



# ARUD 2017

## BALKAN STATES

### ANESTHESIA DAYS IV

Sarajevo  
Bosnia and Herzegovina  
17-20 May 2017

# PROCEEDING BOOK





Anesthesiology and Reanimation Specialists' Society Congress



# **BOOK OF PROCEEDINGS AND ABSTRACTS**

**ABDOMINAL ANESTHESIA AND INTENSIVE CARE  
BALKAN STATES ANESTHESIA DAYS – IV**

**Sarajevo, Bosnia and Herzegovina  
17-20 May  
2017**

**Editor-in-chief**

Prof. Meral Kanbak, MD

**Coeditors:**

Prof. Asli Donmez, MD

Asst Prof Jasmina Smajic MD, PhD

Asst Prof Aysun Ankay Yilbas, MD

Tulin Gumus, MD

**Technical editor:**

Hakan Gunel

**Print:**

.....

ABDOMINAL anesthesia and intensive care balkan states anesthesia days IV, 17-20 May, Sarajevo, 2016 : book of proceedings and abstracts / [editor-in-chief Meral Kanbak]. - Sarajevo : Bosnia i Herzegovina

Dear Colleagues,

On behalf of the Anesthesiology and Reanimation Specialists' Society (ARUD) and The Association of Medical Doctors Anesthesiologist-Reanimatologists in FBiH (UDMAR) it is our great pleasure to invite you to join ARUD2017 Balkan States Anesthesia Days IV Sarajevo, Bosnia and Herzegovina, May 17 – 20, 2017.

"Balkan States Anesthesia Days", which started as a small drop, became one of the most anticipated events in Balkan Anesthesia Doctors' calendars.

This year's topic is "Abdominal Anesthesia and Intensive Care". Our Scientific Committee has put together a comprehensive and clinically relevant programme that will update you on the latest standards and innovations in abdominal anesthesia and intensive care. On the other hand, we will have the opportunity to discuss the findings of our latest clinical and experimental studies with experts on the subject.

Of course, you are also welcome to discover the Olympic city Sarajevo, capital of the heart shaped country Bosnia and Herzegovina. Have breakfast at one of the Olympic mountains that rises over the city. Take coffee in the center of the Old Town, which will, like a time capsule, take you back to the 15th century. Be in the center of a capital, yet so close to nature. Meet some of the nicest people in the world. And an old legend says whoever drinks the water from Bascarsija, must come back to Sarajevo!

We are aiming at organizing a Congress which is both socially satisfying and scientifically enriching. We look forward to seeing you in Sarajevo to have an energetic and serene Congress.

Prof Meral Kanbak, MD  
Congress Chair  
President of ARUD

Asst Prof Jasmina Smajic MD, PhD  
Congress Chair  
President of UDMAR

## Organizing Committees

### Chairs

Prof Meral Kanbak, MD

Asst Prof Jasmina Smajic MD, PhD

### General Secretary

Asst Prof Aysun Ankay Yılbaş, MD

### Local Secretary

Prim Mirsad Babovic, MD

### Members

Assoc Prof Nurdan Bedirli, MD

Ediba Celic Spuzic, MD, PhD

Assoc Prof Sanem Çakar, MD

Prof Aslı Dönmez, MD

Tülin Gümüő, MD

Prim Mehmed Haznadar, MD

Assoc Prof Semir Imamovic, MD, PhD

Merlina Kalajdzija Cero, MD, PhD

Raif Kaya, MD

Msc Edina Lekic, MD

Adisa Sabanovic, MD

### Organisation and Contact

#### CONGRESS SECRETARIAT

Asst Prof Aysun Ankay Yılbaş, MD

e-mail: arudmail@gmail.com

#### LOCAL SECRETARIAT

Prim Mirsad Babovic, MD

e-mail: mirsadbabovic@hotmail.com

### Scientific Committee

Prof Őule Akın Enes, MD

Prof Seda Banu Akıncı, MD

Prof Hülya Bilgin, MD

Prof İsmail Cinel, MD

Prof Bilge Çelebiođlu, MD

Assoc Prof Semir Imamovic, MD, PhD

Asst Prof Merlina Kalajdzija Cero, MD, PhD

Prof Meral Kanbak, MD

Asst Prof Suad Keranovic, MD, PhD

Assoc Prof Alisa Krdzalic, MD, PhD

Prof Ömer Kurtipek, MD

Prof Ermina Mujicic, MD, PhD

Meldijana Omerbegović, MD, PhD

Prof Fatma Sarıcaođlu, MD

Asst Prof Selma Sijercic Avdagić, MD, PhD

Asst Prof Jasmina Smajic, MD, PhD

Prof Marija Soljakova, MD, PhD







## CONTENTS

Hemodynamic monitoring	<i>Vojislava Neskovic (Serbia)</i>	2
Monitoring of microcirculation	<i>Banu Kılıçaslan (Turkey)</i>	4
Liver function monitoring	<i>A. Gülsün Pamuk (Turkey)</i>	8
Blood alternatives: fibrinogen concentrates and FFP	<i>Bahar Öç (Turkey)</i>	11
Immunological effects of transfusion	<i>Meldijana Omerbegovic (B&amp;H)</i>	13
Bridging acute liver failure to transplantation: have we got better?	<i>Mihai Popescu (Romania)</i>	15
Differential diagnosis of early renal allograft dysfunction	<i>Enisa Mesic (B&amp;H)</i>	23
Anesthesia in Renal transplantation	<i>Elvin Kesimci (Turkey)</i>	24
Anesthesia for non-specific surgery in post- transplantation patients	<i>Ender Gedik (Turkey)</i>	27
Regional Anesthesia for Abdominal Surgery	<i>Nevriye Salman (Turkey)</i>	31
Anesthesia for Patients with Endocrine Disease	<i>Şule Akın Enes (Turkey)</i>	33
Anesthetic-analgesic techniques and malignancy: Friend or foe?	<i>Filiz Üzümcügil (Turkey)</i>	35
SGA could be used	<i>Gregorios Voyagis (Greece)</i>	37
SGA should not be used	<i>Igli Zhilla (Albania)</i>	39
Bariatric Surgery: Yesterday, today and tomorrow	<i>Fuad Pasic (B&amp;H)</i>	42
Keys in bariatric anesthesia	<i>Haluk Gümüş (Turkey)</i>	44
Strategies for managing oxygenation: Airway management	<i>Biljana Shirgoska (Macedonia)</i>	47
Strategies for managing oxygenation: Mechanical ventilation	<i>Esra Özayar (Turkey)</i>	49
Robotic anesthesia: dream or future?	<i>Zerrin Özköse Şatırlar (Turkey)</i>	54
Anesthetic concern with robotic surgery	<i>Nurdan Bedirli (Turkey)</i>	56
The influence of different modalities of postoperative analgesia on bowel motility and enhanced recovery after abdominal surgery	<i>Marija Soljakova (Macedonia)</i>	58
Future perspectives of ERAS	<i>Dilek Kazancı (Turkey)</i>	67
Keys in pediatric abdominal anesthesia	<i>Antigona Hasani (Kosovo)</i>	71
Intraabdominal hypertension and abdominal compartment syndrome	<i>Seda B Akıncı (Turkey)</i>	75
Transfusion related acute lung injury (TRALI)	<i>Işıl Özkoçak (Turkey)</i>	81
Management of postoperative nausea and vomiting	<i>Jülide Ergil (Turkey)</i>	83
HBO and abdominal critical care	<i>Hristo Bozov (Bulgaria)</i>	86
Analgo-sedation in ICU	<i>Sanja Maric (B&amp;H)</i>	92
SIRS and CARS in surgical patients	<i>Jasmina Smajic (B&amp;H)</i>	101

**ORAL PRESENTATION-I****17 MAY 2017, Wednesday, 13.00-14.15****CHAIRS: Elvin Kesimci, Filiz Üzümcügil**

- OP-001** **107**  
The effects of anaesthetic induction with propofol or thiopental on oxidative stress parameters in patients undergoing laparoscopic cholecystectomy surgery  
Ayse Gul Celiksu, Mustafa Aksoy  
Ankara Ataturk Training and Research Hospital, Anesthesiology and Reanimation Clinic, Ankara, Turkey
- OP-002** **108**  
Is Khine's formula accurate for prediction of tracheal tube size in Turkish children?  
Serkan Tastan, Elvin Kesimci, Cihan Doger, Mustafa Aksoy  
Ankara Ataturk Training and Research Hospital, Anesthesiology and Reanimation Clinic, Ankara, Turkey
- OP-003** **109**  
The comparison of sugammadex and neostigmine for reversal of rocuronium-induced neuromuscular blockade in patients undergoing robotic prostatectomy  
Suleyman Ellik, Tulin Gumus, Ezgi Erkilic, Elvin Kesimci, Mustafa Aksoy, Orhan Kanbak  
Ankara Ataturk Training and Research Hospital, Anesthesiology and Reanimation Clinic, Ankara, Turkey
- OP-004** **110**  
The role of sonographic evaluation of diaphragm in investigating the cause of difficult weaning: A Case Report  
Banu Kilicarslan\*, Ismail Kerem Gelir\*, Seda Banu Akinci\*, Melike Mut Askun\*\*  
\*Hacettepe University, School of Medicine, Department of Anesthesiology and Reanimation, Ankara, Turkey  
\*\*Hacettepe University, School of Medicine, Department of Neurosurgery, Ankara, Turkey
- OP-005** **112**  
Body surface area is not a reliable predictor of tracheal tube size in children  
Filiz Uzumcugil\*, Emre Can Celebioglu\*\*, Demet Basak Ozkaragoz\*, Aysun Ankay Yilbas\*, Basak Akca\*, Nazgol Lotfinagsh\*, Bilge Celebioglu\*  
\*Hacettepe University, School of Medicine, Department of Anesthesiology and Reanimation, Ankara, Turkey  
\*\*Karabuk University, Department of Radiology, Karabük, Turkey
- OP-006** **114**  
Awake fiberoptic intubation in a patient with severe maxillofacial trauma  
Aysun Ankay Yilbas, Almila Gulsun Pamuk, Melahat Yalcin Solak, Ozgur Canbay, Meral Kanbak, Fatma Saricaoglu  
Hacettepe University, School of Medicine, Department of Anaesthesiology, Ankara, Turkey
- OP-007** **115**  
Management of descending necrotizing mediastinitis as a complication of peritoncillar abscesses: a case report  
Ismail Kerem Gelir\*, Koray Altun\*\*, Banu Kilicarslan\*, Seda Banu Akinci\*, Bilge Celebioglu\*, Meral Kanbak\*  
\*Hacettepe University, School of Medicine, Department of Anesthesiology and Reanimation  
\*\*Mehmet Akif Ersoy Training and Research Hospital, Department of Anesthesiology and Reanimation, Istanbul, Turkey

- OP-008** **116**  


---

 Evaluation of the efficacy of local anesthetic wound infusion on postoperative pain after thoracotomy-a retrospective observational study  
 Omer Ozsancaktar\*, Basak Akca\*, Meral Kanbak\*, Aysun Ankay Yilbas\*, Filiz Uzumcugil\*, Erkan Dikmen\*\*, Bilge Celebioglu\*  
 \*Hacettepe University, School of Medicine, Department of Anaesthesiology and Reanimation, Ankara, Turkey  
 \*\*Hacettepe University School of Medicine, Department of Thoracic Surgery, Ankara, Turkey
- OP-009** **118**  


---

 The effect of methylprednisolone use on sugammadex reversal of neuromuscular blokade-a prospective observational study  
 Mustafa Kav, Almila Gulsun Pamuk, Basak Akca, Aysun Ankay Yilbas, Filiz Uzumcugil  
 Hacettepe University, School of Medicine, Department of Anesthesiology and Reanimation, Ankara, Turkey
- OP-010** **119**  


---

 The effect of audiovisual preoperative information on parental anxiety in the cases of elective pediatric surgery  
Sengul Ozmert\*, Feyza Sever\*, Galip Ozmert\*\*, Gulser Senses Dinc\*\*\*, Gulsen Keskin\*, Dilek Kahraman Oztas\*\*\*\*, Jale Karakaya\*\*\*\*\*, Ozden Sukran Uneri\*\*\*  
 \*Ankara Children's Haematology Oncology Training and Research Hospital, Department of Anaesthesiology, Ankara, Turkey  
 \*\*Etlik Zübeyde Hanım Gynecology Training and Research Hospital Department of Anaesthesiology, Ankara, Turkey  
 \*\*\*Ankara Children's Haematology Oncology Training and Research Hospital, Department of Psychiatry, Ankara, Turkey  
 \*\*\*\*Ankara Atatürk Training and Research Hospital / Yıldırım Beyazıt University, Faculty of Medicine, Department of Public Health, Ankara, Turkey  
 \*\*\*\*\*Hacettepe University, School of Medicine, Department of Biostatistics, Ankara, Turkey

## ORAL PRESENTATION-II

17 MAY 2017, Wednesday, 14.15-15.30

**CHAIRS: Nevriye Salman, Aysun Ankay Yılbaş**

- OP-011** **121**  


---

 Comparison of analgesic effects of morphine, remifentanil and meperidine in patients with coronary artery bypass surgery  
Nevriye Salman\*, Alper Gurbuz\*\*, Baris Durukan\*\*\*, H. Ibrahim Ucar\*\*, Sumru Sekerci\*, Cem Yorgancioglu\*\*  
 \*Turkiye Yuksek Ihtisas Training and Research Hospital, Ankara, Turkey  
 \*\*Memorial Hospital, Ankara, Turkey  
 \*\*\*Medical Park Hospital, Usak, Turkey
- OP-012** **122**  


---

 Use of video laryngoscope in difficult intubation due to vocal cord anomalies:2 case reports  
Nevriye Salman, Seyhan Yagar, Sumru Sekerci  
 Turkiye Yuksek Ihtisas Training and Research Hospital, Ankara, Turkey
- OP-013** **123**  


---

 The Effects Of Sevoflurane And Propofol On The Intraocular Pressure In Bariatric Surgery  
 Munire Babayigit, Mehmet Erol Can, Hakan Bulus, Necla Dereli, Esra Ozayar, Aysun Kurtay, Mustafa Alparslan Babayigit, Seda İlhan, Eyup Horasanlı  
 Kecioren Education and Training Hospital, Ankara, Turkey

<b>OP-014</b>	<b>124</b>
<hr/>	
Comparison of C-Mac D blade and Fast-Trach laryngeal mask airway for intubation conditions in cervical discectomy: a preliminary study Derya Ozkan, Savas Altinsoy, Murat Sayin, Habip Dolgun, <u>Julide Ergil</u> , Aslı Donmez University of Health Sciences, Diskapi Yildirim Beyazit Training and Research Hospital, Ankara, Turkey	
<b>OP-015</b>	<b>125</b>
<hr/>	
Prolonged infraclavicular brachial plexus block in a diabetic patient Sevtap Cemaloglu, Ceyda Ozhan Caparlar, Derya Ozkan, Mehmet Murat Sayin, <u>Haluk Gumus</u> University of Health Sciences, Diskapi Yildirim Beyazit Training and Research Hospital, Ankara, Turkey	
<b>OP-016</b>	<b>126</b>
<hr/>	
The prognostic value of neutrophil-to-lymphocyte ratio and activated partial thromboplastin time clotting in critically patients after abdominal surgery <u>Hilal Ayoglu*</u> , Ozcan Piskin*, Huseyin Oztoprak*, Gamze Kucukosman*, Bengu Gulhan Aydin*, Dilek Okyay*, Ferruh Niyazi Ayoglu** *Bulent Ecevit University, Faculty of Medicine, Department of Anesthesiology and Reanimation, Zonguldak, Turkey **Bulent Ecevit University, Faculty of Medicine, Department of Public Health, Zonguldak, Turkey	
<b>OP-017</b>	<b>127</b>
<hr/>	
Postoperative acute respiratory failure in a patient with hemophilia: case report and differential diagnosis <u>Sevtap Cemaloglu</u> , Başak Gulel, Savas Altinsoy, Zeynep Koc, Mustafa Yildirim, Dilek Unal, Mehmet Murat Sayin University of Health Sciences, Diskapi Yildirim Beyazit Training and Research Hospital, Ankara, Turkey	
<b>OP-018</b>	<b>131</b>
<hr/>	
Performing nasal foi with or without a nasal airway: a manikin study Sevtap Cemaloglu, Burak Nalbant, <u>Aslı Donmez</u> , Derya Ozkan, Emine Arik University of Health Sciences, Diskapi Yildirim Beyazit Training and Research Hospital, Ankara, Turkey	
<b>OP-019</b>	<b>132</b>
<hr/>	
Our anesthesia management on a children with Saethre-Chotzen Syndrome <u>Meric Bayram</u> , Nihal Deniz Bulut Yuksel, Ozgur Canbay Hacettepe University, School of Medicine, Department of Anesthesiology and Reanimation, Ankara, Turkey	
<b>OP-020</b>	<b>134</b>
<hr/>	
Unanticipated difficult airway in two cases due to post-intubation tracheal stenosis <u>Aysun AnkaY Yilbas</u> , Filiz Uzumcugil, Basak Akca, Ozgur Canbay Hacettepe University, School of Medicine, Department of Anesthesiology and Reanimation, Ankara, Turkey	

## ORAL PRESENTATION- III

17 MAY 2017, Wednesday, 15.30-16.45

**CHAIRS: Kadriye Kahveci, Verda Toprak**

<b>OP-021</b>	<b>135</b>
<hr/>	
Neuropathic pain associated with incision for abdominal tube drainage: TAP block for diagnosis and treatment <u>Pakize Kirdemir</u> , Birzat Emre Golboyu Suleyman Demirel University, Faculty of Medicine, Department of Anaesthesiology and Reanimation, Isparta, Turkey	

<b>OP-022</b>	<b>136</b>
<hr/>	
The scary doubt in jugular venous catheterization: carotid artery cannulation?	
Derya Ademoglu*, Busra Tezcan*, Sema Turan*, Hija Yazicioglu**, <u>Dilek Kazanci*</u> , Aysegul Ozgok**	
* Turkiye Yuksek Ihtisas Training and Research Hospital, Intensive Care Clinic, Ankara, Turkey	
**Turkiye Yuksek Ihtisas Training and Research Hospital, Anesthesiology and Reanimation Clinic, Ankara, Turkey	
<b>OP-023</b>	<b>137</b>
<hr/>	
Deep sedation with bispectral index monitoring for pediatric gastrointestinal endoscopy cases	
<u>Mine Akin*</u> , Gulsen Keskin*, Yesim Senayli*, Gulin Hizal**	
*Ankara Child Health and Diseases Hematology and Oncology Education and Research Hospital, Department of Anaesthesiology, Ankara, Turkey	
** Ankara Child Health and Diseases Hematology and Oncology Education and Research Hospital, Department of Peadiatric Gastroenterology, Ankara, Turkey	
<b>OP-024</b>	<b>138</b>
<hr/>	
An examination of factors affecting the length of stay in a palliative care centre	
Metin Dincer, Kadriye Kahveci, <u>Cihan Doger</u>	
YBU Atatürk Education and Research Hospital, Ankara, Turkey	
<b>OP-025</b>	<b>139</b>
<hr/>	
Evaluation for postoperative analgesia effectiveness of low dose intrathecal morphine in pediatric patients	
<u>Gulsen Keskin</u> , Mine Akin, Yesim Senayli	
Ankara Child Health and Diseases Hematology and Oncology Education and Research Hospital, Ankara, Turkey	
<b>OP-026</b>	<b>140</b>
<hr/>	
Anesthesia for endoscopic procedures in pediatric age. An analysis of 1682 cases	
<u>Nilgun Sahin*</u> , Cihan Doger**, Ferda Ozbay Hosnut***, Eyup Sari****	
*Dr. Sami Ulus Education and Research Hospital, Anesthesiology and Reanimation, Ankara, Turkey	
**Yildirim Beyazit University Ataturk Education and Research Hospital, Anesthesiology and Reanimation, Ankara, Turkey	
***Dr. Sami Ulus Education and Research Hospital, Pediatric Gastroenterology, Ankara, Turkey	
****Dr. Sami Ulus Education and Research Hospital, Pediatrics, Ankara, Turkey	
<b>OP-027</b>	<b>142</b>
<hr/>	
Effect of obstructive sleep apnea on delayed recovery following bariatric surgery	
<u>Verda Toprak*</u> , Hakan Nurac*, Emin Pashazade*, Leyla Caglayan*, Elif Ozcimen**	
*Baskent University, Istanbul Hospital, Anesthesiology and Reanimation Department, Istanbul, Turkey	
**Baskent University, Istanbul Hospital, General Surgery Department, Istanbul, Turkey	
<b>OP-028</b>	<b>143</b>
<hr/>	
Anidulafungin induced reversible thrombocytopenia: A case report	
<u>Zubeyir Cebeci</u> , Ayse Ilksen Egilmez, Yasin Tire, Mehmet Sargin	
Konya Training and Research Hospital, Anesthesiology and Reanimation Department, Konya, Turkey	
<b>OP-029</b>	<b>145</b>
<hr/>	
Storz videolaryngoscope vs macintosh laryngoscope in intraocular pressure changes, throat pain, intubation time and hemodynamic variables	
Ceyda Ozhan Caparlar*, Gozde Bumin Aydin*, <u>Evginar Sezer*</u> , Julide Ergil*, Aysun Sanal Dogan**	
*Diskapi Yildirim Beyazit Training and Research Hospital, Anesthesiology and Reanimation Clinics, Ankara, Turkey	
**Diskapi Yildirim Beyazit Training and Research Hospital, Ophthalmology Clinics, Ankara, Turkey	

<b>OP-030</b>	<b>146</b>
<hr/>	
Abdominal adiposity and acute kidney injury in major abdominal surgery <u>Seyhan Yagar</u> , Perihan Kemerci, Mine Cavus, Gulseren Suer Kaya, Mustafa Ozdemir, Sarper Okten Turkiye Yuksek Ihtisas Training and Research Hospital, Ankara, Turkey	

## ORAL PRESENTATION- IV

18 May 2017, Thursday, 13.30-14.45

### CHAIRS: Pakize Kirdemir, Zübeyir Cebeci

<b>OP-031</b>	<b>147</b>
<hr/>	
High flow nasal cannula oxygen treatment (HFNCOT): Case report <u>Oznur Demiroglu</u> , Suheyla Abitagaoglu, Arzu Yildirim Ar, Emre Akin, Guldem Turan Fatih Sultan Mehmet Teaching And Research Hospital Department of ICU, Istanbul, Turkey	

<b>OP-032</b>	<b>149</b>
<hr/>	
Compare the effects of inhalational anesthesia and tiva methods on pulmonary function in morbid obese patients going to laparoscopic sleeve gastrectomy Mehmet Celal Oztürk, <u>Oznur Demiroglu</u> , Suheyla Abitagaoglu, Guldem Turan, Dilek Erdogan Ari Fatih Sultan Mehmet Teaching And Research Hospital Department of Anaesthesiology and Reanimation, Istanbul, Turkey	

<b>OP-033</b>	<b>150</b>
<hr/>	
Research into the protective effect of syringic acid in rats with induced experimental pancreatitis Mehmet Sertkaya, Mehmet Fatih Yazar, <u>Omer Faruk Boran</u> , Aykut Urfalioglu, Yasir Bahar, Hasan Dagli, Seda Ikkardes, Metin Kilic Kahramanmaras Sutcu Imam University, Kahramanmaras, Turkey	

<b>OP-034</b>	<b>152</b>
<hr/>	
Effect of general and regional anesthesia on bone turnover markers in adult patients Ebru Biricik*, Feride Karacaer*, Ersel Gulec*, <u>Murat Ilginel</u> *, Omer Sunkar Bicer**, Dilek Ozcengiz* Cukurova University, Adana, Turkey	

<b>OP-035</b>	<b>153</b>
<hr/>	
Anesthetic implications for vagal nerve stimulation: A report of ten cases <u>Ozge Ozden Ilginel</u> Cukurova University Faculty of Medicine Department of Anesthesiology and Reanimation, Adana, Turkey	

<b>OP-036</b>	<b>154</b>
<hr/>	
Comparison of effects of preemptive oral pregabalin-tramadol combination and parasetamol-tramadol combination administration on post-operatif tramadol consumption in breast reduction surgery <u>Murat Turkeun Ilginel</u> Cukurova University Faculty of Medicine Department of Anesthesiology and Reanimation, Adana, Turkey	

<b>OP-037</b>	<b>155</b>
<hr/>	
Evaluation of patients with traceostomy which performed by Griggs Technique Mehmet Erdem Cakmak, Sema Turan, <u>Dilek Kazanci</u> , Aysegul Ozgok, Busra Tezcan, Sultan Sevim Yakin, Cilem Bayindir Dicle, Ibrahim Mungan Turkiye Yuksek Ihtisas Training and Research Hospital, Ankara, Turkey	

<b>OP-038</b>	<b>156</b>
<hr/>	
Effects of epiduroscopy on quality of life in patients with low back pain <u>Ozge Aktoz</u> , Nalan Celebi Hacettepe University, School of Medicine, Department of Anesthesiology and Reanimation, Ankara, Turkey	

**OP-039** **157**

A systematic review of neuraxial anesthesia in patients with ankylosing spondylitis

Ibrahim Ozturk\*, Derya Ozkan\*\*, Julide Ergil\*\*

\*Medeniyet University, Goztepe Education And Research Hospital, Department Of Anesthesiology, Istanbul, Turkey

\*\*Diskapi Yildirim Beyazit Training and Research Hospital,

Anesthesiology and Reanimation Clinics, Ankara, Turkey

**OP-040** **159**

Effect of thoracic epidural or intravenous analgesia on neutrophil / lymphocyte ratio in thoracotomy cases

Metin Alkan\*, Fatmanur Duruk Erkent\*, Ali Celik\*\*, Anil Gokce\*\*, Mustafa Arslan\*, Yusuf Unal\*

\*Gazi University, Faculty of Medicine, Department of Anesthesiology and Reanimation, Ankara, Turkey

\*\*Gazi University, Faculty of Medicine, Department of Thoracic Surgery, Ankara, Turkey

**ORAL PRESENTATION- V**

**18 May 2017, Thursday, 14.45-16.00**

**CHAIRS: Hilal Ayođlu, Hüseyin Ulaş Pınar**

**OP-041** **160**

Goal Directed Fluid Therapy via Pleth Variability Index 's Effects on Acute Kidney Injury with Patients Undergoing Laparoscopic Colorectal Surgery

Sevcan Buyuk, Suheyla Karadag Erkoc, Cigdem Yildirim Guclu, Ali Abbas Yilmaz

Ankara University School of Medicine, Department of Anaesthesiology and Intensive Care Unit, Ankara, Turkey

**OP-042** **161**

Zukloperthiol-induced neuroleptic malignant syndrome

Ismail Kerem Gelir, Abdullah Yalcin, A. Gulsun Pamuk, Banu Kilcarslan, Seda Banu Akinci

Hacettepe University, School of Medicine, Department of Anesthesiology and Reanimation, Ankara, Turkey

**OP-043** **163**

Our extra-corporeal cardiopulmonary resuscitation experience: a case report

Ibrahim Mungan, Dilek Kazanci, Hayriye Cankar Dal, Mine Cavuc, Serdar Yamanyar, Busra Tezcan, Sema Turan, Aysegul Ozgok

Turkiye Yuksek Ihtisas Training and Research Hospital, Ankara, Turkey

**OP-044** **164**

Effects of remifentanyl pretreatment on bupivacaine cardiotoxicity in rats

Ozcan Piskin, Hilal Ayoglu

Bulent Ecevit University, Faculty of Medicine, Department of Anesthesiology and Reanimation, Zonguldak, Turkey

**OP-045** **165**

Percutaneous dilatational tracheostomy via Griggs technique at bedside in intensive care unit; a single center experience

Yeliz Sahiner\*, Ibrahim Tayfun Sahiner\*\*

\*Hitit University, School of Medicine, Department of Anesthesiology and Reanimation, Corum, Turkey

\*\*Hitit University, School of Medicine, Department of General Surgery, Corum, Turkey

<b>OP-046</b>	<b>166</b>
<hr/>	
The effect of neuromuscular blockade depth, remnant CO <sub>2</sub> excretion and prolonged assisted ventilation on postoperative pain in patients undergoing laparoscopic cholecystectomy; A prospective, randomized, blind clinical study <u>Ibrahim Tayfun Sahiner*</u> , <u>Yeliz Sahiner**</u> *Hitit University, School of Medicine, Department of General Surgery, Corum, Turkey **Hitit University, School of Medicine, Department of Anesthesiology and Reanimation, Corum, Turkey	
<b>OP-047</b>	<b>167</b>
<hr/>	
The comparison of thoracic epidural block or transversus abdominis plane block during anesthesia and postoperative pain management for abdominal malignancy surgery <u>Sultan Ozgun Gunduz*</u> , <u>Zubeyir Cebeci**</u> , Mehmet Yalvac***, Onur Ozlu**** *Health Ministry, Çivril State Hospital **Health Ministry, Ordu Medical School Hospital, Anesthesia and Reanimation Clinic ***Bozok University, Medical School Hospital, Anesthesia and Reanimation Department **** TOBB -ETU Medical School, Anesthesia and Reanimation Department	
<b>OP-048</b>	<b>168</b>
<hr/>	
Does addition of preoperative i.v. ibuprofen to pregabalin reduce postoperative pain in posterior lumbar interbody fusion surgery? <u>Huseyin Ulas Pinar</u> , Omer Karaca, Fatma Karakoc, Rafi Dogan Baskent University Konya Research Center, Anesthesiology Department, Konya, Turkey	
<b>OP-049</b>	<b>169</b>
<hr/>	
Anesthesia application in trombocytopenic pregnant (case report) <u>Elif Buyukerkmen</u> , <u>Tuba Berra Saritas</u> , Remziye Sivaci Afyon Kocatepe University, Afyon, Turkey	
<b>OP-050</b>	<b>170</b>
<hr/>	
A case report of ultrasound guided stellate ganglion block for peripheral vascular disease in critical care Ilksen Donmez, Aysu Hayriye Tezcan, <u>Mesut Oterkus</u> , Omur Ozturk, Esref Erdem Kafkas University School of Medicine, Anesthesiology and Reanimation Department, Kars, Turkey	

## ORAL PRESENTATION- VI

18 May 2017, Thursday, 16.00-17.00

### CHAIRS: Oğuzhan Arun, Tuğba Karaman

<b>OP-051</b>	<b>171</b>
<hr/>	
The effects of transversus abdominis plane block on analgesic and anesthetic consumption during total abdominal hysterectomy: a randomized controlled study <u>Tugba Karaman*</u> , Asker Zeki Ozsoy**, Serkan Karaman*, Serkan Dogru*, Hakan Tapar*, Aynur Sahin*, Hatice Dogru**, Mustafa Suren* * Gaziosmanpasa University, School of Medicine, Department of Anesthesiology and Reanimation, Tokat, Turkey **Gaziosmanpasa University, School of Medicine, Department of Gynecology and Obstetrics, Tokat, Turkey	
<b>OP-052</b>	<b>173</b>
<hr/>	
The time factor on patient outcomes? Serkan Dogru, Hakan Tapar, Aynur Sahin, <u>Tugba Karaman</u> , Serkan Karaman, Mustafa Suren Gaziosmanpasa University, School of Medicine, Department of Anesthesiology and Reanimation, Tokat, Turkey	



<b>OP-053</b>	<b>174</b>
<hr/>	
Anesthesia management in a patient with Baraitser Syndrome <u>Nihal Deniz Bulut YukseI</u> , Melahat Yalcin Solak, Fatma Saricaoglu Hacettepe University, School of Medicine, Department of Anesthesiology and Reanimation, Ankara, Turkey	
<b>OP-054</b>	<b>175</b>
<hr/>	
The effects of leptin on cardiac potassium channel types in an experimental diabetic cardiomyopathy model Murat Simsek*, Bahar Oc**, Murat Ayaz***, Basak Sirma Yanardag***, Oguzhan Arun**, Ates Duman**, <u>Mehmet Oc*</u> *Selcuk University, Faculty of Medicine, Department of Cardiovascular Surgery, Konya, Turkey **Selcuk University, Faculty of Medicine, Department of Anesthesia and Intensive Care, Konya, Turkey ***Selcuk University, Faculty of Medicine, Department of Biophysics, Konya, Turkey	
<b>OP-055</b>	<b>176</b>
<hr/>	
The comparison of the effects of mild and moderate hypothermia on serum Neuron-Specific Enolase (NSE), S-100 $\beta$ and Near-infrared spectroscopy (NIRS) in patients undergoing open heart surgery with cardiopulmonary bypass Feyza Tulek*, <u>Bahar Oc*</u> , Oguzhan Arun*, Ali Unlu**, Mehmet Oc***, Jale Bengi Celik*, Ates Duman* *Selcuk University, Faculty of Medicine, Department of Anesthesia and Intensive Care, Konya, Turkey **Selcuk University, Faculty of Medicine, Department of Biochemistry, Konya, Turkey ***Selcuk University, Faculty of Medicine, Department of Cardiovascular Surgery, Konya, Turkey	
<b>OP-056</b>	<b>177</b>
<hr/>	
Effects of endotracheal tube size determination with traditional formulary vs. ultrasonographical method on postoperative airway complications in pediatric patients Busra Yorulmazlar Solgun*, <u>Asli Donmez*</u> , Azad Hekimoglu**, Derya Ozkan*, M. Murat Sayin* *University of Health Sciences, Diskapi Yildirim Beyazit Training and Research Hospital, Anesthesiology and Reanimation Clinics, Ankara, Turkey **University of Health Sciences, Diskapi Yildirim Beyazit Training and Research Hospital, Radiology Clinics, Ankara, Turkey	
<b>OP-057</b>	<b>178</b>
<hr/>	
Anesthetic management of a premature newborn with congenital cystic adenoid malformation undergoing closure of patent ductus arteriosus Bahar Oc*, Oguzhan Arun*, <u>Ozlem Tas*</u> , Serkan Akcan**, Ates Duman*, Mehmet Oc** *Selcuk University, Faculty of Medicine, Department of Anesthesia and Intensive Care, Konya, Turkey **Selcuk University, Faculty of Medicine, Department of Cardiovascular Surgery, Konya, Turkey	
<b>OP-058</b>	<b>179</b>
<hr/>	
Evaluation of anesthetic approach in children's dental treatment with deep sedation Sengul Ozmert*, <u>Fatma Kavak Akelma**</u> , Zeynep Candan Okten*** *Department of Anaesthesiology, Health Sciences University Ankara Children's Haematology Oncology Training and Research Hospital, Ankara, Turkey **Department of Anesthesiology, Health Sciences University Ankara Zubeyde Hanim Etlik Maternity and Gynecology Teaching and Research Hospital, Ankara, Turkey ***Department of Anesthesiology, Ankara 75th Year Ministry of Health Oral and Dental Health Hospital, Turkey	

**ORAL PRESENTATION- VII**

**19 May 2017, Friday, 08:15 - 09:30**

**CHAIRS: Maja Tomic Sejranic, Fatima Iljazagic Halilovic**

<b>OP-059</b>	<b>180</b>
<hr/>	
Extremely low frequency electromagnetic field from FMS 2000 on various infusion rates Kyu Won Lee, <u>Yong Han Kim</u> Haeundae Paik Hospital, Inje University, Busan	
<b>OP-060</b>	<b>181</b>
<hr/>	
Abdominal compartment syndrome: Current insights in acute intestinal distress syndrome <u>Shosholcheva M*</u> , Kartalov A**, Kuzmanovska B**, Jankulovski N***, Ristovski S*. *University Clinic of Surgery "Ss Naum Ohridski", "Ss Cyril & Methodius" University, Faculty of Medicine, Macedonia **Clinic for Anesthesiology, Reanimatology and Intensive Care Unit, "Ss Cyril & Methodius" University, Faculty of Medicine, Macedonia ***University Clinic for Abdominal Surgery, "Ss Cyril & Methodius" University, Faculty of Medicine, Macedonia	
<b>OP-061</b>	<b>182</b>
<hr/>	
Early postoperative complications in patients after repair of ruptured abdominal aortic aneurysm <u>Tahto E</u> , Selimovic M, Kusturica A, Kovcic J, Selimovic Ceke L, Krdzalic A University Clinical Center Tuzla, Clinic for Cardiovascular Diseases, Department of Intensive Care Medicine and Cardiac Anesthesiology	
<b>OP-062</b>	<b>183</b>
<hr/>	
Leopard syndrome <u>Emira Mešanović</u> , Prim Senida Keser, Suada Salkić University Clinical Centre Tuzla, Clinic for Anesthesiology and resuscitation	
<b>OP-063</b>	<b>185</b>
<hr/>	
Subphrenic abscess as a cause of chest pain Jasmina Smajić, <u>Fatima Iljazagić Halilović</u> University Clinical Center Tuzla, Prof Ibri Pasica 1	
<b>OP-064</b>	<b>186</b>
<hr/>	
Intrahospital infections after abdominal surgery in the Surgical ICU of General Hospital "Prim. dr. Abdulah Nakaš" Sarajevo <u>Lejla Muminagić-Hamza</u> , Davorka Matković, Vesna Čengić General Hospital "Prim.dr. Abdulah Nakaš"; Kranjčevićeva 12, 71000 Sarajevo; Bosnia and Herzegovina	
<b>OP-065</b>	<b>187</b>
<hr/>	
Pulmonary embolism after surgery <u>Erna Buro</u> , Senida Keser, Emira Mesanovic, S. Salkic University Clinical Centre Tuzla, Clinic for anesthesiology and resuscitation	
<b>OP-066</b>	<b>188</b>
<hr/>	
Anesthesia and intensive therapeutic procedure at eclampsia in the period 2011.-2015 <u>Mešanović Emira</u> , Prim Keser Senida, Buro Erna University Clinical Centre Tuzla, Clinic or anesthesiology and resuscitation	
<b>OP-067</b>	<b>189</b>
<hr/>	
Infections of abdominal surgical wounds in a post-operative intensive care unit <u>L. Osmić</u> , Š. Tupajić, A. Bukvarević, E. Halilbašić University Clinical Center Tuzla	

**OP-068** **190**

Intermittent versus extended infusion carbapenems in intensive care unit patients at University Clinical Center Tuzla

Lejla Rakovac Tupković, Aldina Ahmetagić, Jasmina Smajić  
University Clinical Centre Tuzla

**ORAL PRESENTATION- VIII**

**19 May 2017, Friday, 09:30-10:45**

**CHAIRS: Bahar Öç, Yeliz Şahiner**

**OP-069** **191**

Effects of extracellular ion concentrations on the neuronal excitability: Simulation study

Murat Ayaz\*, Funda Arun\*\*

\*Selcuk University, Department of Biophysics, Konya, Turkey

\*\*Beyhekim State Hospital, Anesthesiology and Reanimation Clinic, Konya, Turkey

**OP-070** **193**

Dental injury related to conventional direct laryngoscopy: A preliminary report of a prospective observational study

Funda Arun\*, Oguzhan Arun\*\*, Ahmet Emin Sonmez\*\*, Ozlem Tas\*\*, Nimet Unlu\*\*\*, Bahar Oc\*\*

\*Beyhekim State Hospital, Anesthesiology and Reanimation Clinic, Konya, Turkey

\*\*Selcuk University Faculty of Medicine, Department of Anesthesiology and Reanimation, Konya, Turkey

\*\*\*Selcuk University Faculty of Dentistry, Department of Restorative Dentistry, Konya, Turkey

**OP-071** **195**

Evaluation of the patients diagnosed with brain death in pediatric intensive care unit with apnea test

Sengul Ozmert\*, Feyza Sever\*, Ganime Ayar\*\*, Mutlu Uysal Yazici\*\*\*, Dilek Kahraman Oztas\*\*\*\*

\*Ankara Children's Haematology Oncology Training and Research Hospital, Department of Anaesthesiology, Ankara, Turkey

\*\*Ankara Children's Haematology Oncology Training and Research Hospital, Department of Pediatric Intensive Care Unit, Ankara, Turkey

\*\*\*Hacettepe University Ihsan Dogramaci Children's Hospital, Department of Pediatric Intensive Care Unit, Ankara, Turkey

\*\*\*\*Ankara Atatürk Training and Research Hospital / Yıldırım Beyazıt University Medical Faculty, Department of Public Health, Ankara, Turkey

**OP-072** **196**

Comparison of effects of preoperative melatonin or vitamin c administration on postoperative analgesia

Demet Lafli Tunay

Cukurova University Faculty of Medicine Department of Anesthesiology and Reanimation, Adana, Turkey

**OP-073** **197**

Effect of transcutaneous electrical nerve stimulation on quality of recovery after major gynecologic surgery

Serkan Karaman\*, Tugba Karaman\*, Hulya Deveci\*\*, A. Zeki Ozsoy\*\*\*, I. Bahri Delibas\*\*\*

\*Gaziosmanpasa University, School of Medicine, Department of Anesthesiology and Reanimation, Tokat, Turkey

\*\*Gaziosmanpasa University, School of Medicine, Department of Physical Medicine and Rehabilitation, Tokat, Turkey

\*\*\*Gaziosmanpasa University, School of Medicine, Department of Gynecology and Obstetrics, Tokat, Turkey

<b>OP-074</b>	<b>198</b>
<hr/>	
The affect of Sevoflurane and Desflurane on ischemia and reperfusion damage on the distant organ lungs	
Ilknur Aytakin*, Saban Cem Sezen**, Muhammed Enes Aydin***, <u>Naciye Turk Ozterlemez***</u> , Mustafa Arslan***, Meral Erdal Erbatur***, Mustafa Kavutcu****	
1*Yıldırım Beyazıt Dışkapı Training and Research Hospital, Ankara, Turkey	
**Kırıkkale University School of Medicine, Department of Histology and Embryology, Kırıkkale, Turkey	
***Gazi University School of Medicine, Department of Anesthesia and Reanimation, Ankara, Turkey	
****Gazi University Medical School, Department of Biochemistry, Ankara, Turkey	
<b>OP-075</b>	<b>199</b>
<hr/>	
Post-dural puncture headache after cesarean section: Comparison with median and paramedian approaches	
<u>Mehmet Selcuk Uluer</u> , Mehmet Sargin, Osman Sahin, Elmas Uluer	
Isparta City Hospital, Isparta, Turkey	
<b>OP-076</b>	<b>201</b>
<hr/>	
<i>withdrawn</i>	
<b>OP-077</b>	<b>202</b>
<hr/>	
Guidewire related complication during hemodialysis catheter placement in ICU: A case report	
Bahar Oc*, Oguzhan Arun*, <u>Ahmet Emin Sonmez*</u> , Serkan Akcan**, Ates Duman*, Mehmet Oc**	
*Selcuk University, Faculty of Medicine, Department of Anesthesia and Intensive Care, Konya, Turkey	
**Selcuk University, Faculty of Medicine, Department of Cardiovascular Surgery, Konya, Turkey	
<b>OP-078</b>	<b>203</b>
<hr/>	
Anesthetic management for neurosurgery during intraoperative magnetic resonance imaging	
<u>Gozde Inan*</u> , Gokcen Emmez*, Alp Borcek**, Hakan Emmez**, Murat Ucar***, Zerrin Ozkose Satirlar*	
*Gazi University Faculty of Medicine Department of Anesthesiology, Ankara, Turkey	
**Gazi University Faculty of Medicine Department of Neurosurgery, Ankara, Turkey	
***Gazi University Faculty of Medicine Department of Radiology, Ankara, Turkey	

## ORAL PRESENTATION- IX

19 May 2017, Friday, 10:45-12:00

**CHAIRS: Nurdan Bedirli, Adnan Bayram**

<b>OP-079</b>	<b>204</b>
<hr/>	
<i>withdrawn</i>	
<b>OP-080</b>	<b>206</b>
<hr/>	
A patient with a tracheoesophageal fistula formed 11 years after lung cancer treatment	
<u>Goksen Oz*</u> , Serpil Ocal**	
*SBU Kayseri Education and Research Hospital, Anesthesiology ICU (Formerly in Hacettepe University Medical Faculty Anesthesiology ICU), Kayseri, Turkey	
**Hacettepe University Medical Faculty Medical ICU, Ankara, Turkey	
<b>OP-081</b>	<b>208</b>
<hr/>	
Retrospective analysis of lung protective mechanical ventilation of elderly patients undergoing robotic rectum resection	
<u>Nurdan Bedirli*</u> , Omer Kurtipek*, Cagri Buyukkasap**, Abdulkadir Bedirli**	
Gazi University, Medical Faculty, Departments of Anesthesiology and Reanimation* and General Surgery**, Ankara, Turkey	

<b>OP-082</b>	<b>209</b>
<hr/>	
Ultrasound-guided bilateral transversus abdominis plane block versus patient control analgesia in patients undergoing in autologous breast reconstruction for postoperative pain management <u>Nurdan Bedirli</u> , Berrin Isik, Hakan Tuzlali, Omer Kurtipek Gazi university, Medical Faculty, Department of Anesthesiology and Reanimation, Ankara, Turkey	
<b>OP-083</b>	<b>210</b>
<hr/>	
Peritoneo-pleural leakage of parenteral nutrition solution via femoral venous catheter due to extravasation Filiz Uzumcugil, <u>Fatmanur Aslan</u> , Nihal Deniz Bulut Yuksel Hacettepe University School of Medicine, Department of Anesthesiology and Reanimation, Ankara, Turkey	
<b>OP-084</b>	<b>211</b>
<hr/>	
Effect of interscalene block on intraocular pressure and ocular perfusion pressure Betul Basaran*, <u>Aysun Ankay Yilbas</u> ** *Department of Anesthesiology, Konya Training and Research Hospital, Konya, Turkey **Department of Anesthesiology and Reanimation, Hacettepe University, School of Medicine, Ankara, Turkey	
<b>OP-085</b>	<b>213</b>
<hr/>	
Pain control of a patient with rectus muscle haematoma with respiratory distress: transversus abdominis plane block procedure <u>Emine Uzunoglu</u> , Muhammed Ahmet Karakaya, Cigdem Heyik, Esra Kutlu, Pelin Karaaslan Istanbul Medipol University, Turkey	
<b>OP-086</b>	<b>214</b>
<hr/>	
Does reducing heparin dose by calculating due to lean body weight, decrease the transfusion requirement in perioperative period? A randomized controlled trial Aslihan Aykut*, Ulku Sabuncu*, Zeliha Asli Demir*, Eda Balci*, Başak Soran Turkcan**, Utku Unal**, <u>Aysegul Ozkok</u> * *Turkiye Yuksek Ihtisas Training and Research Hospital, Department of Anesthesiology and Reanimation, Ankara, Turkey **Turkiye Yuksek Ihtisas Training and Research Hospital, Cardiovascular Surgery Clinic, Ankara, Turkey	
<b>OP-087</b>	<b>216</b>
<hr/>	
Management of high-risk emergency abdominal surgeries with epidural anesthesia in Sakarya University Training and Research Hospital (Turkey): 15 months retrospective study <u>Burak Kaya</u> , Ali Eman, Burcin Ersoy, Candan Yilmaz Gunel, Tugba Caglar, Fikret Bayar, Ali Fuat Erdem Department of Anesthesiology and Reanimation, Sakarya University Training and Research Hospital, Sakarya, Turkey	
<b>OP-088</b>	<b>217</b>
<hr/>	
Renal effects of coronary artery bypass graft surgery in obese and non-obese patients: A study with urinary neutrophil gelatinase-associated lipocalin, serum cystatin C and kidney injury molecule-1 Bahar Oc*, Gulperi Celik**, <u>Oguzhan Arun</u> *, Ali Unlu***, Ates Duman*, Mehmet Oc**** Selcuk University, Faculty of Medicine, Departments of Anesthesiology and Reanimation*, Nephrology**, Biochemistry***, Cardiovascular Surgery****, Konya, Turkey	

## ORAL PRESENTATION- X

19 May 2017, Friday, 13.30-14.45

**CHAIRS: Senita Beharic, Ediba Celic Spuzic**

<b>OP-089</b>	<b>218</b>
<hr/>	
Thrombocytopenia in pregnancy (case report) Denis Odošić, Senida Keser, <u>Suada Salkić</u> JZU UKC Tuzla, Prof.dr. Ibri Pašića, 75 000 Tuzla	

<b>OP-090</b>	<b>219</b>
<hr/>	
Anesthetic management of patient with transcatheter aortic valve implantation undergoing abdominal surgery: Case report	
<u>Burmuzoska M.</u> MD, Naumovski F. MD, Kartalov A. PhD, Kuzmanovska B. MD PhD, Donev Lj. MD	
PHI University Clinic Of Anesthesiology, Reanimation and Intensive care – Skopje	
<b>OP-091</b>	<b>221</b>
<hr/>	
Laparoscopic cholecystectomy and laryngeal mask airway	
<u>Cengic Vesna</u> , Juros-Zovko Marina, Keser Ivan	
General Hospital "Prim.dr.Abdulah Nakas" Sarajevo	
<b>OP-092</b>	<b>222</b>
<hr/>	
Severe acute necrotizing pancreatitis presenting with rhabdomyolysis, acute renal failure and ARDS : Case report	
<u>Arijana Horman-Leventa</u> , Amela-Katica Mulalić, Lejla Tafro, Hilmi Kačamaković, Jasna Karakaš-Zukić, Ines Abdagić, Belma Pašić-Torlak, Aida Smajić	
Clinic of Anesthesiology and reanimation, Clinical Center University of Sarajevo, Bosnia and Herzegovina	
<b>OP-093</b>	<b>223</b>
<hr/>	
Taking care of injured patients with firearm in small hospitals- Case report	
<u>Elvira Kazagic</u>	
Kantonalna bolnica Goražde	
<b>OP-094</b>	<b>224</b>
<hr/>	
Tracheal intubating conditions following atracurium in children undergoing sevoflurane and thiopentone-fentanyl induction	
<u>Lejla Dedić Simendić</u> , Selma Sijerčić Avdagić	
University Clinical Centre Tuzla, Clinic for anesthesiology and resuscitation	
<b>OP-095</b>	<b>225</b>
<hr/>	
Pulmonary embolism and infection following abdominal surgery: Case report	
<u>Senita Beharić</u> , Ismet Suljević, Jasna Bučo	
Klinika za anesteziju i reanimaciju, KCU Sarajevo	
<b>OP-096</b>	<b>226</b>
<hr/>	
Anesthetic implications for invasive monitoring during Video Assisted Thoracoscopic Surgery in children - a case report	
Donev Lj., Naumovski F. , Burmuzoska M. , <u>Kartalov A.</u> , Kuzmanovska B.	
PHI – University Clinic of Anesthesiology, Reanimation and Intensive Care – Skopje	
<b>OP-097</b>	<b>228</b>
<hr/>	
Endotracheal tube cuff pressure and postoperative pharyngolaryngeal discomfort with various cuff inflation media: air, saline and alkalinized lidocaine	
<u>Nermina Rizvanović</u>	
Department of Anesthesiology and Intensive Care, Cantonal Hospital Zenica, Crkvice 67, 72000 Zenica	
University of Zenica, Faculty of Medicine, Fakultetska 3, 72 000 Zenica	

## ORAL PRESENTATION- XI

19 May 2017, Friday, 14:45-16:00

**CHAIRS: Adisa Sabanovic Adilovic, Senada Causevic**

<b>OP-098</b>	<b>230</b>
<hr/>	
Can clostridium difficile infection lead to colonic perforation? Case report	
<u>Burmuzoska M.</u> , Naumovski F, Kartalov A, Kuzmanovska B, Donev Lj	
PHI University Clinic Of Anesthesiology, Reanimation and Intensive care – Skopje	

<b>OP-099</b>	<b>231</b>
<hr/>	
The caudal block with analgosedation is a good alternative to general anaesthesia in pediatric surgery	
<u>Adisa Šabanović Adilović</u> Cantonal Hospital Zenica	
<b>OP-100</b>	<b>232</b>
<hr/>	
The use of clonidine in laparoscopic surgery	
<u>Merlina Kalajdžija</u> , Lejla Nukić Cantonal Hospital Zenica	
<b>OP-101</b>	<b>233</b>
<hr/>	
Refractory bradycardia and hypotension during spinal anesthesia - a case report	
<u>Naumovski F.</u> , <u>Burmuzoska M.</u> , <u>Kartalov A.</u> , <u>Kuzmanovska B.</u> PHI – University Clinic of Anesthesiology, Reanimation and Intensive Care – Skopje	
<b>OP-102</b>	<b>235</b>
<hr/>	
Sealing ETT cuff pressure is reliable technique for cuff inflation	
<u>Marina Juros-Zovko</u> , <u>Vesna Cengic</u> , <u>Haris Pandza</u> General Hospital "Prim.dr.Abdulah Nakas"	
<b>OP-103</b>	<b>236</b>
<hr/>	
Challenge and changes of the airway management: Increasing use of the laryngeal mask airway in the General Hospital Sarajevo	
<u>Vesna Cengic</u> , <u>Marina Juros-Zovko</u> , <u>Haris Pandza</u> General Hospital "Prim.dr.Abdulah Nakas"	
<b>OP-104</b>	<b>237</b>
<hr/>	
Evaluation of patient satisfaction with anesthetic management using the lowa scoring	
L.Pasic; <u>M.Haznadar</u> ; M.Muhovic; I.Heric; S. Ridjesic Hospital "Dr Safet Mujić" Mostar	
<b>OP-105</b>	<b>238</b>
<hr/>	
Correlation between incidence of ventilator associated pneumonia and time of tracheotomy in patients subjected to abdominal surgery	
<u>Maja Tomić Sejranović*</u> , <u>Fatima Iljazagić-Halilović</u> University Clinical Centre Tuzla, Clinic for anesthesiology and resuscitation	

## POSTER PRESENTATIONS – I

17 MAY 2017, Wednesday, 12.30-13.30

**CHAIRS: Jasmila Jakupovic, Lejla Zilic**

<b>PP-001</b>	<b>240</b>
<hr/>	
Metastasized pancreatic neuroendocrine tumor in a young adult: a case report	
<u>Ahmetašević Dženita</u> , <u>Žilic Lejla</u> , <u>Jakupović Jasmila</u> University Clinical Center Tuzla, Prof dr Ibri Pasica 1	
<b>PP-002</b>	<b>242</b>
<hr/>	
Analysis of course, treatment and outcome of pregnancy complicated by HELLP syndrome at the Obstetric and Gynecology Clinic Tuzla during the period from 2015	
<u>F. Trebinčević</u> , <u>S. Keser</u> , <u>D. Simić</u> University Clinical Center Tuzla, Prof.dr. Ibri Pasica	
<b>PP-003</b>	<b>242</b>
<hr/>	
Anesthesia for bariatric surgery at the University Clinical Center Tuzla, our experience	
<u>Jasmina Ahmetović Đug</u> , <u>Alma Jahić Campara</u> , <u>Lejla Vikalo</u> Clinic of Anesthesiology and Resuscitation at the University Clinical Center Tuzla	

<b>PP-004</b>	<b>243</b>
<hr/>	
Ventilator associated pneumonia in surgical patients <u>Mujkic Lejla</u> , Pojskic Aida, Smajic Jasmina University Clinical Center Tuzla, Prof.dr. Ibri Pasica	
<b>PP-005</b>	<b>244</b>
<hr/>	
Thrombocytopenia in pregnancy <u>S.Salkić</u> , S.Keser, E.Buro, E.Mešanović University Clinical Center Tuzla, Prof.dr. Ibri Pasica	
<b>PP-006</b>	<b>245</b>
<hr/>	
Epidural analgesia and anesthesia for hernioplasty in ASA II/III patients – a case report <u>Naumovski F.</u> , Burmuzoska M., Kartalov A. , Kuzmanovska B. PHI – University Clinic of Anesthesiology, Reanimation and Intensive Care – Skopje	
<b>PP-007</b>	<b>246</b>
<hr/>	
Laryngospasm During Gastroendoscopy: Case Report Donev Lj., Burmuzoska M., Naumovski F., <u>Kartalov A.</u> , Kuzmanovska B. PHI – University Clinic of Anesthesiology, Reanimation and Intensive Care – Skopje	
<b>PP-008</b>	<b>247</b>
<hr/>	
Case Report : ICU Management of the Bizarre Trauma – fall from a height onto the broom handle <u>Jasmina Selimović Jašarević</u> , Damir Pištoljević, Alma Jahić Čampara University Clinical Center Tuzla	

## POSTER PRESENTATIONS – II

17 MAY 2017, Wednesday, 12.30-13.30

**CHAIRS: Mine Akin, Seyhan Yağar**

<b>PP-009</b>	<b>248</b>
<hr/>	
Our experience of awake fiberoptic intubation in a patient with morquio syndrome: Case report Murat Izgi, Ozgur Canbay, Pinar Ozdemir Yasar, <u>Abdullah Yalcin</u> , A. Gulsun Pamuk, Fatma Saricaoglu Hacettepe University, School of Medicine, Department of Anesthesiology and Reanimation, Ankara, Turkey	
<b>PP-010</b>	<b>250</b>
<hr/>	
Combination with videolaryngoscope and gum elastic bougie in unpredictable difficult intubation Seda Ilhan, Handan Güleç, <u>Esra Özayar</u> , Aysun Kurtay, Berrin Koşar, Eyup Horasanli Keçiören Eğitim Araştırma Hastanesi	
<b>PP-011</b>	<b>251</b>
<hr/>	
Aortic injury during laparoscopic orchiectomy in pediatric patient : case Report <u>Gulsen Keskin*</u> , Mine Akin*, Yesim Senayli*, Can Ihsan Ozturun** *Department of Anesthesiology, Ankara Child Health and Diseases Hematology and Oncology Education and Research Hospital, Ankara, Turkey **Department of Pediatric Surgery, Ankara Child Health and Diseases Hematology and Oncology Education and Research Hospital, Ankara, Turkey	
<b>PP-012</b>	<b>252</b>
<hr/>	
Sevoflurane induction in a brugada syndrome patient (case report) <u>Tuba Berra Saritas</u> , Elif Buyukerkmen, Remziye Sivaci Afyon Kocatepe University, Afyon, Turkey	



<b>PP-013</b>	<b>253</b>
<hr/>	
Our experiences during laparoscopic sleeve gastrectomy in sakarya training and research hospital: first 120 cases <u>Tugce Ebiloglu*</u> , Umit Karadeniz*, Burak Kaya*, Mehmet Aziret**, Kerem Karaman** *Department of Anesthesiology and Reanimation, Sakarya University Training and Research Hospital, Sakarya, Turkey **Department of General Surgery, Sakarya University Training and Research Hospital, Sakarya, Turkey	
<b>PP-014</b>	<b>254</b>
<hr/>	
Local anesthesia toxicity during the infraclavicular brachial plexus block <u>Sevtap Cemaloglu</u> , Savas Altinsoy, Julide Ergil, Derya Ozkan Diskapi Yildirim Beyazit Training and Research Hospital, Anesthesiology and Reanimation Clinics, Ankara, Turkey	
<b>PP-015</b>	<b>255</b>
<hr/>	
Implementation of infraclavicular brachial plexus block in two cannabis addicted patients Sevtap Cemaloglu, Oya Kale, Derya Ozkan, Julide Ergil, <u>Haluk Gumus</u> Diskapi Yildirim Beyazit Training and Research Hospital, Anesthesiology and Reanimation Clinics, Ankara, Turkey	
<b>PP-016</b>	<b>256</b>
<hr/>	
The effects of intraoperative fluid therapy on postoperative electrolyte levels of patients undergoing pancreaticoduodenectomy: a retrospective review <u>Almila Gulsun Pamuk</u> , Murat Izgi, Erkan Erkmek, Nalan Celebi Hacettepe University School of Medicine, Department of Anesthesiology and Intensive Care, Ankara, Turkey	
<b>PP-017</b>	<b>257</b>
<hr/>	
Perioperative communication between surgeons and anesthesiologists <u>Sibel Catalca</u> , Julide Ergil, Zeynep Koc, Derya Ozkan, M. Murat Sayin Department of Anesthesiology and Reanimation, Ministry of Health Diskapi Yildirim Beyazit Training and Research Hospital, Ankara, Turkey	
<b>PP-018</b>	<b>258</b>
<hr/>	
Anesthesia for colonoscopy in pediatric age. Cihan Doger*, <u>Nilgun Sahin**</u> , Gulseren Sahin***, Eyup Sari**** *Yildirim Beyazit University Ataturk Education and Research Hospital, Anesthesiology and Reanimation, Ankara, Turkey **Dr. Sami Ulus Education and Research Hospital, Anesthesiology and Reanimation, Ankara, Turkey ***Dr. Sami Ulus Education and Research Hospital, Pediatric Gastroenterology, Ankara, Turkey ****Dr. Sami Ulus Education and Research Hospital, Pediatrics, Ankara, Turkey	

## POSTER PRESENTATIONS – IIII

19 MAY 2017, Friday, 12.30-13.30

**CHAIRS: Esra Özayar, Adnan Bayram**

<b>PP-019</b>	<b>260</b>
<hr/>	
Our spinal anesthesia experience in a patient with severe scoliosis Seda Ilhan, Munire Babayigit, Handan Gulec, Esra Ozayar, Aysun Kurtay, <u>Eyup Horasanli</u> Kecioren Education and Training Hospital, Ankara, Turkey	
<b>PP-020</b>	<b>261</b>
<hr/>	
Anesthetic management for a recurrent right atrial myxoma <u>Bahar Oc*</u> , Oguzhan Arun*, Ahmet Sert**, Mehmet Oc*** *Selcuk University Faculty of Medicine, Department of Anesthesia and Intensive Care, Konya, Turkey **Selcuk University Faculty of Medicine Department Pediatric Cardiology, Konya, Turkey ***Selcuk University Faculty of Medicine Department of Cardiovascular Surgery, Konya, Turkey	

<b>PP-021</b>	<b>262</b>
<hr/>	
Anesthetic management of a child with loeys-dietz syndrome: Case report <u>Oguzhan Arun*</u> , Bahar Oc*, Serdal Bozdogan*, Mehmet OC** *Selcuk University Faculty of Medicine, Department of Anesthesiology and Reanimation, Konya, Turkey **Selcuk University Faculty of Medicine, Department of Cardiovascular Surgery, Konya, Turkey	
<b>PP-022</b>	<b>263</b>
<hr/>	
Anesthetic considerations in a newborn infant with giant encephalocele: A case report Oguzhan Arun, <u>Ozlem Tas</u> , Ates Duman, Bahar Oc Selcuk University Faculty of Medicine, Department of Anesthesiology and Reanimation, Konya, Turkey	
<b>PP-023</b>	<b>264</b>
<hr/>	
Safe anesthesia method for congenital long qt syndrome Serdal Bozdogan, Zeynep Erdogan, <u>Ahmet Emin Sonmez</u> , Bahar Oc Department of Anesthesia and Intensive Care, Selcuk University Faculty of Medicine, Konya, Turkey	
<b>PP-024</b>	<b>265</b>
<hr/>	
Consecutive sugammadex applications to a pregnant patient receiving electroconvulsive treatments and its postpartum effects <u>Evginar Sezer</u> , Julide Ergil, Derya Ozkan University of Health Sciences, Diskapi Yildirim Beyazit Training and Research Hospital, Ankara, Turkey	
<b>PP-025</b>	<b>266</b>
<hr/>	
Anesthetic management in a child for tethered cord release, nine months after liver transplantation Gokcen Emmez*, Hasan Kutluk Pampal*, <u>Gozde Inan*</u> , Alp Ozgun Borcek**, Zerrin Ozkose Satirlar* *Gazi University Faculty of Medicine Department of Anesthesiology, Ankara, Turkey **Gazi University Faculty of Medicine Department of Neurosurgery, Ankara, Turkey	
<b>PP-026</b>	<b>267</b>
<hr/>	
Comparison of sedation and general anesthesia for transcatheter aortic valve implantation (TAVI) <u>Seyhan Yagar</u> , Gulseren Suer Kaya Turkiye Yuksek Ihtisas Training and Research Hospital, Ankara, Turkey	
<b>PP-027</b>	<b>268</b>
<hr/>	
Using general anesthesia plus muscle relaxant in a patient with spinal muscular atrophy type iii: a case report Gul Meral Kocabeyoglu, Gokcen Emmez, <u>Fatmanur Duruk Erkent</u> , Hasan Kutluk Pampal Gazi University Faculty of Medicine Department of Anesthesiology and Reanimation, Ankara, Turkey	

## POSTER PRESENTATIONS – IV

19 MAY 2017, Friday, 12.30-13.30

### CHAIRS: Elevdina Smajic, Suhreta Tupajic

<b>PP-028</b>	<b>269</b>
<hr/>	
Antimicrobial prophylaxis in surgery - guidelines for perioperative and perioperative prophylaxis of the anatomical areas <u>M.Haznadar*</u> , N.Koluder**, E. Avdic*** *Department of Anesthesiology with reanimatology and JIT, Cantonal Hospital "Dr. Safet Mujic" Mostar **University Clinical Center in Sarajevo, Department of Infectious diseases ***Department of Microbiology and Parasitology	
<b>PP-029</b>	<b>271</b>
<hr/>	
Case report: early postoperative complications related to massive ventral hernia repair Jasmina Smajic, <u>Fatima Ilijazagic-Halilovic</u> University Clinical Centre Tuzla, Clinic for anesthesiology and resuscitation	

<b>PP-030</b>	<b>272</b>
Acute abdomen as a consequence of a ruptured abdominal aortic aneurysm	
<u>Ilijas Aslanj</u> , Amela Zahirović, Amra Duraković	
Univerziteti klinički centar Sarajevo, Bolnička 25	
JU Bolnica Travnik, Kalibunar bb	
Kantonalna bolnica "Dr Irfan Ljubijankić", Ul. Darivalaca krvi 67, Bihać	
<b>PP-031</b>	<b>273</b>
Nutrition and stomach cancer	
<u>Ediba Čelić – Spužić</u>	
Clinical Centre and University of Sarajevo, Clinic for Anaesthesia and Reanimation	
Sarajevo, Bosnia and Herzegovina	
<b>PP-032</b>	<b>275</b>
Complicated Intra-abdominal Infection – diagnosis and management: Case report	
<u>Senita Beharić</u> , Elvedina Smajić, Jasmina Katica	
Klinički centar Univerziteta Sarajevo (KCUS) Klinika za anesteziju i reanimaciju (KAR), Bolnička 25	
<b>PP-033</b>	<b>276</b>
Anesthetic management of a patient with 21kg heavy megacolon	
<u>Jasmina Selimović Jašarević</u> , Lejla Žilić, Samira Cipurković Nalić	
University Clinical Center Tuzla	
<b>PP-034</b>	<b>277</b>
Critically poisoned patients in the intensive care unit	
<u>Daniela Chaparoska*</u> , Natalija Baneva** and Suzana Nikolovska***	
University Clinic of Toxicology*, University Clinic of Neurology**, University Clinic of Dermatology***, Medical Faculty, University Sts Cyril and Methodius, Skopje, Macedonia	



## **SUMMARIES**

**May 17, 2017, Wednesday**

---

**11:30-12:30 Panel III**

<b>Update on non-invasive monitoring</b>	<b>Zuhal Aykaç (Turkey)</b> <b>Edina Lekic (B&amp;H)</b>
<b>Hemodynamic monitoring</b>	<b>Vojislava Neskovic (Serbia)</b>
Monitoring of microcirculation	Banu Kılıçaslan (Turkey)
Liver function monitoring	A. Gülsün Pamuk (Turkey)

---

## **HEMODYNAMIC MONITORING**

*Vojislava Neskovic*

The goal of hemodynamic monitoring is to assess the function of the cardiovascular system and determine if cardiac output matches the metabolic needs of the body. Key step is to identify components of the hemodynamic profile that can be improved with targeted therapy.

Rapid technology development provides large number of different hemodynamic monitors and it is of utmost priority that all their advantages and disadvantages are well known, as well as their appropriate use. If used correctly, the monitors may improve the quality of treatment. However, if it does not lead to effective treatment, no hemodynamic monitoring, no matter how accurate and safe, will improve outcome.

Accordingly, most of the time, monitoring is applied in order to diagnose hemodynamic instability in patients before irreversible damage and to provide information that can clarify further therapy. One of the most important questions is related to fluid responsiveness and recognition of those patients who may increase their cardiac output with the increase of preload (volume responders vs. non-responders). In case of hypotension it is necessary to define whether vascular tone is increased, reduced or normal. And finally, assessment of cardiac contractility can reveal the source of hemodynamic instability. Nowadays, most of the treatment algorithms are based on these principals and appropriate implementation of various monitors may provide information on patient's hemodynamic profile.

All parameters are divided into static and dynamic. Static parameters measure filling pressures (central venous and pulmonary artery pressure) or blood volume in the heart or vascular bed and are considered less effective in identification of volume responders and non-responders. Dynamic parameters (stroke volume, pulse pressure and systolic pressure variation) are based on recognition of the Frank-Starling curve of individual patient, as a result of cyclic changes in preload induced by positive pressure inspiration during mechanical ventilation. Nowadays, less invasive hemodynamic monitors are implemented in "goal-directed" therapy protocols in order to maximize oxygen delivery with the optimal use of fluids, vasopressors or inotropes.

In recent years, transthoracic and transesophageal echocardiography are used more often. Assessment of heart anatomy and function may provide diagnosis of hemodynamic instability and influence therapy.

### **Suggested literature**

- 1) Vincent JL, Weil MH. Fluid challenge revisited. Crit Care Med 2006;34:1333-1337
- 2) Michael R. Pinsky. Hemodynamic Evaluation and Monitoring in the ICU. Chest 2007; 132:2020–2029

- 3) The Association of Anaesthetists of Great Britain and Ireland. Recommendations for standards of monitoring during anaesthesia and recovery. 4th Edition. 2007.
- 4) Steven B Greenberg, Glenn S Marphy, Jeffery S Vender. Standard monitoring techniques. In: Clinical Anesthesia. Barash PG, Cullen BF, Stoelting RK, Cahalan MK, Stock MC. 6<sup>th</sup> Edition. Lippincott, William and Wilkins. Philadelphia. 2009
- 5) Jochen Renner, Jens Scholz, Berthold Bein. Monitoring fluid therapy. Best Practice & Research Clinical Anaesthesiology 2009; 23:159-171
- 6) David Osman, Christophe Ridel, Patrick Ray, Xavier Monnet, Nadia Anguel, Christian Richard, Jean-Louis Teboul. Cardiac filling pressures are not appropriate to predict hemodynamic response to volume challenge. Crit Care Med 2007; 35:64–68
- 7) Daniel A. Reuter, Cecil Huang, Thomas Edrich, Stanton K. Shernan, Holger K. Eltzschig. Cardiac Output Monitoring Using Indicator-Dilution Techniques: Basics, Limits, and Perspectives. Anesth Analg 2010;110:799-811
- 8) V. Eichhorna, M.S. Goepfert, C. Eulenburgb, M.L.N.G. Malbrainc, D.A. Reutera. Comparison of values in critically ill patients for global end-diastolic volume and extravascular lung water measured by transcardiopulmonary thermodilution: A metaanalysis of the literature. Med Intensiva. 2012. doi:10.1016/j.medin.2011.11.014
- 9) Mehrnaz Hadian, Michael R Pinsky. Evidence-based review of the use of the pulmonary artery catheter: impact data and complications. Critical Care 2006, 10(Suppl 3):S8 (doi:10.1186/cc4834)

**May 17, 2017, Wednesday**

---

**11:30-12:30 Panel III****Update on non-invasive monitoring**    **Zuhal Aykaç (Turkey)**  
**Edina Lekic (B&H)**

Hemodynamic monitoring    Vojislava Neskovic (Serbia)

**Monitoring of microcirculation**    **Banu Kılıçaslan (Turkey)**Liver function monitoring    A. Gülsün Pamuk (Turkey)

---

## **MONITORING OF MICROCIRCULATION**

*Associate Prof Banu Kilicaslan, MD  
Hacettepe University, Faculty of Medicine,  
Department of Anesthesiology and Critical Care*

### **Introduction**

Clinical observations on disruption of regional perfusion and its prognostic value have been made for many years (1). Microcirculatory impairments are one of the main characteristics observed in critically ill patients. Even so, bedside decisions are mainly made on the basis of gross systemic hemodynamic parameters. On the other hand, the authors showed that regional measurements techniques have supported the inadequacy of global hemodynamic monitoring in regard to possible failure of microcirculatory oxygenation (2). Therefore, it is anticipated that more complete and personalized treatments based on resuscitation of the microcirculation will improve patient outcomes in the near future as technology related to bedside microcirculatory monitoring progress.

### **Historical Background**

In 1628, Sir William Harvey made his exposition of the entire circulation and was credited with the discovery of the minor circuit of the circulation for the annals of medicine, although Harvey's appreciation of the function of the heart as a pump propelling the blood through the circulation remains controversial. 300 years before Harvey's discovery, an Arab physician Ibn al Nafis (1210–1288), had described in detail the pulmonary circulation and was the first person to appreciate the coronary circulation. He also described that between the arterious vein (pulmonary artery) and the venous artery (pulmonary vein) "*there might be existing perceptible passages.*" This suggestion can probably be regarded as the first mention of the notion of a microcirculation in the history of medicine (3). In 1688, Van Leeuwenhoek's introduced first invivo microcirculatory microscopy (4,5). Freedlander, and Lenhart first visualized capillaries in living human in 1922 (6). In 1987; Slaaf and colleagues invented an alternative microscopy that was inspired by fluorescence microscopy (7). Groner, and colleagues combined the methods developed by Sherman, and Slaaf and they added a component that they introduced orthogonal polarization spectral (OPS) imaging in 1999 (8). After that Goedhart and colleagues have developed a second generation device, which was termed sidestream dark field (SDF) imaging (9). Finally, third generation device was developed that term incident dark field illumination (IDF) microscopy.

### **Tools to Investigate the Microcirculation**

Patient physical examinations have always been the first and most important method for identifying changes in regional perfusion as clinical signs but today, microvascular perfusion can be measured directly or indirectly methods.



***Clinical Evaluation and Biomarkers***

An impaired microvascular perfusion may be inferred in the presence of mottled skin, acrocyanosis, slow recoloration time, or increased central to toe temperature gradient [10, 11]. These signs indicate the severity of cardiovascular impairment [11] and are, therefore, associated with a poor outcome but they do not provide relevant information on the central microcirculation. Biological markers can also be used. Even though microvascular impairment is associated with increased lactate levels, they have poor sensitivity and specificity (12).

***Mixed Venous and Central Venous O<sub>2</sub> Saturation***

These parameters reflect the balance between oxygen delivery and oxygen consumption. These are useful to determine global decreases in tissue perfusion. These are important in the perioperative period and shock states but they are a poor indicator of microvascular dysfunction (13).

**Direct Measurements*****Laser Doppler Imaging (LDF)***

LD flow measurements provide a two-dimensional visualization of microcirculation flow status. LDF is a non-invasive method to measure blood flow on tissue surface. This method can thus be useful when occurring a homogeneous decrease in perfusion as in hemorrhagic shock. Laser speckle imaging is another modality that allows detection of blood flow heterogeneity as sepsis (14).

***Microvideoscopic techniques******Nailfold videocapillaroscopy***

This method was the first method used at the bedside and it is particularly suitable for investigating the microvascular effects of chronic diseases, such as diabetes, vasculitis, and arteritis (15).

***Orthogonal Polarization Spectral (OPS) Imaging******Sidestream Dark Field (SDF) Imaging******Incident Dark-Field (IDF) Imaging***

They can be applied at the bedside. These techniques can be used only on organs covered by a thin epithelial layer. In animals or in patients during surgery, they have been used to evaluate the microcirculation of several organs including the brain, lungs, tongue, liver, gut, skin, conjunctiva, gingiva, sublingual area, ileostomies or colostomies, and rectal mucosa. Red blood cells are identified as black bodies and tissue perfusion can be characterized in individual vessels (15-19). Vascular density and heterogeneity of perfusion should be measured for the relevant results. Secretions and movement artifacts may impair image quality and all visible vessels are more relevant, but it is not feasible in clinical practice.

**Indirect Measurements*****Near-Infrared Spectroscopy***

The principle of clinical NIRS is to non-invasively measure tissue oxy- and deoxyhemoglobin, and with some algorithms, myoglobin, and cytochrome aa<sub>3</sub> utilizing a narrower spectrum of wavelengths than pulse oximetry (which penetrates deeper into the tissue and is not dependent on pulsative wave). Tissue O<sub>2</sub> saturation (StO<sub>2</sub>) mostly shows the saturation of the vessels in the sampling volume (20).

***Tissue PCO<sub>2</sub> and veno-arterial CO<sub>2</sub> gradient***

There are three major determinants that evaluate microcirculation (PtCO<sub>2</sub>): PaCO<sub>2</sub>, VCO<sub>2</sub> and tissue blood flow. Different techniques can be used to measure tissue PCO<sub>2</sub> (electrodes, contact probes, and tonometry). It has been measured in the sublingual area and stomach.

The PCO<sub>2</sub> gap shows more the adequacy of flow than the presence of tissue hypoxia, unless very high PCO<sub>2</sub> gap values are reached (21).

### **Future Perspectives for Clinical Utilization of Bedside Microcirculatory Diagnostics and Guiding of Therapy**

Recent technical developments have enabled to establish the microcirculatory targets, not only macrocirculatory targets, at the bedside and could reduce mortality rates in the critically ill patients. For these purpose; the choice of the device or technique should be guided by the expected type of alteration, which mostly depends on the underlying disease. On the other hand, this functional hemodynamic monitoring has provided the promise of identifying new therapeutic interventions. Clinical research has identified various conventional and new therapeutic approaches that are successful in modifying the microcirculation.

### **References**

- 1) Kaplan LJ, McPartland K, Santora TA et.al Start with subjective assessment of skin temperature to identify hypoperfusion support of sepsis. 2001; J Trauma 50: 620-28
- 2) De Backer D, Donadello K, Sakr Y, Ospina-Tascon G, Salgado D, Scolletta S, Vincent JL. Microcirculatory alterations in patients with severe sepsis: impact of time of assessment and relationship with outcome. Crit Care Med. 2013;41(3):791-9
- 3) Loukas M, Lam R, Tubbs RS, Shoja MM, Apaydin N. Ibn al-Nafis (1210-1288): the first description of the pulmonary circulation. Am Surg. 2008;74(5):440-2
- 4) Van Leeuwenhoek A: Letter 65. Read at the Royal Society;1688
- 5) Hall HL. A study of the pulmonary circulation by the transillumination method. Am J Physiol 1925; 72: 446
- 6) Freedlander SO, Lenhart CH. Clinical observations on the capillary circulation. Arch Intern Med 1922, 29:12-32
- 7) Slaaf DW, Tangelder GJ, Reneman RS et.al. A versatile incident illuminator for intravital microscopy. Int J Microcirc Clin Exp 1987,6: 391-397
- 8) Groner W, Winkelmann JW, Harris AG., et.al. OPS imaging: a new method for study of the microcirculation. Nat Med 1999,5: 1209-12.
- 9) Goedhart PT, Khalizada M, Bezemer R. et. al. SDF imaging: a new novel stroboscopic LED ring-based imaging modality for clinical assessment of the microcirculation. Opt Express 2007,15: 15101-14.
- 10) Joly HR, Weil MH. Temperature of the great toe as an indication of the severity of shock. Circulation 1969; 39:131-138
- 11) Boerma EC, Kuiper MA, Kingma WP, Egbers PH, Gerritsen RT, Ince C. Disparity between skin perfusion and sublingual microcirculatory alterations in severe sepsis and septic shock: a prospective observational study. Intensive Care Med 2008; 34:1294-1298
- 12) Ospina-Tascon G, Neves AP, Occhipinti G.et.al. Effects of fluids on microvascular perfusion in patients with severe sepsis. Intensive Care Med. 2010; 36:949-55.
- 13) De Backer D, Creteur J, Preiser JC, Dubois MJ, Vincent JL. Microvascular blood flow is altered in patients with sepsis. Am J Respir Crit Care Med 2002; 166:98-104
- 14) Boyle NH, Roberts PC, Ng B, Berkenstadt H, McLuckie A, Beale RJ, Mason RC Scanning laser Doppler is a useful technique to assess foot cutaneous perfusion during femoral artery cannulation. Crit Care 1999, 3:95-100
- 15) Awan ZA, Wester T, Kvernebo K Human microvascular imaging: a review of skin and tongue videomicroscopy techniques and analysing variables. Clin Physiol Funct Imaging 2010; 30:79-88
- 16) Puhl G, Schaser KD, Vollmar B, Menger MD, Settmacher U. Noninvasive in vivo analysis of the human hepatic microcirculation using orthogonal polarization spectral imaging. Transplantation 2003; 75:756-761

- 17) Biberthaler P, Langer S, Luchting B, Khandoga A, Messmer K. In vivo assessment of colon microcirculation: comparison of the new OPS imaging technique with intravital microscopy. *Eur J Med Res* 2001; 6:525–534
- 18) Tugtekin I, Radermacher P, Theisen M, Matejovic M, Stehr A, Ploner F, Matura K, Ince C, Georgieff M, Trager K. Increased ileal- mucosal-arterial PCO<sub>2</sub> gap is associated with impaired villus microcirculation in endotoxic pigs. *Intensive Care Med* 2001; 27:757–766
- 19) Lupi O, Semenovitch I, Treu C, Bouskela E. Orthogonal polarization technique in the assessment of human skin microcirculation. *Int J Dermatol* 2008; 47:425–431
- 20) Myers DE, Anderson LD, Seifert RP, Ortner JP, Cooper CE, Beilman GJ, Mowlem JD. Noninvasive method for measuring local hemoglobin oxygen saturation in tissue using wide gap second derivative near-infrared spectroscopy. *J Biomed Opt* 2005; 10:034017
- 21) Levy B, Gawalkiewicz P, Vallet B, Briancon S, Nace L, Bollaert PE. Gastric capnometry with air-automated tonometry predicts outcome in critically ill patients. *Crit Care Med* 2003; 31:474–480

**May 17, 2017, Wednesday**

---

**11:30-12:30 Panel III**

<b>Update on non-invasive monitoring</b>	<b>Zuhal Aykaç (Turkey)</b> <b>Edina Lekic (B&amp;H)</b>
--	---

---

Hemodynamic monitoring	Vojislava Neskovic (Serbia)
------------------------	-----------------------------

Monitoring of microcirculation	Banu Kılıçaslan (Turkey)
--------------------------------	--------------------------

<b>Liver function monitoring</b>	<b>A. Gülsün Pamuk (Turkey)</b>
----------------------------------	---------------------------------

---

## **PERIOPERATIVE MONITORIZATION OF LIVER FUNCTION**

*Assoc. Prof. Almila Gülsün Pamuk*

*Hacettepe University, Department of Anesthesiology*

The liver is almost a whole system in itself. It metabolizes, detoxifies, synthesizes, conjugates and coordinates all of these. It has the volume and capacity to spare and can also regenerate as needed. As a result anesthesiologists have traditionally given little thought to protecting the liver. Our priorities have been the protection of the brain, the heart, and kidneys. It was also thought we did not have any reliable monitorization tools or processes. In the past few decades, especially as organ transplantation became a widespread procedure, this has started to change.

Medical community always tends to use the simplest, most widely available and cheapest techniques. We must also consider, though, that some tests get easier and cheaper as they are needed more and find widespread usage.

In this lecture we will take a look at the non-invasive, or probably minimally-invasive would be a better definition, techniques of liver function, used perioperatively.

Our first decision should be about the parameter to be monitorized. We could monitorize liver cell integrity (SGOT, SGPT, LDH), cholestatic parameters (bilirubin, GGT, ALP) or liver synthetic function (albumin, coagulation profile). We may need to monitorize the volume of healthy/ diseased liver or we may need to know the safety margin around a tumor. We may need to learn about the perfusion of a liver, the extent of injury or the timing (e.g. acute vs chronic) of it.

Our second decision should be about the expense and mobility of the technique we are to use. Its predictive value and specificity as well as how invasive it is are factors we take into consideration.

And of course our third criterion would be if this technique is available and easy to use. And if we would be able to perform it or be able to interpret the results. The results should be relevant and making changes should change the big picture (e.g. mortality, life expectancy).

Our oldest, most widespread monitors are biochemical markers. These give us an idea about the type and extent of injury which could be traumatic/ surgical, septic, ischemic, toxic, or even parenteral nutrition-related. Markers of injury (ALT, AST, GGT, ALP), of function (PT, bilirubin), proliferation ( $\alpha$ -fetoprotein) or viral hepatitis serologies are usually used preoperatively.

MELD and modified MELD scores are a combination of these markers, as are the postoperative liver graft function scores.

In the intraoperative period these factors are usually not changing fast enough to guide our practice. We could monitor blood glucose, calcium and lactate intraoperatively. Lactate has been shown to be as reliable as indocyanine green in showing function.

We have been using quantitative tests of liver function for decades, but these have not gained wide or routine usage. These tests are:

Indocyanine green clearance

<sup>14</sup>C-aminopyrine breath test

Antipyrine clearance

Galactose elimination capacity

<sup>13</sup>C-caffeine breath test

Some radiologic or nuclear medicine tests are also useful for assessing segmental liver function and helping with surgical dissection decisions. A few examples of these tests are:

Functional MRI imaging of the liver

3T MRI relaxometry

Perfusion CT time to peak values

99m Tc SPECT- shows liver dynamics well, reliable predictive values for postoperative liver failure

Mobile and cheap tests are easier to use intraoperatively.

Ultrasound elastography is cheap and mobile, it can be used to show chronic liver disease, cholestasis or perfusion of the liver.

Clotting profile can be achieved and re-evaluated intraoperatively.

Arterial blood gases can give us information about changing Hb, glucose, pH and lactate levels.

Near-infrared spectroscopy (NIRS) is a noninvasive method of estimating the Hb concentration changes in certain tissues like the brain. It has been used with success for the liver.

Plethysmographic variation index given by Masimo SET Rainbow is a non-invasive indicator but lacks strength.

CEUS (Dynamic contrast enhanced ultrasound) based liver microcirculation was not found to be reliable.

Newer techniques combining indocyanine green clearance and ultrasound (LIMON, Germany) have been shown to be more reliable, providing real-time monitoring of intraoperative liver function.

Our main concern, at this point is deciding which patients to monitorize and which techniques to use. It would be prudent to incorporate 'the monitorization of the liver' into our daily operating room practice.

**References:**

1. Mc Gill, MR. The past and present of serum aminotransferases and serum injury biomarkers. *EXCLI J.* 2016;15:817-28.
2. Limdi JK, Hyde GM. Review: Evaluation of abnormal liver function tests. *Postgrad Med J.* 2003;79:307-12.
3. Frulio N, Trilaud H. Ultrasound elastography in liver. *Diag Interv Imag.* 2013; 94(5): 515-34.
4. Tomas, MN, Weninger E, Angele M, Bösch F, Pratschke S. Et al. LIMON allows real-time monitoring of intraoperative liver function during surgery. *HPB (Oxford).* 2015(Jun); 17(6):471-6.
5. Orii R, Sugawara Y, Hayashida M, Uchida K, Yamada Y et al. Lactate is correlated with the indocyanine green elimination rate in liver resection for cirrhotic patients. *Anesth Analg* 2001 Apr; 92(4):1064-70.
6. Burra P, Masier A. Dynamic tests to study liver function. *Eur Rev Med Pharmacol Sci.* 2004 Jan-Feb; 8(1):19-21.

May 17, 2017, Wednesday

14:00-15:15 Panel IV

<b>Fluid and blood management in abdominal surgery</b>	<b>Eleni Mavromati (Greece) Ayşegül Özgök (Turkey) Selma Sijercic Avdagic (B&amp;H)</b>
Goal directed fluid therapy	Robert G. Hahn (Sweden)
Goal directed coagulation management	Eleni Katsika (Greece)
<b>Blood alternatives: fibrinogen concentrates and FFP</b>	<b>Bahar Öç (Turkey)</b>
Immunological effects of transfusion	Meldijana Omerbegovic (B&H)

## **BLOOD ALTERNATIVES: FRESH FROZEN PLASMA AND FIBRINOGEN CONCENTRATES**

*Bahar OC*

*Selcuk University Faculty of Medicine,  
Department of Anesthesiology and Reanimation, Turkey*

The amount of perioperative bleeding during or following abdominal surgery mainly depends on the type of surgery. Major causes of bleeding are hepatectomy, liver transplantation, pancreatic surgery and digestive tract surgery. Bleeding is usually controlled by simple local interventions including surgery or interventional radiology. Transfusion of blood and blood products depend on coagulation abnormalities.

### **Fresh frozen plasma**

Fresh frozen plasma (FFP) contains all coagulation factors in normal concentration. Thawed plasma may be transfused up to five days after thawing and contains slightly decreased levels of Factor V and VIII. FFP is indicated in patients with documented coagulation factor deficiencies and active bleeding or who are about to undergo an invasive procedure.

Especially for abdominal surgery FFP transfusion indications are:

- Correction of deficiencies of clotting factors when the PT or aPTT ratio is higher 1.5
- Liver disease (active bleeding and prevention of bleeding)
- During treatment with vitamin K antagonists
- Acute disseminated intravascular coagulation with active bleeding
- Microvascular bleeding during massive transfusion
- Deficiencies of single clotting factors in the absence of specific concentrates
- Reconstitution of whole blood for exchange transfusion

Contraindications of FFP:

- FFP should not be used solely for volume expansion
- For to correct mildly prolonged PT or aPTT without active bleeding
- Should not be given for replacement of isolated factor or specific protein deficiencies if the appropriate factor concentrates are available

- FFP should not be given for vitamin K deficiency or warfarin reversal if correction can safely be achieved using vitamin K supplementation

The risks of FFP include disease transmission, anaphylactoid reactions, alloimmunization and excessive intravascular volume.

### **Fibrinogen concentrate**

Fibrinogen is a glycoprotein synthesized in the liver, necessary both for platelet aggregation and fibrin formation. The conversion of fibrinogen to fibrin is catalyzed by thrombin and fibrinogen levels will determine the quantity and complexity of the fibrin net formed during coagulation. If the fibrinogen levels are reduced the fibrin net will be more fragile and will affect secondary hemostasis. Fibrinogen is the first plasmatic factor to become depleted in critical bleeding. There are three ways to supply fibrinogen: FFP, cryoprecipitate and fibrinogen concentrate.

Clinical guidelines recommend fibrinogen administration in order to reduce bleeding and/or transfusion rate, the indication according to label for fibrinogen concentrate administration is only for treatment of bleeding in patients with hypofibrinogenemia or afibrinogenemia with tendency to bleeding. Coagulation factor concentrates offer potential advantages over allogeneic blood products such as decreased immunogenic and infectious complications as well as rapid availability.

The risks of fibrinogen concentrate include viral disease transmission, immunological and allergic reactions. On the other hand a growing number of reports note the importance of fibrinogen replacement in the treatment of massive bleeding across a broad range of clinical settings.



---

**May 17, 2017, Wednesday**

---

**14:00-15:15 Panel IV**

---

<b>Fluid and blood management in abdominal surgery</b>	<b>Eleni Mavromati (Greece) Ayşegül Özgök (Turkey) Selma Sijercic Avdagic (B&amp;H)</b>
Goal directed fluid therapy	Robert G. Hahn (Sweden)
Goal directed coagulation management	Eleni Katsika (Greece)
Blood alternatives: fibrinogen concentrates and FFP	Bahar Öç (Turkey)
<b>Immunological effects of transfusion</b>	<b>Meldijana Omerbegovic (B&amp;H)</b>

## **IMMUNOLOGICAL EFFECTS OF TRANSFUSION**

*Meldijana Omerbegovic*

*University Clinical Centre Sarajevo, Bolnička 25, Bosnia and Herzegovina*

The rapid rate of scientific and technological developments in transfusion medicine has been prompting medical professionals to endeavor for better understanding of basic aspects of different physiological and pathophysiological changes after transfusion administration.

Delineation of the complexity of cellular populations and plasma components of blood gave rise to continuum of efforts to improve clinical transfusion practice in terms of restricting to avoiding the use of blood and blood components unless in the situation of objective necessity.

Since Landsteiner discovery of main antigen groups at the beginning of last century there has been enormous increase in the number of blood group antigens identified, and understanding of biochemical basis, function and possible adverse reactions in situations of exposure to unknown antigens. According to The International Society of Blood Transfusion more than three hundred red cell surface antigens have been identified that belong to thirty-six blood groups systems while numerous are not included in systems, what only partly reveals the complexity of the transfusion medicine.

Administration of transfusion of red blood cells and restoration of tissue oxygenation is a basic therapeutic intervention in management of haemorrhage for many subjects who undergo surgical procedures. For decades transfusion therapy has not been associated with significant evidence of adverse effects. Development of immunological techniques enabled better insight in the characteristics of cellular and humoral immune response and better understanding of complexity of antigen-antibody interreactions and subsequent responses in the host after administering of allogenic blood. Another incentive to improvement of transfusion medicine was technological advances that enabled separation of plasma components and cellular components of the blood. Technique of Western blotting, monoclonal antibodies, cloning and polymerase chain reaction-based assays have been contributing to detection of presence of pathogenic particles in the transfusion.

In the last period, since 1980's there have been published numerous papers on clinical trials with analysis of the safety and efficacy of blood transfusion. Many of the publications are from field of cardiosurgery that have found correlations of transfusions and clinical complications like renal failure, prolonged respiratory support, neurological damages, and

infection processes, what have drawn attention and prompted to finding strategies for restriction of transfusion in clinical practice.

Despite the fact that in developed societies the safety of allogeneic red cells transfusions has been improving over the last three decades due to improved blood screening and preservation there have been numerous adverse reactions after transfusion administration. The most critical reactions after transfusion administration is immediate haemolytic transfusion reactions with immediate intravascular red cell destruction associated with activation of full complement cascade by IgM antibodies due to ABO incompatible blood transfusion. Immunologic response lead to major deterioration of cardiovascular and endothelial function with severe hypotension and cardiovascular instability, disseminated intravascular coagulation and possible renal failure with mortality rate of 5-10%. Delayed hemolytic transfusion reactions develop after five to ten days after secondary immunization caused by IgG with less dramatic clinical picture of hypotension and tachycardia. Febrile nonhaemolytic reactions are caused by transfusion of blood components that contain white cells or by cytokines deliberated from white cells during storage. Transfusion of platelets to recipient with antibodies against specific platelet antigens that lead to destruction of donor platelets causes post-transfusion purpura. Transfusion-related acute lung injury develops within six hours of transfusion with clinical and radiological picture of non cardiogenic lung oedema with hypotension and hypoxia. It is estimated that leucoagglutinins react with granulocytes of recipient with consequent complement activation and epithelial and endothelial alterations that cause this syndrome. Transfusion-associated graft-versus-host disease caused by transfusion of lymphocytes with engraftment and clonal expansion in recipient is rare but usually with high mortality rate. Immunological reactions to plasma proteins could be mild with urticaria to severe anaphylactic reactions with high mortality rate in subjects with IgA deficiency.

The list of strategies for decreasing of transfusion administration perioperatively has been widening continuously including early preoperative diagnosis and management of anaemia, appropriate management of acute haemorrhage by multidisciplinary approach involving surgical, radiological, endoscopic procedures, administration of blood components whenever possible, early administration of antifibrinolytics especially in trauma patients and more items to be added...after emersion of new advances in medical science and technology while observing essential social and human values in general.

**References:**

- 1.Murphy GJ, Reeves BC,Rogers C, Rizvi SI, Culliford L, Angelini GD. Increased mortality,postoperative morbidity,and cost after red blood cell transfusionin patients having cardiac surgery. *Circulation*, 2007;116(22):2544-52
- 2.Hajjir LA, Vincent JL, Galas FR,Nakamura RE, Silva CM,Santos MH et al.Transfusion requirements after cardiac surgery: the TRACS randomized controlled trial.*JAMA*.2010;304(14):1559-67
- 3.So-OsmanC, Nellisen R, Te Sleas R, Coene L, Brand R,Brand A. A randomized comparison of transfusion triggers in elective orthopaedic surgeryusing leucocyte-depleted red blood cells. *Vox Sanguinis*. 2010;98:56-64

---

May 18, 2017, Thursday

---

08:30-09:45 Panel VI

**Liver transplantation and anesthesia** Sanja Maric (B&H)  
Mustafa Kemal Bayar (Turkey)

---

Criteria for patient selection in liver transplant Nermin Salkic (B&H)

**Bridging acute liver failure to transplantation: have we got better?** Mihai Popescu (Romania)

Liver transplantation Zijah Rifatbegovic (B&H)

Anesthesia in Liver transplantation Hüseyin İlksen Toprak (Turkey)

---

## **BRIDGING ACUTE LIVER FAILURE TO LIVER TRANSPLANTATION: HAVE WE GOT BETTER?**

*Mihai Popescu MD, PhD; Dana Tomescu MD, PhD*

*Fundeni Clinical Institute, Bucharest Romania*

*"Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania*

Acute liver failure (ALF) is a life threatening condition in which rapid deterioration of liver function results in altered mentation and coagulopathy in individuals without known pre-existing liver disease. The management of such patients requires a skilled multi-disciplinary team (intensivists, surgeons, gastroenterologists etc) working in hospitals that offer both medical treatment and liver transplantation (LT) to patients with ALF. Also, such patients must be managed in a dedicated intensive care unit due to the need for advanced monitoring and 24/7 specialized intensive care. Such a setting can offer both sustained organ function (cardiovascular, neurological, respiratory and renal) and communication between key players.

The natural history of ALF is either towards spontaneous recovery (under 20% of patients) or towards irreversible liver damage and death (Figure 1). The main problem is that there are no clinical scores or laboratory tests with a high enough specificity and sensitivity that can be used in order to determine who can benefit most from LT and who should be treated with medical care alone. As intensivists we have to consider that waiting too long before deciding to transplant a patient may be associated with a worse outcome or even death but, on the other hand, transplanted patients are required to take long-term immunosuppressant regimens associated with various complications including an increased risk of infections.

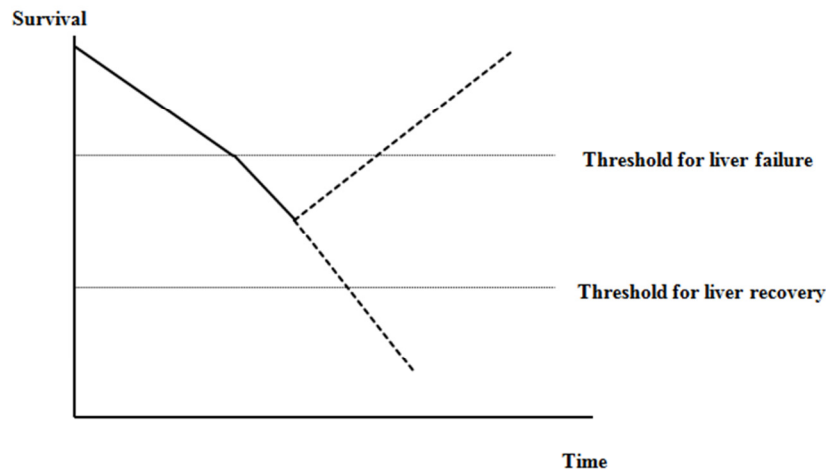


Figure 1: Natural history of ALF

The "perfect timing" for LT remains an individualized clinical decision based on case-by-case criteria and on the medical expertise of the transplant team. In our experience patients should be included on the transplant waiting list as soon as possible as zero (high-grade) emergency and in the case of spontaneous recovery they can be removed from the waiting list. This approach depends, of course, on each country's laws and national policies. The most used criteria in deciding LT are those stated by Kings' College and Clichy (Table 1) but they still have a relative low sensitivity and specificity.

Table 1: Criteria for liver transplantation in acute liver failure

<i>Kings College Criteria</i>	
Acetaminophen	Non-acetaminophen
<ul style="list-style-type: none"> <li>- Lactate &gt; 3.5</li> </ul> Or <ul style="list-style-type: none"> <li>- pH&lt;7.3 or lactate&gt;3</li> </ul> Or <ul style="list-style-type: none"> <li>- Grade III or IV HE and INR &gt;6.5 and creatinine&gt;300 mmol/L</li> </ul>	<ul style="list-style-type: none"> <li>- INR&gt;6.5 with HE</li> </ul> Or <ul style="list-style-type: none"> <li>- Any 3 of 5 with HE                             <ul style="list-style-type: none"> <li>o Age &lt;10 or &gt;40 yrs</li> <li>o Bilirubin&gt;300 mmol/L</li> <li>o INR&gt;3.5</li> <li>o Duration of jaundice to HE&gt;7days</li> <li>o Etiology: toxicity due to drugs or undetermined causes</li> </ul> </li> </ul>
<i>Clichy criteria</i>	
<ul style="list-style-type: none"> <li>- HE grade III or more and factor V concentration &lt;20% in patients aged under 30 years</li> <li>- HE grade III or more and factor V concentration &lt;30% in patients aged more than 30 years</li> </ul>	

In a meta-analysis performed by McPhail et al. [1] using 18 trials published between 1992 and 2009 on the performance of Kings College Criteria in predicting outcome in non-acetaminophen induced ALF, the pooled sensitivity was 0.68 and specificity was 0.82. Another study [2], that compared different severity scores in predicting survival in patients with acute-on-chronic liver failure, identified the APACHE II score as having the highest sensitivity (88.6%) but a very low specificity (61.9%). Dhiman et al. [3] identified other factors associated with a poor outcome in patients with fulminant liver failure: age>50 years, jaundice to encephalopathy interval> 7 days, grade III or IV hepatic encephalopathy,

presence of cerebral edema, prothrombin time  $\geq 35$  seconds and creatinine  $>1.5$  mg/dL. Also, age above 45 years seems to be also a negative prognostic factor of survival after liver transplantation [4].

Unfortunately, during the last decade, we experienced an increase in the number of patients waiting for a liver graft. In a recent article, Orman et al. [5] demonstrated that if current trends are maintained we will see a decrease to 48% in the number of suitable grafts. This may lead to the possibility that we will be forced to use low-quality grafts. Due to the rapid deterioration of liver function and severe, life threatening, organ dysfunctions (cerebral edema with the risk of brain herniation, cardiovascular collapse, acute respiratory distress syndrome etc) patients with ALF are often required to receive unsuitable organs (ABO incompatible, liver grafts from marginal donors etc). In our experience living-related LT may represent the best choice for such patients and so, next of kin should be thoroughly informed as soon as possible about the possibility of organ donation and should be subsequently investigated.

In this chapter we will discuss the medical treatment and procedures used by intensivists in bridging patients with ALF to liver transplantation. The main problems in such patients that need to be addressed are: hepatic encephalopathy (HE) and the risk of irreversible brain damage, cardiovascular collapse, infection, acute respiratory distress syndrome, acute renal failure and severe coagulopathy (as a consequence of both liver failure and endothelial dysfunction).

**Hepatic encephalopathy** is a key feature of ALF. The pathophysiology of ALF is multi-factorial and includes neuro-inflammation demonstrated by an increase in pro-inflammatory cytokines such as TNF $\alpha$ , IL-1 $\beta$  and IL-6, an increase in intracellular glutamine levels responsible for astrocyte edema, activation of sodium-potassium-chloride co-transporter, down regulation of glutamine transport by SNAT-3 and microcirculatory derangements.

Arterial ammonia is one of the most useful predictors of hepatic encephalopathy and intracranial hypertension. In a study by Bernal et al. [6], the authors have demonstrated increased ammonia levels in patients with ALF with HE when compared to those without HE or with acute-on-chronic liver failure. They also demonstrated that the higher the ammonia levels, the more increased was the risk of developing HE soon after ICU admission. In another study, Clemmesen et al. [7] demonstrated in 22 patients by measuring hepatic blood flow and net ammonia release that patients with ALF had a higher ammonia release from the hepato-splanchnic region and an increased risk of brain herniation.

Classic therapeutic goals include maintenance of cerebral perfusion pressure above 70 mm Hg, lowering the intracranial pressure below 20 mmHg, lowering cerebral oxygen requirements and cerebral blood flow. These goals could possibly be obtain with standard medical care including sedation and mechanical ventilation, osmotic diuresis and elevated head position. The use of therapeutic hypothermia has been long questioned. Recently, Karvellas et al. [8] showed no benefits of therapeutic hypothermia (32-35°C) when compared to normothermia but also demonstrated no increase in either hemorrhagic or infectious complications. In a meta-analysis and review, Stravitz et al. [9] demonstrated little or no benefits in terms of survival or improvement of intracranial hypertension.

Continuous hemofiltration may represent the treatment of choice in ALF complicated with cerebral edema as it can lower both ammonia levels and removes excess water. Slack et al. [10] showed decreasing ammonia levels after a 24 hour period of continuous veno-venous hemofiltration. The increase in ammonia clearance was correlated with ultrafiltration rate. They also showed that using high volume ultrafiltration (90ml/kg/h) was associated with a higher decrease in ammonia clearance when compared with low volume ultrafiltration (35ml/kg/h).

**Infection** in ALF has an incidence of up to 80%. Involved microorganisms consist of Gram positive cocci including methicillin-sensitive Staphylococcus aureus in the early stages and Gram negative bacteria, Candida spp and Aspergillus spp in the late stages. This high incidence of infectious complications is due to impaired neutrophil and Kupffer cell function and opsonin deficiency. Antibiotherapy is indicated only if infection is documented or highly suspected. Prophylactic administration of antibiotics has not demonstrated any benefits in avoiding infection and hence it is not recommended. Infection was also demonstrated to correlate with progression of HE [11]. The number of systemic inflammatory response syndrome components has been demonstrated to be positively correlated with patient outcome both in non-infected and in infected patients [12]. Hence, the use of a hemoadsorption column may improve patient outcome by rebalancing inflammatory cytokines in ALF [13].

**Haemostasis** in ALF has been intensively investigated starting with Tripodi et al. [14] who demonstrated a re-balanced approach in patients with chronic liver disease. Patients with ALF have normal clot formation as assessed by thromboelastography with increased clot strength correlated with the severity of liver injury [15] that may reveal a pro-coagulant state. Such patients demonstrate increased INR values that do not predict severity of underlying coagulopathy, hence standard coagulation tests are not recommended to be used in guiding haemostatic interventions in patients with ALF. We do not recommend routine correction of coagulopathy unless invasive procedures are planned or there is an overt sign of bleeding.

**Liver support systems in ALF.** Today, there are two types of liver support systems available: dialysis or cleansing systems and biological systems (table 2). These are meant to either bridge patients to liver transplantation by eliminating protein-bound toxins or help regeneration of hepatocytes and regain liver function.

Table 2. Liver support systems used in acute liver failure

Dialysis / Cleansing systems	Biological systems
<ul style="list-style-type: none"> <li>- Renal replacement therapy</li> <li>- Albumin dialysis</li> <li>- Absorbent systems</li> <li>- Plasma exchange</li> </ul>	<ul style="list-style-type: none"> <li>- Dialysis and hepatocyte exposure</li> <li>- Liver perfusion</li> <li>- Cell therapy</li> <li>- Auxiliary transplantation</li> </ul>

In a randomized trial of patients with acute-on-chronic liver failure, Laleman et al. [16] showed a decrease in bilirubin and bile salts concentration after use of both Prometheus and MARS (Molecular Absorbent Recirculating System) therapies, with Prometheus showing better results. In the same study MARS therapy was associated with an improved hemodynamic profile: increase in mean arterial pressure, in stroke volume and systemic

vascular resistance. This was probably due to a decrease in plasma rennin activity and a decrease in aldosterone, norepinephrine and nitric oxide concentration. In another study, Sponholz et al. [17] demonstrated a decrease in bilirubin concentration and bile acids with the use of either MARS or SPAD (Single Pass Albumin Dialysis), with MARS showing better results.

Two major randomized control trials investigated the effects of liver assist devices on survival in patients with acute-on-chronic liver failure. In the RELIEF study [18], 189 patients were randomized to receive either standard medical therapy or MARS therapy. There was no difference in 28 days survival between the two groups. As a secondary end-point no statistically significant adverse effects were noted when using MARS therapy. Variables associated with a poorer outcome were: HE grade II or higher, increase in MELD score and increase in serum bilirubin at day 4. In the HELIOS trial [19], 145 patients were randomized to receive either standard medical care or standard medical care and Prometheus therapy. Although there was no overall survival benefits both at 28 and 90 days after randomization, Prometheus was associated with survival benefits in a sub-group of patients with MELD scores above 30.

In our experience, liver assist devices are beneficial in bridging patients with acute liver failure to transplantation, but the exact timing and duration of therapy remain still under debate with no major randomized control trial published to date that investigates this issue. Table 2 summarizes the main indications for liver assist devices.

Table 2: Main indications for liver assist devices

- |   |
|---|
| <ul style="list-style-type: none"> <li>• <b>Acute liver failure (all cases - personal experience)</b></li> <li>• <b>Acute on chronic liver failure +</b> <ul style="list-style-type: none"> <li>• hepatic encephalopathy</li> <li>• severe jaundice</li> <li>• acute kidney injury</li> </ul> </li> <li>• <b>Severe pruritus</b></li> <li>• <b>Acute intoxications (eg. mushroom)</b></li> <li>• <b>Postoperative liver failure</b></li> <li>• <b>Primary graft non-function</b></li> </ul> |
|---|

Plasma-exchange represents one of the most underappreciated therapies applied in patients with ALF. The advantages of plasma-exchange are that it removes all molecules, substitutes plasma products including coagulation factors, has multi-organ effects (but demonstrated only in case series) including improvement in HE, improvement in cerebral perfusion pressure, no increase in intracranial pressure, improvement in haemodynamics (increase in mean arterial pressure and systemic vascular resistance) and decreases cardiac index (in hyper-dynamic states like ALF), oxygen delivery, but not oxygen consumption. The main disadvantages of plasma-exchange are: limited transport of water soluble substances, unselected removal of substances and the fact that it requires donor plasma and hence has all the adverse effects of transfusion.

In a recently published randomized control trial, Larsen et al. [20] demonstrated improved survival in patients receiving high volume plasma-exchange regardless of liver

transplantation. The positive effects of plasma-exchange may be due to a decrease in histone-associated DNA and pro-inflammatory cytokines (TNF-alpha, IL-6, IL-8).

Stravitz et al. [21] showed an increase in microparticles concentration and activity in patients with ALF. In their study, this increase directly correlated with the severity of inflammatory syndrome and severity of hepatic encephalopathy. In the light of this new evidence plasma-exchange may represent an old but new therapy in rebalancing inflammation and promoting organ recovery in ALF.

Individualized, patient oriented approach should be sought out when treating patients with ALF by liver assist devices. There is no universal best treatment yet but personal experience and know-how alongside published data should be the bases for choosing the appropriate therapy. Figure 2 presents the protocol used in Fundeni Clinical Institute for decision-making in ALF.

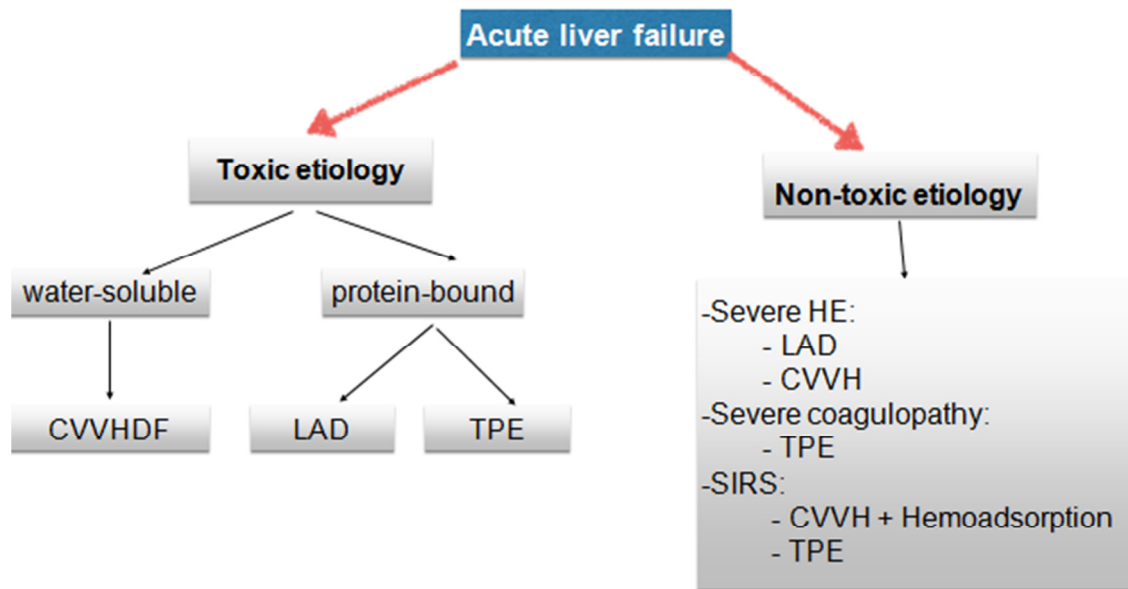


Figure 2: Decision algorithm for applying liver assist devices in patients with ALF. CVVHDF – continuous veno-venous hemodiafiltration, LAD – liver assist device, TPE – plasma-exchange, CVVH – continuous veno-venous hemofiltration

**Outcome of ALF:** A 20 years analysis of the European Liver Transplant database [22] showed that survival in patients with ALF that underwent LT has significantly improved during this time span. Also, in an observational study performed by Donnelly et al. [23] both spontaneously survival and survival with liver transplant have improved in the last 15 years. There is no doubt that we did get better in treating patients with ALF and this is mainly due to the progresses recently made in understanding physiopathology and improvement of medical care, the use of liver assist devices and the introduction of emergency liver transplantation.



1. McPhail MJ, Wendon JA, Bernal W. Meta-analysis of performance of Kings's College Hospital Criteria in prediction of outcome in non-paracetamol-induced acute liver failure. *J Hepatol.* 2010 Sep;53(3):492-9.
2. Duseja A, Choudhary NS, Gupta S, Dhiman RK, Chawla Y. APACHE II score is superior to SOFA, CTP and MELD in predicting the short-term mortality in patients with acute-on-chronic liver failure (ACLF). *J Dig Dis.* 2013 Sep;14(9):484-90.
3. Dhiman RK, Jain S, Maheshwari U, Bhalla A, Sharma N, Ahluwalia J, et al. Early indicators of prognosis in fulminant hepatic failure: an assessment of the Model for End-Stage Liver Disease (MELD) and King's College Hospital criteria. *Liver Transpl.* 2007 Jun;13(6):814-21.
4. Bernal W, Cross TJ, Auzinger G, Sizer E, Heneghan MA, Bowles M, et al. Outcome after wait-listing for emergency liver transplantation in acute liver failure: a single centre experience. *J Hepatol.* 2009 Feb;50(2):306-13.
5. Orman ES, Mayorga ME, Wheeler SB, Townsley RM, Toro-Diaz HH, Hayashi PH, Barritt AS 4th. Declining liver graft quality threatens the future of liver transplantation in the United States. *Liver Transpl.* 2015 Aug;21(8):1040-50.
6. Bernal W, Hall C, Karvellas CJ, Auzinger G, Sizer E, Wendon J. Arterial ammonia and clinical risk factors for encephalopathy and intracranial hypertension in acute liver failure. *Hepatology.* 2007 Dec;46(6):1844-52.
7. Clemmesen JO, Larsen FS, Kondrup J, Hansen BA, Ott P. Cerebral herniation in patients with acute liver failure is correlated with arterial ammonia concentration. *Hepatology.* 1999 Mar;29(3):648-53.
8. Karvellas CJ, Todd Stravitz R, Battenhouse H, Lee WM, Schilsky ML; US Acute Liver Failure Study Group. Therapeutic hypothermia in acute liver failure: a multicenter retrospective cohort analysis. *Liver Transpl.* 2015 Jan;21(1):4-12.
9. Stravitz RT, Larsen FS. Therapeutic hypothermia for acute liver failure. *Crit Care Med.* 2009 Jul;37(7 Suppl):S258-64.
10. Slack AJ, Auzinger G, Willars C, Dew T, Musto R, Corsilli D, et al. Ammonia clearance with haemofiltration in adults with liver disease. *Liver Int.* 2014 Jan;34(1):42-8.
11. Vaquero J, Polson J, Chung C, Helenowski I, Schiodt FV, Reisch J, et al. Infection and the progression of hepatic encephalopathy in acute liver failure. *Gastroenterology.* 2003 Sep;125(3):755-64.
12. Rolando N, Wade J, Davalos M, Wendon J, Philpott-Howard J, Williams R. The systemic inflammatory response syndrome in acute liver failure. *Hepatology.* 2000 Oct;32(4 Pt 1):734-9.
13. Tomescu DR, Olimpia Dima S, Ungureanu D, Popescu M, Tulbure D, Popescu I. First report of cytokine removal using CytoSorb® in severe noninfectious inflammatory syndrome after liver transplantation. *Int J Artif Organs.* 2016 May 16;39(3):136-40.
14. Tripodi A, Mannucci PM. The coagulopathy of chronic liver disease. *N Engl J Med.* 2011 Jul 14;365(2):147-56.
15. Stravitz RT, Lisman T, Luketic VA, Sterling RK, Puri P, Fuchs M, et al. Minimal effects of acute liver injury/acute liver failure on hemostasis as assessed by thromboelastography. *J Hepatol.* 2012 Jan;56(1):129-36.
16. Laleman W, Wilmer A, Evenepoel P, Elst IV, Zeegers M, Zaman Z, et al. Effect of the molecular adsorbent recirculating system and Prometheus devices on systemic haemodynamics and vasoactive agents in patients with acute-on-chronic alcoholic liver failure. *Crit Care.* 2006;10(4):R108.
17. Sponholz C, Matthes K, Rupp D, Backaus W, Klammt S, Karailieva D, et al. Molecular adsorbent recirculating system and single-pass albumin dialysis in liver failure--a prospective, randomised crossover study. *Crit Care.* 2016 Jan 4;20:2.
18. Bañares R, Nevens F, Larsen FS, Jalan R, Albillos A, Dollinger M, et al. Extracorporeal albumin dialysis with the molecular adsorbent recirculating system in acute-on-chronic liver failure: the RELIEF trial. *Hepatology.* 2013 Mar;57(3):1153-62.

19. Kribben A, Gerken G, Haag S, Herget-Rosenthal S, Treichel U, Betz C, et al. Effects of fractionated plasma separation and adsorption on survival in patients with acute-on-chronic liver failure. *Gastroenterology*. 2012 Apr;142(4):782-789.
20. Larsen FS, Schmidt LE, Bernsmeier C, Rasmussen A, Isoniemi H, Patel VC, et al. High-volume plasma exchange in patients with acute liver failure: An open randomised controlled trial. *J Hepatol*. 2016 Jan;64(1):69-78.
21. Stravitz RT, Bowling R, Bradford RL, Key NS, Glover S, Thacker LR, Gabriel DA. Role of procoagulant microparticles in mediating complications and outcome of acute liver injury/acute liver failure. *Hepatology*. 2013 Jul;58(1):304-13.
22. Germani G, Theodoridou E, Adam R, Karam V, Wendon J, O'Grady J, et al. Liver transplantation for acute liver failure in Europe: outcomes over 20 years from the ELTR database. *J Hepatol*. 2012 Aug;57(2):288-96.
23. Donnelly MC, Davidson JS, Martin K, Baird A, Hayes PC, Simpson KJ. Acute liver failure in Scotland: changes in aetiology and outcomes over time (the Scottish Look-Back Study). *Aliment Pharmacol Ther*. 2017 Mar;45(6):833-843.

May 18, 2017, Thursday

09:45-10:45 Panel VII

Renal transplantation and  
anesthesia

Ömer Kurtipek (Turkey)  
Meldijana Omerbegovic (B&H)  
Saadet Özgen (Turkey)

Differential diagnosis of early renal  
allograft dysfunction

Enisa Mesic (B&H)

Anesthesia in Renal transplantation

Elvin Kesimci (Turkey)

Anesthesia for non-specific surgery in  
post- transplantation patients

Ender Gedik (Turkey)

## DIFFERENTIAL DIAGNOSIS OF IMMEDIATE RENAL ALLOGRAFT DYSFUNCTION

*Enisa Mesic, Mirna Aleckovic-Halilovic  
University Clinical Center Tuzla  
Nephrology, Dialysis and Kidney Transplantation Department*

Renal allograft dysfunction is not rare during the immediate postoperative period. We have to find the cause of dysfunction in timely manner because early dysfunction of renal allograft can have the great impact on the patient and graft survival.

Immediately after transplant surgery the principal underlying causes of graft dysfunction can be prerenal, postrenal and intrinsic renal disease. The most frequent prerenal causes are hypotension and volume depletion. Vasodilatation from anesthesia with or without cytokine release from antythymocyte globulin (ATG) or alemtuzumab can predispose to fluid extravasation and intravascular volume depletion. Thrombosis of renal artery or vein can be surgery related or hypercoagulable state related.

We have to think about possible urinary bladder dysfunction (diabetics), undiagnosed prostatic hyperplasia, ureteral obstruction due to ureteral necrosis or hematoma which can lead to postrenal graft dysfunction.

In the immediate postoperative period the most frequent intrinsic renal causes of graft dysfunction are postishemic acute tubular necrosis and reperfusion injury which can lead to delayed graft function (DGF). Hyperacute and antibody-mediated rejection or thrombosis must be considered also. The incidence of DGF increases with cold ischemia time exceeding 24 hours (with cyclosporin induction therapy), prior sensitization in retransplanted patients, dialysis performed immediately prior to transplantation, the quality of the graft (history of hypertension).

If we exclude hyperacute rejection (usually made by surgeon in the operating room), the most important is to monitor vital signs, diuresis, think about adequate fluid balance, exclude obstruction of Foley catheter and make Doppler ultrasound to exclude problems with renal arteries and veins.

**May 18, 2017, Thursday**

---

**09:45-10:45 Panel VII**

**Renal transplantation and anesthesia**

**Ömer Kurtipek (Turkey)**  
**Meldijana Omerbegovic (B&H)**  
**Saadet Özgen (Turkey)**

---

Differential diagnosis of early renal allograft dysfunction

Enisa Mesic (B&H)

**Anesthesia in Renal transplantation**

**Elvin Kesimci (Turkey)**

Anesthesia for non-specific surgery in post-transplantation patients

---

## **ANESTHESIA IN RENAL TRANSPLANTATION**

*Elvin Kesimci*

After the first successful renal transplantation on identical twins in 1954, many studies have shown a significant reduction of mortality in patients following renal transplantation. Despite this substantial progress in renal transplant surgery, the risk of perioperative complications remains. The treatment of these high-risk patients has to be optimised in order to reduce postoperative complications.

In this presentation, the characteristics of renal transplant patients and impact of their co-morbidities on outcome, preoperative assessment optimised hemodynamic management and avoidance of potentially nephrotoxic drugs intraoperatively and postoperative management in renal transplant surgery patients have been discussed.

Patients undergoing renal transplant surgery present with several risk factors. Cardiovascular diseases are the most important factors affecting postoperative morbidity and mortality. Cardiac assessment is particularly important in patients with unstable coronary syndromes, decompensated heart failure, significant arrhythmias and severe valvular disease. Hypertension and diabetes mellitus are other co-morbidities. Good glycemic control is important before and during transplant and is associated with a lower mortality

Patients undergoing renal transplant operations are usually receiving hemodialysis and their intravascular filling status should be monitored closely. Careful monitoring of the filling status of the patient is paramount, the use of central venous pressure (CVP) as the sole indicator or in combination with other monitors such as esophageal doppler is advised.

The disturbances in acid–base balance and electrolytes such as hyponatremia, hyperchloremia, hyperkalemia, hypocalcemia, hypermagnesemia and metabolic acidosis, estimation of fluid status (from severe hypovolemia to pronounced hypervolemia), presence of anemia should be identified. The respiratory challenges are mostly due to volume overload and pulmonary congestion, resulting in hypoxemia and occasionally hypercapnia. Dialysis and fluid removal prior to surgery may help to alleviate pulmonary congestion.

Uremia from kidney failure may lead to gastroparesis. So these patients mostly with diabetes mellitus and autonomic neuropathy are thought to have full stomach. Preoperative treatment with a histamine-2 blocker and metoclopramide are recommended. Hepatitis C virus (HCV) infection is common among dialysis patients. In addition, patients on chronic hemodialysis have an increased risk of acquiring HCV infection as a result of frequent blood transfusions. This is a risk factor for sepsis and septic shock in renal transplantation patients leading to death.

Normally patients are not prescribed pre-medications prior to induction of anesthesia, unless strongly indicated. Induction of anesthesia always takes place with the routine monitors. In patients with associated cardiovascular disease, invasive blood pressure monitoring should be considered, to ensure close monitoring of the blood pressure.

Hemodynamic stability should be maintained throughout the period of the operation. Fluctuations of the blood pressure should be within 20% of the baseline reading, this can be achieved by dampening surgical stimulation with the use of opioids.

Intraoperatively boluses of fentanyl or continuous infusion of remifentanyl can be used. Atracurium is the muscle relaxant of choice in renal failure, because it undergoes Hofmann degradation mainly and ester hydrolysis to a lesser extent. Other muscle relaxants can be used, including all non-depolarizing muscle relaxants, but care must be taken with large or repeated doses as accumulation may result in a prolonged neuromuscular block.

All inhalational agents can be used safely, with the exception of enflurane (which is hardly being used in clinical practice nowadays). Total intravenous anaesthesia (TIVA) is successfully being used with propofol and remifentanyl to maintain general anesthesia.

Transplant procedures have routinely short duration, minimal blood loss. Type of intravenous fluid is of great importance, as the use of 0.9% sodium chloride is thought to be the standard fluid, but the use of other crystalloid fluids such as Lactated Ringer's was used safely as long as serum potassium levels are monitored closely. Colloids could also be used safely in these procedures as long as its use is not excessive.

Immediate urine output can be seen in 90% of live kidney donation and up to 50% of cadaveric donation. Appropriate fluid management is the single most important factor to determine good urine output following the transplant. Blood transfusion is better avoided in transplant procedures as the activation of autoimmune system may induce early rejection of the graft. Renal failure patients are always anemic, and it is quite safe to keep their hemoglobin levels as low as 7.0 g/dL in the perioperative period.

Few studies have shown that dopamine infusion at low doses would increase both urine output and creatinine clearance. Other studies have questioned the value of dopamine infusion following graft of denervated kidney. There is no clear benefit from infusing or withholding dopamine, it is usually left to individual institution guidelines and protocols.

If the patient's blood pressure is thought to be high enough to grant adequate mean arterial pressure and central venous pressure prior to the release of the clamps, this will ensure good blood flow to the kidney. The target values are dependent on the patient's normal mean arterial pressures.

The postoperative fluid management is important. The urine output should be closely monitored. Patients undergoing transplant procedures present many challenges to the anesthesiologist. Success of transplant depends on thorough preoperative, close intraoperative monitoring and appropriate fluid management.

---

May 18, 2017, Thursday

---

09:45-10:45 Panel VII

Renal transplantation and  
anesthesia

Ömer Kurtipek (Turkey)  
Meldijana Omerbegovic (B&H)  
Saadet Özgen (Turkey)

---

Differential diagnosis of early renal  
allograft dysfunction

Enisa Mesic (B&H)

Anesthesia in Renal transplantation

Elvin Kesimci (Turkey)

**Anesthesia for non-specific surgery  
in post- transplantation patients**

**Ender Gedik (Turkey)**

---

## ANESTHESIA FOR NON-SPECIFIC SURGERY IN POST-TRANSPLANTATION PATIENTS

*Ass Prof Ender Gedik, MD, Baskent University, Ankara, Turkey*

### Introduction

Advances in surgery, anesthesia, postoperative and intensive care have led to the high success of organ transplantation (1). Post-transplant survival ranges between 60 and 90% at five years, with good functional outcome and 50% of recipients have good quality of life and return to work. All recipients require immunosuppressive medications and they may experience episodes of serious infections (2). Transplant recipients may need re-operation for early and late complications of surgery. They require elective diagnostic and surgical procedures or suffer trauma and other emergencies (2). Post-transplant status can be considered a new chronic illness that can affect physiological functions and require tailored anesthetic plan (3).

Since renal transplant is the most performed transplantation procedure, every anesthesiologist has to be familiar with these patients. Because they may undergo non-transplant surgery at any hospital, all anesthesia team in these hospitals have required excellent anesthetic plan for these patients (1).

The main aspects of perioperative anesthetic management for renal transplants who undergo nonspecific surgery are reviewed in this short review.

### Surgical requirements

There are common surgical problems for which renal transplants:

#### 1. Procedures related to post transplant complications

Early complications: Re-exploration required due to bleeding or a sudden decrease in urine output. The main problems are arterial anastomosis and kinked ureter

Delayed complications: Wound infection, thrombosis of the renal graft due to rejection or infection (graft nephrectomy), lymphocele, incisional hernia, new arteriovenous (AV) fistula or continuous ambulatory peritoneal dialysis (CAPD) insertion in the case of graft failure (3).

#### 2. Procedures unrelated to renal transplantation

Appendicitis or any other emergent procedure, CAPD insertion, cataract surgery (3).

#### 3. Other major surgery

Reconstructive or cosmetic (4), cardiac (5), thoracic (6), obstetric (7), and colorectal surgery (8).

**Overview**

Renal transplant recipients have several problems. They are on life long immunosuppressive therapy. The function of the transplanted kidney is variable. These patients have systemic illness as cardiac disease, hypertension, anemia and diabetes mellitus. The effects of end-stage renal disease on other organs are of great importance. If they are on hemodialysis, there may be life-threatening conditions like hypokalemia, hypovolemia and cardiovascular instability. Compared with other transplants are older with associated co-morbidities (1).

**Principles of Management (1,2, 9-11)**

- Preoperative assessment and optimization of renal function
- Control of blood pressure and glucose levels
- Control of other co-morbidities
- Immunosuppressive therapy to be continued
- Meticulous regional or general anesthetic technique to prevent injury to the graft
- Asepsis is of vital importance
- Drug excretion may be prolonged
- Use drugs that do not rely on the kidneys for excretion
- Avoid hypoperfusion of the kidneys due to volume depletion
- Use diuretic drugs judiciously
- Plan meticulous postoperative care and multi-modal analgesia

**Preoperative Evaluation (1,2, 9-11)****a. Detailed history of immunosuppressive therapy**

There may be alteration due to acute illness, surgical stress and alteration of the usual drug regime. The immune instability can result in graft rejection and/or infection. These drugs have side effects that may affect perioperative care. Hyperglycemia, hypertension, additional renal compromise and neurotoxicity with seizures can be seen. Cyclosporine and tacrolimus levels are increased when other drugs used (cimetidine, diltiazem, metoclopramide, nifedipine, verapamil) that are metabolized with cytochrome P-450 enzyme in liver. Some anticonvulsants (carbamazepine, phenytoin) may act as cytochrome P-450 enzyme inducers.

**b. Assessment of renal (graft) function**

Immunosuppressive therapy may compromise renal function. The recipients may require renal replacement therapy in the perioperative period.

**c. Focus on graft rejection and infections**

The balance between risk of rejection due to inadequate immunosuppression and risk of infection due to high dose drugs should be maintained during surgery.

**d. Assessment of other major organ functions**

These patients have co-morbidities like hypertension, diabetes, congestive heart failure and coronary artery disease. They should be optimized before surgery.

**e. Laboratory investigations and imaging**

Standard blood tests, arterial blood gas analysis, immunosuppressive drug levels, an electrocardiogram and chest X-Ray are mandatory. If indicated other procedures like transthoracic echocardiography and other imaging studies should be done according to other specialty consultations.

**f. Premedication, other drugs and fasting**

Patients should be fasting according to ASA guidelines. All investigations should be reviewed before surgery. Patients may receive alprazolam to allay anxiety. Proton pump



inhibitors may be given. The usual dose of antihypertensive and cardiac drugs should be given on the morning. The immunosuppressive drugs should be continued. A supplemental stress dose of steroid should be given.

### **Anesthetic Management (1,2, 9-11)**

General, regional and monitored anesthesia cares (MAC) have all been used. The type of anesthesia is chosen according to type surgery and patient (graft) status contemplated. Whichever method of anesthesia a strict aseptic technique should be maintained. Regional anesthesia may be administered if coagulation profile is within normal limits. It is complicated in the case of hypovolemia, platelet dysfunction, uremic/diabetic neuropathy. Peripheral nerve blocks with continuous catheter infusion is questionable because potential risk of infection.

Anesthesia induction with thiopentone/propofol, muscle relaxation with cisatracurium/atracurium may be preferred. Cyclosporine enhances the effect of muscle relaxants. LMA may be preferred over endotracheal intubation. Rapid sequence intubation should be considered if there is high risk of aspiration. Suxamethonium is safe if serum potassium levels are below 5.5 mEq/L. All popular volatile agents (especially isoflurane) are safer other than enflurane. Hyperventilation should be avoided because of lower seizure threshold due to immunosuppressant. Monitoring should be appropriate for the nature of surgery. A CVP catheter may be helpful to assess volume status but it should be removed as soon as possible. Close intraoperative arterial blood gas analysis for acid base status and electrolyte levels is essential. Neuromuscular monitoring may be helpful for reversal of agents and safe extubation.

### **Postoperative Care (1,2, 9-11)**

All patients should receive DVT prophylaxis. Multimodal postoperative pain relief may be maintained with local infiltration, intravenous and epidural patient controlled analgesia. NSAIDs should be avoided. Morphine and meperidine are unwanted opioid drug choice due to prolonged effects of metabolites. Outpatient and laparoscopic surgery may be chosen if indicated.

The patient should be transferred high dependency or intensive care unit if required. Postoperative dialysis requirement should be assessed.

### **Conclusion**

A close liaison between surgeon, anesthesiologist, intensivist and nephrologist is mandatory for perioperative management of renal transplants whom undergone non-transplant surgery.

### **References**

1. Sood J. Anesthetic management of a transplanted (renal and cardiac) patient for non-transplant surgery. In: Sood J, Vohra V (eds.) *Anesthesia for Transplant Surgery*, New Delhi, Jaypee Brothers Medical Publishers 2014; 248-254.
2. Aguina L, Pretto EA. Anaesthesia for non-transplant surgery in the organ transplant recipient. In: Pretto EA (ed.) *Oxford Textbook of Transplant Anaesthesia and Critical Care*, New York, Oxford University Press 2015; 419-427.
3. Keegan MT, Plevak DJ. The transplant recipient for nontransplant surgery. *Anesthesiol Clin N Am* 2004; 22:827-861.
4. Shveiky D, Blatt A, Sokol AI, Nghiem HG, Iglesia CB. Pelvic reconstructive surgery in renal transplant recipients. *Int Urogynecol J* 2009; 20:551-555.
5. Basic-Jukic N, Jankovic-Ivanac R, Biocina B, Kes P. Cardiovascular surgery after renal transplantation - indications, complications and outcome. *Ren Fail* 2015; 37:1020-1021.

6. Maeda H, Kanzaki M, Sakamoto K, et al. Video-assisted thoracoscopic surgery after renal transplantation: A single-institution experience. *Asian J Endosc Surg* 2016; 9:37-43.
7. Moavani DM, Cohn JH, Hoctor KG, Longman RE, Ranasinghe JS. Anesthetic considerations for the parturient solid organ transplantation. *Anesth Analg* 2016; 123:402-410.
8. Halabi WJ, Jafari MD, Nguyen VQ, et al. Colorectal surgery in kidney transplant recipients: a decade of trends and outcomes in the United States. *Am Surg* 2013; 79:1026-1033.
9. Hammel L, Sebranek J, Hevesi Z. The anesthetic management of adult patients with organ transplants undergoing nontransplant surgery. *Advances in Anesthesia* 2010; 28:211-244.
10. Kara İ, Çelik G. Böbrek nakilli hastalarda anestezi yönetimi. *Selçuk Tıp Derg* 2013; 29:100-104.
11. Şatırlar ZÖ. Böbrek transplantasyonu yapılmış olgularda anestezi. *Anestezi Dergisi* 2013; (eksayı):40-42.

May 18, 2017, Thursday

11:15-12:30 Panel VIII

Key points in Abdominal Anesthesia	Slavenka Straus (B&H) Aslı Dönmez (Turkey) Ljubica Pejakov (Montenegro)
Regional Anesthesia for Abdominal Surgery	Nevriye Salman (Turkey)
COPD and Lung protective ventilation strategies	Dusanka Jancevic (Serbia)
Anesthesia for Patients with Endocrine Disease	Şule Akın Enes (Turkey)
Anesthetic-analgesic techniques and malignancy: Friend or foe?	Filiz Üzümcügil (Turkey)

## REGIONAL ANESTHESIA FOR ABDOMINAL SURGERY

*Doç. Dr. Nevriye Salman*

*Department of Anesthesiology And Reanimation*

*SBU Türkiye Yüksek İhtisas Education and Research Hospital, Turkey*

Regional anesthesia is used to desensitize a specific part of the body to a painful stimulus. In 1860, Albert Niemann isolated alkaloid in crystallized form from coca leaves which started the use of regional anesthesia and after that regional anesthesia has began to be used more commonly in the 19th and 20th centuries. However, abdominal regional anesthesia and especially the use of on central nerve blocks in abdominal surgery was put into practice following the studies of Koller on this subject during the first World War. As regional anesthesia, 3 different methods can be applied in abdominal surgery:

- Local infiltration
- Peripheral nerve block
  - Minor: ilioinguinal, iliohypogastric and genitofemoral nerves block
  - Major: Paravertebral nerve block, celiac plexus blockade, intercostal nerve block, transversus abdominis plane (TAP) block, etc.
- Central neuraxial block:
  - Epidural anesthesia
  - Spinal anesthesia

Central neuraxial block: Central blocks are used commonly in abdominal surgery. Because epidural anesthesia:

1. Decreases stress response to surgery
2. Decreases cardiac complications
3. Decreases respiratory complications (such as atelectasis, pneumonia) since respiration is protected
4. Increases motility due to sympathetic inhibition of intestines affected by many negative factors with abdominal surgery.

5. Increase splanic blood flow due to sympathetic inhibition and therefore preventing anastomotic leakages.
6. Reduce blood loss
7. Minimalizes insulin resistance and limits protein catabolism.
8. Decrease thromboemboli risk.
9. Increases the oxygenation of surgical wound and therefore decreases wound infection and enhances healing
10. Increase surgical exposure by deep muscle relaxation and intestinal contraction
11. Prevent postoperative pain effectively with minimal side effects.

By all these effects, use of central blocks decrease the length of hospitalization in patients who underwent abdominal surgery. However, complications including higher blockage, systemic and local toxicity, infection, headache and back pain and contraindications limits the use of epidural anesthesia.

Spinal anesthesia is used less commonly in abdominal surgery compared to epidural anesthesia. Especially due to the negative effect of respiration on upper abdominal surgery and titration of block forces the use of general anesthesia for these patients.

Peripheral nerve block: Paravertebral nerve block can be used safely in selected abdominal surgeries because of low rates of pulmonary and cardiac adverse effects and due to its effective analgesia. It can be used either unilateral or bilateral. The intercostal nerve blocks can also be used during unilateral abdominal surgeries with effective analgesia. TAP block anesthetize the nerves supplying the anterior abdominal wall (T6-L1). TAP block was shown to reduce postoperative opioids use with decreased opioid side effects and especially in abdominal and gynecologic procedures. As a result, peripheral nerve block can be used for postoperative analgesia in abdominal surgery.

In conclusion, use of regional anesthesia during abdominal surgery is associated with shorter hospitalization, decreased risk of complication, decreased used of analgesics, lower cost and increased patient comfort and satisfaction.

---

**May 18, 2017, Thursday**

---

**11:15-12:30 Panel VIII**

<b>Key points in Abdominal Anesthesia</b>	<b>Slavenka Straus (B&amp;H)</b> <b>Aslı Dönmez (Turkey)</b> <b>Ljubica Pejakov (Montenegro)</b>
---	--

---

Regional Anesthesia for Abdominal Surgery	Nevriye Salman (Turkey)
---	-------------------------

COPD and Lung protective ventilation strategies	Dusanka Jancevic (Serbia)
---	---------------------------

<b>Anesthesia for Patients with Endocrine Disease</b>	<b>Şule Akın Enes (Turkey)</b>
---	--------------------------------

Anesthetic-analgesic techniques and malignancy: Friend or foe?	Filiz Üzümcügil (Turkey)
--	--------------------------

---

## **ANESTHESIA FOR PATIENTS WITH ENDOCRINE DISEASE**

*Prof Şule Akın Enes, MD. (Turkey)*

*Baskent University Faculty of Medicine, Department of Anesthesiology and Reanimation*

The endocrine system consists of glands which produce hormones regulating metabolism, growth, tissue function, sexual function, reproduction, sleep, mood and etc. The organs of this system include pituitary gland, thyroid gland, parathyroid glands, adrenal glands, pancreas, ovaries and testicles. It is known that the endocrine system affects almost all organs and cells in the body.

Endocrine system diseases are due to very high or very low hormones or lack of unresponsiveness to the hormones. On the other hand stress, infection, fluid and electrolyte imbalances can affect hormone levels.

Anesthesiologists meet various endocrine problems in their daily practice. Both physiological and pharmacological effects due to hypofunctioning or hyperfunctioning of the endocrine organs may cause many perioperative difficulties and are importantly placed in perioperative medicine applications.

The most primary or coexisting endocrine pathologies that anesthesiologists may face during perioperative period are:

1. Diabetes Mellitus
2. Thyroid gland disease
3. Parathyroid gland disease
4. Pheochromocytoma
5. Adrenocortical disease
6. Anterior and posterior pituitary gland disease

Anatomical changes effecting ventilation and intubation, obesity, blood sugar regulation, autonomic neuropathy, hemodynamic control (tachycardia, bradycardia, hypertension, hypotension), cardiovascular performance, respiratory disorders (hypoxia, hypercapnia), positioning, optimal choice of anesthetics, interaction between anesthetic drugs and

presently used drugs are the common topics that should be managed by an anesthesiologist on perioperative period.

The followings may be the key points for endocrine diseases and anesthesia management:

1. Autonomic neuropathy secondary to DM may affect patient's compensation to intravascular volume changes and may cause hypotension/cardiac arrest after anesthesia induction.
2. In diabetic patients temporomandibular joint and cervical spine mobility should be evaluated on preoperative period. It is known that difficult intubation may be seen 30% of patients with type 1 diabetes.
3. As oral antidiabetics including sulfonylureas and metformin have long half-lives, they should be withheld 24-48 hours before surgery.
4. Hyperthyroid patients whom are not treated enough may show hypotension after anesthesia induction due to hypovolemia.
5. Hypothyroid patients have decreased cardiac output, baroreceptor reflexes and intravascular volume. So that after anesthetic administration unavoidable hypotension may occur.
6. During perioperative period we have to give steroid replacement to the patients with glucocorticoid deficiency.
7. For pheochromocytoma patients, drugs/techniques that indirectly stimulate catecholamines' release (ephedrine, hypoventilation, ketamine), increase the arrhythmic effects of catecholamines (halothane), or release histamine (atracurium or morphine sulfate) should be avoided.
8. Obese patients have limited mobility of the temporomandibular and atlantooccipital joints. Difficult ventilation and intubation may be a problem.
9. Anesthetic and surgical techniques/agents may release vasoactive substances from the tumor which may result with cardiac instability. Additional attention must be given.

## **CONCLUSION**

Endocrine diseases frequently present major clinical anesthetic problems. To provide optimal anesthetic planning and perioperative management, an anesthesiologist requires an extensive knowledge about the pathophysiology of the endocrine status.

## **References:**

1. Buggy DJ, Anaesthesia for Patients with Endocrine Disease. F.M. James (editor). Published by Oxford University Press, Oxford, UK. Pp. 266; Br J Anaesth (2011) 106 (3): 425-426.
2. Bajwa SJS and Kalra S. Endocrine anesthesia: A rapidly evolving anesthesia specialty. Saudi J Anaesth 2014; 8(1): 1-3.

---

**May 18, 2017, Thursday**

---

**11:15-12:30 Panel VIII**

<b>Key points in Abdominal Anesthesia</b>	<b>Slavenka Straus (B&amp;H) Aslı Dönmez (Turkey) Ljubica Pejakov (Montenegro)</b>
Regional Anesthesia for Abdominal Surgery	Nevriye Salman (Turkey)
COPD and Lung protective ventilation strategies	Dusanka Jancevic (Serbia)
Anesthesia for Patients with Endocrine Disease	Şule Akın Enes (Turkey)
<b>Anesthetic-analgesic techniques and malignancy: Friend or foe?</b>	<b>Filiz Üzümcügil (Turkey)</b>

## **ANESTHETIC-ANALGESIC TECHNIQUES AND MALIGNANCY: FRIEND OR FOE?**

*Assist. Prof. Filiz Üzümcügil, MD, DESA  
Hacettepe University School of Medicine*

*Department of Anesthesiology and Reanimation, Ankara, Turkey*

Various types of cancer, especially solid tumors, which are most commonly expected to be cured by surgical treatment, lose the chance for being cured due to the development of recurrence and metastasis. Cancer cells, which gain the ability to proliferate, migrate and invade the tissues nearby, can successfully metastasize along with the developing angiogenesis by evading the immune system. The factors that suppress the immune system can be considered to have the potential of being a contributing factor leading to recurrence and metastasis. Immune suppression occurs within a few hours of surgery and continues for days after surgery. Surgical procedures and general anesthesia cause immune suppression both by directly affecting the immune system and by activating hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system (SNS). The perioperative period include various factors contributing the development of immune suppression, such as blood transfusion, hypothermia and postoperative pain, as well as surgical stress and general anesthesia. Volatile anesthetics were suggested to have protumor effects and opioids were shown to stimulate cancer cells *in vitro*, while propofol and non-steroidal anti-inflammatory drugs to have antitumor effects.<sup>1,2</sup> Regional anesthesia, which is quiet well-known to reduce the requirement for both anesthetic agents and opioids providing less stress response, has been suggested to diminish immunosuppressive effects of these agents and provide antitumor and antiinflammatory effects also by direct systemic effects of local anesthetic agents.<sup>3</sup> The results of studies suggest that there is a potential advantage of employing regional anesthesia and propofol for anesthetic management of oncologic patients, but there is no sufficient data, moreover simple changes in clinical practice would probably not provide clear improvement in survival of those patients. There are ongoing randomized controlled trials, which are expected to provide data on this subject, but more are required to evaluate the effects of anesthetic management on cancer recurrence and metastasis in different types of cancer.

## References

1. Ryungsa K. Anesthetic technique and cancer recurrence in oncologic surgery: unraveling the puzzle. *Cancer Metastasis Rev* 2017; 36 (1): 159-177
2. Melamed R, Bar-Yosef S, Shakhar K, Ben-Eliyahu S. Suppression of natural killer cell activity and promotion of tumor metastasis by ketamine, thiopental and halothane, but not by propofol: mediating mechanisms and prophylactic measures. *Anesth Analg* 2003; 97 (5): 1331-1339
3. Votta-Velis EG, Piegeler T, Minshall RD, Aguirre J, Beck-Schimmer B, Schwartz DE, et al. Regional anesthesia and cancer metastasis: the implication of local anesthetics. *Acta Anaesth Scand* 2013; 57 (10): 1211-1229



---

May 18, 2017, Thursday

---

13:30-14:15 Pro/con I

Supraglottic Airway usage for  
laparoscopic surgery

Hülya Bilgin (Turkey)  
Biljana Shirgoska (Macedonia)  
Mirsad Babovic (B&H)

SGA could be used

Gregorios Voyagis (Greece)

SGA should not be used

Igli Zhilla (Albania)

---

**Pro** / Con

## **USAGE OF SUPRAGLOTTIC AIRWAY DEVICES (SADS) FOR LAPAROSCOPIC SURGERY (LAPS)**

*Voyagis Gregorios, "Sotiria" Chest Hospital, Athens – Greece*

Usage of SADs in LapS presupposes experienced user who secures the quality of anesthesia and patient's safety. It is supported the usage of 2nd generation (G) SADs (i.e. proseal laryngeal mask airway (PLMA), supreme LMA (SLMA), laryngeal tube suction (LTS) and I-gel) [1], although there are enough data in accessible literature supporting the use of 1stG SAD, such as classic LMA. PLMA has a higher oropharyngeal leak pressure and achieves higher values of maximum tidal volume compared to SLMA and I-gel [2-5]. Either PLMA, or LTS provide a similarly secure airway in LapS, even under conditions of elevated intra-abdominal pressure up to 17 mmHg [6]. However, comparative studies evaluating tracheal intubation (TI) versus SADs usage for LapS concern mainly PLMA. PLMA insertion is similarly effective to conventional laryngoscope-guided TI, but is associated with attenuated haemodynamic response to insertion and removal [7] and more rapid positioning of the gastric tube [8]. Even in obese patients PLMA (once fitted properly) provides better oxygenation during and after LapS, indicating better pulmonary performance, and reduced postoperative coughing, suggesting better recovery for patients [9]. Additionally, neuromuscular blockade is not necessary in general anesthesia with a PLMA [10] and postoperative pain seems to be lower for the PLMA than the tracheal tube in females undergoing gynaecological LapS [11]. Gum elastic bougie-guided insertion of the PLMA is superior to the digital and introducer tool techniques [12-14].

1. Cook TM, Woodall N, Frerk C, eds. The NAP4 report: Major complications of airway management in the UK. Royal College of Anaesthetists. London; 2011.
2. Beleña JM, Núñez M, Anta D, *et al.* Comparison of LMA Supreme and LMA Proseal with respect to oropharyngeal leak pressure during laparoscopic cholecystectomy: a randomised controlled trial. *Eur J Anaesthesiol* 2013, 30:119-23
3. Lee AK, Tey JB, Lim Y, Sia AT. Comparison of the single-use LMA Supreme with the ProSeal LMA for anaesthesia in gynaecological laparoscopic surgery. *Anaesth Intensive Care* 2009, 37: 815-9
4. Anand LK, Goel N, Singh M, Kapoor D. Comparison of the Supreme and the ProSeal LMA in patients undergoing laparoscopic cholecystectomy: A randomized controlled trial. *Acta Anaesthesiol Taiwan* 2016, 54: 44-50
5. Mishra SK, Sivaraman B, Balachander H, *et al.* Effect of pneumoperitoneum and Trendelenburg position on oropharyngeal sealing pressure of I-gel™ and ProSeal LMA in laparoscopic gynecological surgery: A randomized controlled trial. *Anesth Essays Res* 2015, 9: 353-8

6. Esa K, Azarinah I, Muhammad M, Helmi MA, Jaafar MZ. A comparison between Laryngeal Tube Suction II Airway and Proseal LMA in laparoscopic surgery. *Med J Malaysia* 2011, 66: 182-6
7. Lim Y, Goel S, Brimacombe JR. The ProSeal LMA is an effective alternative to laryngoscope-guided tracheal intubation for gynaecological laparoscopy. *Anaesth Intensive Care* 2007, 35: 52-6
8. Borkowski A, Perl T, Heuer J, Timmermann A, Braun U. The applicability of the ProSeal LMA for laparotomies. *Anesthesiol Intensivmed Notfallmed Schmerzther* 2005, 40: 477-86
9. Nicholson A, Cook TM, Smith AF, Lewis SR, Reed SS. Supraglottic airway devices versus tracheal intubation for airway management during general anaesthesia in obese patients. *Cochrane Database Syst Rev* 2013, CD010105. doi: 10.1002/14651858
10. Chen BZ, Tan L, Zhang L, Shang YC. Is muscle relaxant necessary in patients undergoing laparoscopic gynecological surgery with a ProSeal LMA? *J Clin Anesth* 2013, 25: 32-5
11. Hohlrieder M, Brimacombe J, Eschertzhuber S, Keller C. A study of airway management using the ProSeal LMA compared with the tracheal tube on postoperative analgesia requirements following gynaecological Laparoscopic surgery. *Anaesthesia* 2007, 62: 913-8
12. Eschertzhuber S; Brimacombe J; Hohlrieder M; Stadlbauer KH; Keller C. Gum elastic bougie-guided insertion of the ProSeal laryngeal mask airway is superior to the digital and introducer tool techniques in patients with simulated difficult laryngoscopy using a rigid neck collar. *Anesth Analg* 2008, 107: 1253-6
13. Brimacombe J, Keller C, Vosoba Judd D. Gum elastic bougie-guided Insertion of the ProSeal™ laryngeal mask airway is Superior to the Digital and Introducer Tool Techniques *Anesthesiology* 2004, 100: 25-29
14. Kuppusamy A, Azhar N. Comparison of bougie-guided insertion of Proseal™ laryngeal mask airway with digital technique in adults. *Indian J Anaesth* 2010, 54: 35–39

May 18, 2017, Thursday

13:30-14:15 Pro/Con I

Supraglottic Airway usage for  
laparoscopic surgery

Hülya Bilgin (Turkey)  
Biljana Shirgoska (Macedonia)  
Mirsad Babovic (B&H)

SGA could be used

Gregorios Voyagis (Greece)

**SGA should not be used**

**Igli Zhilla (Albania)**

Pro / **Con**

## WHY SUPRAGLOTIC DEVICES CAN NOT BE USED IN LAPAROSCOPIC SURGERY

*Igli Zhilla, MD, PhD*

*LUIS MEDICAL CENTER, TIRANA, ALBANIA*

Supraglottic airway usage has changed airway management for the last 30 years.

All anesthesiologists have one more choice in every day practice.

Supraglottic airway devices have been prescribed as a routinely use in day surgery and their use is becoming so popular among the anesthesiologists for a wide kind of surgeries.

Concerning on laparoscopic procedures they have been referred as a minimally invasive surgery.

Bowel surgery, pancreas surgery, cholecystectomy, and some gynecological surgery are some common procedures.

Regarding laparoscopic surgery the most common debate is concerned about the risk of airways complications (1,2).

Laparoscopic surgery consists on gas insufflation on abdominal cavity (pneumoperitoneum) which transmits pressure to the thorax.

This leads a decrease in functional residual capacity (FRC).

The decreased end expiratory lung volume can trigger atelectasis.

Controlled mechanical ventilation is more difficult due to the decrease in thoracopulmonary compliance so is needed a greater airway pressure to achieve a given tidal volume.

Conversely a mechanically delivered tidal volume will result in higher airway pressure.

Trendelenburg position sometimes preferred in laparoscopic cases will exacerbate intraalveolar pressure, probably resulting in restriction lung diseases.

Regarding to these conditions what we can consider in risk?

- Obese patients with a BMI higher than 30kg/m<sup>2</sup>. Maltby.Jr on his paper shows that 4 of 16 patients with BMI > 30 kg/m<sup>2</sup> crossed over to ETT because of respiratory obstruction or airway leak.(3)

Despite rise on abdominal pressure in obese patient we have some more anatomical issues such as increased soft tissue tone, large tongue, small mouth opening that can result in a malposition of LMA and leakage.

- Older patients may result also in higher risk because of:
  - Previous pulmonary disease can lead to increased airway pressure
  - Loss of soft tissue tonus and denture problems, temporomandibular joint diseases also can lead to a malposition of LMA.

1. Increase in abdominal pressure may trigger some conditions on gastroesophagel tract, including increase in gastroesophageal reflux, increase of the tone of lower esophageal sphincter.

Those conditions can lead to a higher risk of gastroesophageal reflux and pulmonary aspiration.

However there is not any evidence that ETT or supraglottic devices have any comparable difference on practice (4,5,6,7).

2. Circuit leak of anesthetic gases to the atmosphere during positive pressure ventilation may lead to hypoventilation and theatre pollution.

It means that using not appropriate LMA size leakage can occur and loss in gas is higher.

Tracheal intubation may be more difficult and risk of aspiration of gastric contents into the lungs is increased in obese patients.

Supraglottic airway devices (SADs) offer an alternative airway to traditional tracheal intubation with potential benefits, including ease of fit and less airway disturbance. (8,9,10). Although SADs are now widely used, clinical concerns remain that their use for airway management in obese patients may increase the risk of serious complications.

Alteration in respiratory mechanics, increased airway resistance and greater incidence of esophageal reflux are the main concerns in choosing SAD as an airway device in obese patients

1. Maltby JR, Beriault MT, Watson NC, Liepert D, Fick GH (2002) The LMA-ProSeal is an effective alternative to tracheal intubation for laparoscopic cholecystectomy. *Can J Anaesth* 49: 857-862.
2. Nicholson A, Cook TM, Smith AF, Lewis SR, Reed SS (2013) Supraglottic airway devices versus tracheal intubation for airway management during general anaesthesia in obese patients. *Cochrane Database of Syst Rev* 9: CD010105.
3. Maltby JR, Beriault MT, Watson NC, Fick GH. Gastric distension and ventilation during laparoscopic cholecystectomy: LMA-Classic vs. tracheal intubation. *Can J Anaesth* 2000;47:622-6.

4. Brimacombe JR, Berry A. The incidence of aspiration associated with the laryngeal mask airway: a meta-analysis of published literature. *J Clin Anesth.* 1995;7:297–305.
5. Ozdamar D<sup>1</sup>, Güvenç BH, Toker K, Solak M, Ekingen G. Comparison of the effect of LMA and ETT on ventilation and intragastric pressure in pediatric laparoscopic procedures. *Minerva Anesthesiol.* 2010 Aug;76(8):592-9. Epub 2010 Jun 18.
6. Bernardini A, Natalini G (2009) Risk of pulmonary aspiration with laryngeal mask airway and tracheal tube: analysis on 65 712 procedures with positive pressure ventilation. *Anaesthesia* 64: 1289-1294
7. Doyle MT, Twomey CF, Owens TM, et al. Gastroesophageal reflux and tracheal contamination during laparoscopic cholecystectomy and diagnostic gynecological laparoscopy. *Anesth Analg* 1998; 86:624–628.
8. Sinha A, Sharma B, Sood J. ProSeal as an alternative to endotracheal intubation in pediatric laparoscopy. *Paediatr Anaesth.* 2007;17:327–332.
9. Shroff P, Surekha K. Randomized comparative study between the proseal laryngeal mask airway and the endotracheal tube for laparoscopic surgery. *Internet J Anesthesiol.* 2006;Vol. 11 [Last accessed on 2010 Jul 9]
10. Jeon WJ, Cho SY, Baek SJ, Kim KH (2012) Comparison of the Proseal LMA and intersurgical i-gel during gynecological laparoscopy. *Korean J Anesthesiol* 63: 510-514.

**May 18, 2017, Thursday**

**14:15-15:30 Panel IX**

<b>Anesthesia for Bariatric Surgery</b>	<b>Eyüp Horasanlı (Turkey)</b> <b>Jasmina Ahmetovic Djug (B&amp;H)</b>
<b>Bariatric Surgery: Yesterday, today and tomorrow</b>	<b>Fuad Pasic (B&amp;H)</b>
Keys in bariatric anesthesia	Haluk Gümüş (Turkey)
Strategies for managing oxygenation:	Biljana Shirgoska (Macedonia)
Airway management	
Strategies for managing oxygenation:	Esra Özayar (Turkey)
Mechanical ventilation	

## **BARIATRIC SURGERY YESTERDAY, TODAY AND TOMORROW**

*Fuad Pašić Assitant professor  
Surgical Clinic UKC Tuzla, Bosnia and Herzegovina  
Department Head of General Abdominal Surgery  
Email fuad.p@bih.net.ba*

Obesity is one of the most growing pandemic of modern times. Global negative social repercussions about this epidemic has only recently been conceived, objectively and multidimensionally. Although bariatric surgery has been practised for 60 years, it is only in the last several years that it is put into place it objectively deserves. Very few surgical branches could be proud of meteorite success as the one at bariatric surgery accomplished in the last two decades. All these progressive breakthroughs have not been effected by accident. They would not have been possible without the lessons we had to study in the past. Thorny path bariatric surgeons had to go, disputed and doubting state in order to be where they are today. The paradigm on obesity treatment has been changed with enormous various interests.

Obesity surgeries, in other words, metabolic aspects of this surgical branch are subjected to new testing. We could say that this surgical branch is ahead of interesting future. Twenty years ago, bariatric surgeons were shyly and endocrinologists almost in no sense mentioning that the best way of treatment Diabetes type 2 was a surgery. Good surgical results accompanied with low post-operational morbidity and mortality gave metabolic surgeons opportunity to seek for new models, groups of patients that could be helped with surgeries. Research is being carried on about influence of metabolic operations on patients with Diabetes type 2 and BMI 28 and lower. Studies performed in over-populated countries, China, USA, North Korea, bring promising results on influence of metabolic operations on treatment and healing of Diabetes Type 2 at non-obese patients.

Medical proffesionals of different profiles through history have been to different camps, instead of being at the same one, now join their forces and knowledge with the idea that

leads to one goal, accomplishing more in obesity treatment. This research brings parallel data referring to advantages and disadvantages of most common surgical procedures in treatment pathological obesity and vision about direction of surgical concepts in future. That future would be based on multidisciplinary, combination of endoscopic and laparoscopic procedures in treatment, development of new technologies and use of natural openings, mouth, vagina and similar. Unresearched field is a direct effect on centers of energetic homeostasis in hipotalamus and bacteria influence on loss of weight.

---

**May 18, 2017, Thursday**


---

**14:15-15:30 Panel IX**

<b>Anesthesia for Bariatric Surgery</b>	<b>Eyüp Horasanlı (Turkey)</b> <b>Jasmina Ahmetovic Djug (B&amp;H)</b>
Bariatric Surgery: Yesterday, today and tomorrow	Fuad Pasic (B&H)
<b>Keys in bariatric anesthesia</b>	<b>Haluk Gümüş (Turkey)</b>
Strategies for managing oxygenation: Airway management	Biljana Shirgoska (Macedonia)
Strategies for managing oxygenation: Mechanical ventilation	Esra Özayar (Turkey)

---

## **KEYS IN BARIATRIC ANAESTHESIA**

*DR. HALUK GÜMÜŞ*

The World Health Organization defines obesity as body mass index (BMI)  $\geq 30$  kg/m<sup>2</sup>, and further classifies it into 3 groups: class I (30-34.99 kg/m<sup>2</sup>), class II (35-39.99 kg/m<sup>2</sup>), and class III ( $\geq 40$  kg/m<sup>2</sup>), which is morbid obesity (MO). Furthermore, there is a consensus in the literature that BMI 50 to 59.9 kg/m<sup>2</sup> is superobese, BMI 60 to 69.9 kg/m<sup>2</sup> is super-superobese, and BMI  $>70$  kg/m<sup>2</sup> is hyperobese. Obesity rarely seen before 20th century. Obesity 200 million people are seen in adults(%65) in USA, %10 (8,5 milion obese) adults over 40 in Turkey. In 2025 we are expected to be a obese nation. The highest rate in Europe is in Albania ,Bosnia-Herzegovina, The lowest rate is in Uzbekistan and Turkmenistan. Obesity related deaths 300000 death/year/USA. In the USA, 196.000 bariatric surgeries were performed in 2015.

Obesity tends to be familial, with children of two obese parents having about a 70% chance of becoming obese themselves as compared with a 20% risk for children of non-obese parents.

Obesity is a multisystem, chronic, proinflammatory metabolic disorder. Obesity affects all vital organ systems. Obesity effects mainly respiratory and cardiovascular systems.

It is commonly believed that combination of increased intra-abdominal pressure, high volume and low pH of gastric contents, delayed gastric emptying and an increased incidence of hiatus hernia and gastro-oesophageal reflux place the obese patient at a higher risk of aspiration of gastric content followed by aspiration pneumonitis.

Obesity is strongly associated with increased insulin resistance. Poor glycaemic control in the perioperative period is associated with increased morbidity, and good glycaemic control is recommended.

There is limited information on the effect of obesity on the pharmacology of commonly used anesthetic drugs. Much of the excess weight is fat, which has a relatively low blood flow.



While lipophilic drugs will have a larger volume of distribution than hydrophilic ones, the current evidence indicates that changes in volume of distribution in the obese are drug-specific, so generalisations are difficult. For most anaesthetic agents, dosing to total body weight is rarely appropriate and increases the risk of relative overdose. Fortunately, most anaesthetic agents are dosed to affect, e.g. loss of eyelash reflex, nerve stimulator response or relief of pain. In Bariatric anaesthesia, lean or adjusted body weight are used as the scalars for calculating initial anaesthetic drug doses rather than total body weight. With induction agents a TBW dose will last longer than one calculated using LBW or ABW but is likely to result in significant hypotension. It is likely that in the cases of AAGA (accidental awareness under anaesthesia) found, small doses of induction agent based on LBW or ABW were not quickly followed by the introduction of maintenance anaesthesia, thus raising the risk of awareness. Thiopentone is associated with a greater risk of awareness than propofol. It is strongly recommended that additional induction agent be given if there is a delay in commencing effective maintenance anaesthesia after induction.

Morbidly obese patients can be safely decurarised from rocuronium-induced neuromuscular blockade with IBW-based sugammadex dosage.

Lean body weight	Adjusted body weight
Propofol (induction)	Propofol (infusion)
Thiopental	Antibiotics
Fentanyl	Low molecular weight heparin
Rocuronium	Alfentanil
<b>Atracurium</b>	Neostigmine (maximum 5 mg)
Vecuronium	Sugammadex
Morphine	
Paracetamol	
Bupivacaine	
Lidocaine	

Table: Suggested initial dosing scalars for commonly used anaesthetic drugs for healthy obese adults

**Recommendations**

- 1 Every hospital should nominate an anaesthetic lead for obesity.
- 2 Operating lists should include the patients’ weight and body mass index (BMI).
- 3 Experienced anaesthetic and surgical staff should manage obese patients.
- 4 Additional specialised equipment is necessary.

- 5 Central obesity and metabolic syndrome should be identified as risk factors.
- 6 Sleep-disordered breathing and its consequences should always be considered in the obese.
- 7 Anaesthetising the patient in the operating theatre should be considered.
- 8 Regional anaesthesia is recommended as desirable but is often technically difficult and may be impossible to achieve.
- 9 A robust airway strategy must be planned and discussed, as desaturation occurs quickly in the obese patient and airway management can be difficult.
- 10 Use of the ramped or sitting position is recommended as an aid to induction and recovery.
- 11 Drug dosing should generally be based upon lean body weight and titrated to effect, rather than dosed to total body weight.
- 12 Caution is required with the use of long-acting opioids and sedatives.
- 13 Neuromuscular monitoring should always be used whenever neuromuscular blocking drugs are used.
- 14 Depth of anaesthesia monitoring should be considered, especially when total intravenous anaesthesia is used in conjunction with neuromuscular blocking drugs.
- 15 Appropriate prophylaxis against venous thromboembolism (VTE) and early mobilisation are recommended since the incidence of venous thromboembolism is increased in the obese.
- 16 Postoperative intensive care support should be considered, but is determined more by co-morbidities and surgery than by obesity per se.

**References:**

1. Terkawi S.A. Durieux M.E. Perioperative Anesthesia Care For Obese Patients. *Anesthesiology News*. April 2015, pages 1-11.
2. J. P. Adams, P. G. Murphy; Obesity in anaesthesia and intensive care. *Br J Anaesth* 2000; 85 (1): 91-108. doi: 10.1093/bja/85.1.91
3. Nightngale et al. | Guidelines for peri-operative management in obesity. *Anaesthesia* 2015, 70, 859–876
4. J. Ingrande and H. J. M. Lemmens. Dose adjustment of anaesthetics in the morbidly obese. *British Journal of Anaesthesia* 105 (S1): i16–i23 (2010) doi:10.1093/bja/aeq312
5. Joshi, Girish P.; Ahmad, Shireen; Riad. Selection of Obese Patients Undergoing Ambulatory Surgery: A Systematic Review of the Literature. *Anesthesia & Analgesia* . 117(5):1082-1091, November 2013

---

**May 18, 2017, Thursday**

**14:15-15:30 Panel IX**

<b>Anesthesia for Bariatric Surgery</b>	<b>Eyüp Horasanlı (Turkey)</b>
Bariatric Surgery: Yesterday, today and tomorrow	<b>Jasmina Ahmetovic Djug (B&amp;H)</b>
Keys in bariatric anesthesia	Fuad Pasic (B&H)
<b>Strategies for managing oxygenation: Airway management</b>	<b>Haluk Gümüş (Turkey)</b>
Strategies for managing oxygenation: Mechanical ventilation	<b>Biljana Shirgoska (Macedonia)</b>
	Esra Özayar (Turkey)

---

## **STRATEGIES FOR MANAGING OXYGENATION AT OBESE PATIENTS: AIRWAY MANAGEMENT**

*Biljana Shirgoska, Jane Netkovski*

*1University Clinic for Ear, nose and throat surgery, Department of anesthesiology*

*1University Clinic for Ear, nose and throat surgery, Department of ENT,*

*2Medical faculty, St. Cyril and Methodius University, Skopje, Macedonia*

*Correspondence: Biljana Shirgoska, MD, MA, PhD, EAMS representative for Macedonia*

*bshirgoska@yahoo.com; +38975268760*

### **ABSTRACT**

Induction of general anesthesia and extubation at obese patients are a high-risk periods for hypoxemia.

Preoxygenation before induction is considered to be sufficient when the end-tidal oxygen fraction is 90%.

Tidal volume breathing through a well-sealed face mask for three minutes or four vital capacity breaths are two strategies of preoxygenation before anesthesia induction. Evidence suggests that obese patients desaturate faster with four vital capacity breaths than tidal volume breathing through a face mask.

Additional techniques for peri-induction oxygenation include supplemental nasopharyngeal oxygen insufflation, semi-recumbent position, continuous positive airway pressure (CPAP), positive end-expiratory pressure (PEEP), and pressure support ventilation applied before induction of general anesthesia in the spontaneous ventilating patient.

Airway complications and issues with oxygenation may present immediately on emergence from anesthesia at the time of tracheal extubation or may become manifest only in the postanesthesia care unit, resulting in significant morbidity and mortality.

The Difficult Airway Society published guidelines in 2012 for management of tracheal extubation using a stepwise approach.

Patients with obesity and obstructive sleep apnea are stratified into a category of extubation "at risk" of a major complication. Recommendations for awake tracheal extubation in this patient population include patient optimization (full reversal of neuromuscular blockade and return of protective airway reflexes), preoxygenation, placing the patient in a reverse Trendelenburg or semi-recumbent position, and suctioning of the oropharynx under direct vision. Logistic factors to be considered include selecting the operating room as the location for extubation and having skilled assistance, equipment (difficult airway trolley), and

monitoring (in particular capnography) available. The Difficult Airway Society guidelines also advocate the placement of an airway exchange catheter in patients for whom tracheal re-intubation is likely to be difficult.

Conclusion: We can conclude that effective preoxygenation while induction in anesthesia at obese patients and oxygenation before extubation as well as in the postoperative period, means perioperative hard, lung and brain protection.

---

**May 18, 2017, Thursday**


---

**14:15-15:30 Panel IX**

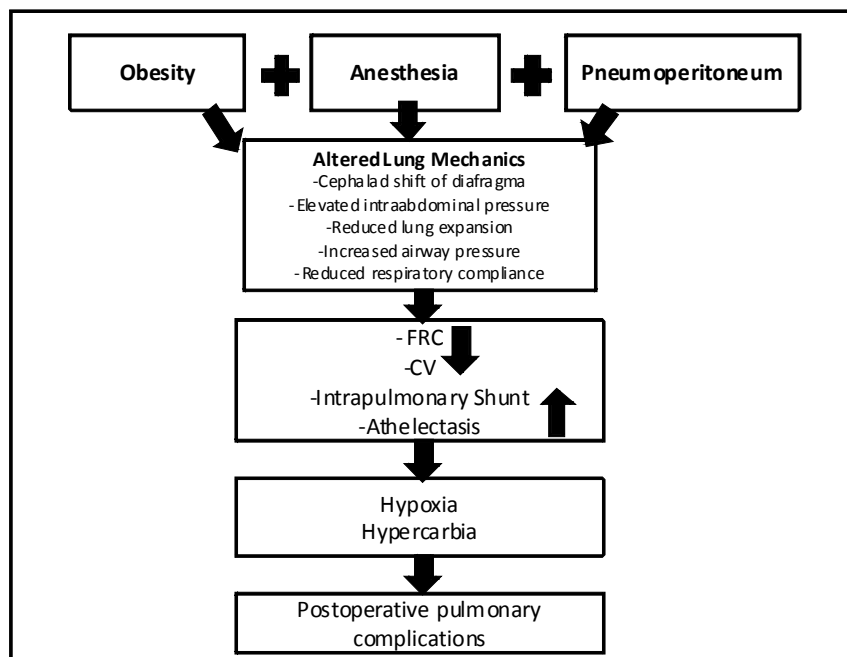
<b>Anesthesia for Bariatric Surgery</b>	<b>Eyüp Horasanlı (Turkey)</b>
Bariatric Surgery: Yesterday, today and tomorrow	<b>Jasmina Ahmetovic Djug (B&amp;H)</b>
Keys in bariatric anesthesia	Fuad Pasic (B&H)
Strategies for managing oxygenation: Airway management	Haluk Gümüş (Turkey)
<b>Strategies for managing oxygenation: Mechanical ventilation</b>	<b>Biljana Shirgoska (Macedonia)</b>
	<b>Esra Özayar (Turkey)</b>

## **Strategies for managing oxygenation: Mechanical Ventilation**

*Dr. Esra OZAYAR*

*Kecioren Training and Research Hospital, Ankara*

The number of patients undergoing bariatric surgery procedures is steadily increasing each year due to growing prevalence of obesity. Management of oxygenation and ventilation may be a challenge in severely obese patients during bariatric surgery procedures. Obesity combined with general anesthesia and pneumoperitoneum have various deleterious effects on respiratory mechanics which may lead to further exaggerate impairment of gas exchange. These effects are, reduced functional residual capacity (FRC), increased closing volume, decreased compliance, increased elastance, atelectasis and a load of carbondioxide to be eliminated (Fig 1). It is important for anesthesiologists to understand the impact of the mechanical ventilation on the respiratory mechanics in the intraoperative setting (1). Although many ventilatory strategies have been tested in obese patients, the ideal intraoperative ventilation strategy remains unclear (2). To manage the ventilatory challenges of obese patients, aside from traditional mechanical ventilation modes such as pressure controlled ventilation (PCV) and volume controlled ventilation (VCV) there are several techniques derived from the ICU mechanical ventilation strategies (3). Mostly suggested techniques to compensates the physiologic derangements of respiratory mechanics include using positive end expiratory pressure (PEEP) during controlled ventilation, recruitment maneuvers (RM), equal ratio ventilation, and reverse Trendelenburg position as possible (4-9).



**Figure 1:** Effects of anesthesia, obesity and pneumoperitoneum on respiratory mechanics

**Preoxygenation**

Desaturation of obese patients during induction is faster than non obese patients. Preoxygenation improves the non hypoxic apnea time in obese patients. Although the wellknown effect of 100% oxygen on occurrence of atelectasis the studies revealed that preoxygenation with 100% oxygen prolong safe apneic duration and reduce atelectasis (3,10). Applying PEEP and CPAP during spontaneous ventilation and apnea period, improves PaO<sub>2</sub>, increase non-hypoxic duration, decrease atelectatic effect of high FiO<sub>2</sub> (3,10).

**Recruitment Maneuver and PEEP**

Many RCT reveals that recruitment maneuvers significantly improve oxygenation, lung volume and minimise atelectasis formation (11-17,3). The recruitment maneuver is effective when it is followed by adequate PEEP which is also known as “open the lungs and keep them open” (3). Trials showed no beneficial effect of recruitment maneuver without PEEP. The beneficial effects of recruitment maneuver in obese patients likely to be observed if the PEEP maintains about 10-12 cm H<sub>2</sub>O after the maneuver (18). In the literature there is a heterogeneity of recruitment delivery methods that leads the lack of consensus to generate spesific recommendations (Table 1).

Although the barotrauma is one of the major concerns of recruitment maneuvers, the studies did not reported barotrauma due to RM (3).

On the other hand timing of the recruitment maneuver is another obscure point needs to be clarified in the literature. Studies demonstrate timing points such as, after induction, every 10 min, after pneumoperitoneum, after abdominal opening and there is a variety of outcomes.

**Table 1: Different recruitment maneuver methods at different time points**

Study	RM strategy	PEEP after RM	RM timing	RM frequency
Whalen et al. <sup>11</sup>	PEEP:10 cm H <sub>2</sub> O (3breaths), PEEP: 15cmH <sub>2</sub> O(3breaths), PEEP:20 cm H <sub>2</sub> O (10 breaths)	12 cm H <sub>2</sub> O	After Pneumoperitoneum	Single
Reinius et al. <sup>15</sup>	PIP 55 cmH <sub>2</sub> O, 10s	10 cm H <sub>2</sub> O	After Induction	Single
Futier et al. <sup>19</sup>	CPAP 40 cm H <sub>2</sub> O, 40s	10 cm H <sub>2</sub> O	After Intubation	Single
Defresne et al. <sup>17</sup>	PIP 40 cmH <sub>2</sub> O, 40 s	10 cm H <sub>2</sub> O	After creation and exsufflation of pneumoperitoneum	Double
Almarakbi et al. <sup>14</sup>	PIP 40 cmH <sub>2</sub> O, 15 s	8 cm H <sub>2</sub> O	After Pneumoperitoneum	Every 10 min.

*RM: Recruitment maneuver, PEEP: Positive end expiratory pressure*

**Pressure-Controlled Ventilation or Volume-Controlled Ventilation**

There is no significant difference shown between PCV and VCV in many trials (20-22). Pressure-controlled ventilation, volume guaranteed (PCV-VG) mode which aims to deliver a targeted volume within the set pressure limit combines the beneficial effects of both VCV and PCV. This mode is newly introduced into the operating room and shown as an alternative to PCV or VCV.

Ideal body weight is suggested to be used to estimate the diameter of tracheal tubes and tidal volume calculation during controlled ventilation. The anesthesiologists should also keep in mind that the tracheal diameter reduces with increasing BMI.

**Equal Ratio Ventilation**

Inverse ratio strategy which is well described for ARDS patients in ICU patients aims to improve oxygenation by preventing alveolar collapse by elevating the mean airway pressure and decreasing the peak airway pressure (23). In equal ratio ventilation strategy (I:E ratio 1:1), the prolongation of inspiration time provides recruitment of the collapsed alveoli and improve oxygenation. Decreased expiration time may cause other problems regarding carbodioxide accumulation and auto-PEEP. A reduction in cardiac output due increase in intrathoracic pressure and reduced venous return is another concern with prolonged inspiratory to expiratory ratio (24).

**Position**

The patient's position is crucial determinant of safe apnea duration and FRC. Reverse Trendelenburg and ramped position has several advantages in bariatric surgery operations. As reverse Trendelenburg position improves oxygenation and pulmonary elastance due to reduced abdominal load of chest, ramped position is advantageous during preoxygenation and laryngoscopy (1,25).

## References

1. Vilma E, Ortiz, Marcos F, Vidal Melo, John L. Strategies for managing oxygenation in obese patients undergoing laparoscopic surgery. *Surgery of Obesity and Related Diseases* 2015;11(3):721-28
2. M Aldenkortt, C Lysakowski, N Elia, L Brochard, and MR Tramer. Ventilation strategies in obese patients undergoing surgery: a quantitative systematic review and meta-analysis
3. Xin Yan Hu, MA, MSN, CRNA . Effective Ventilation Strategies for Obese Patients Undergoing Bariatric Surgery: A Literature Review
3. Schumann R. Anaesthesia for bariatric surgery. *Best Pract Res Clin Anaesthesiol.* 2011;25:83–93.
4. Joanna M Dion, Chris McKee et. al. Ventilation during laparoscopic-assisted bariatric surgery: volume-controlled, pressure-controlled or volume-guaranteed pressure-regulated modes. *Int J Clin Exp Med.* 2014; 7(8): 2242–2247
5. Schumann R. Anaesthesia for bariatric surgery. *Best Pract Res Clin Anaesthesiol.* 2011;25:83–93.
6. Talab HF, Zabani IA, Abdelrahman HS, Bukhari WL, Mamoun I, Ashour MA, Sadeq BB, El Sayed HI. Intraoperative ventilatory strategies for prevention of pulmonary atelectasis in obese patients undergoing laparoscopic bariatric surgery. *Anesth Analg.* 2009;109:1511–6.
7. Mousa WF. Equal ratio ventilation (1:1) improves arterial oxygenation during laparoscopic bariatric surgery: A crossover study. *Saudi J Anaesth.* 2013;7:9–13.
8. Brenn BR. Anesthesia for pediatric obesity. *Anesthesiol Clin North America.* 2005;23:745–764
9. Samuels PJ. Anesthesia for adolescent bariatric surgery. *Int Anesthesiol Clin.* 2006;44:17–31.
10. Rusca M, Proietti S, Schnyder P, et al. Prevention of atelectasis formation during induction of general anesthesia. *Anesth Analg.* 2003;97(6):1835-1839.
11. Whalen FX, Gajic O, Thompson GB, et al. The effects of the alveolar recruitment maneuver and positive end-expiratory pressure on arterial oxygenation during laparoscopic bariatric surgery. *Anesth Analg.* 2006;102(1):298-305.
12. Valenza F, Vagginelli F, Tiby A, et al. Effects of the beach chair position, positive end-expiratory pressure, and pneumoperitoneum on respiratory function in morbidly obese patients during anesthesia and paralysis. *Anesthesiology.* 2007;107(5):725-732.
13. Chalhoub V, Yazigi A, Sleilaty G, et al. Effect of vital capacity manoeuvres on arterial oxygenation in morbidly obese patients undergoing open bariatric surgery. *Eur J Anaesthesiol.* 2007;24(3):283-288.
14. Almarakbi WA, Fawzi HM, Alhashemi JA. Effects of four intraoperative ventilatory strategies on respiratory compliance and gas exchange during laparoscopic gastric banding in obese patients. *Br J Anaesth.* 2009;102(6):862-868.
15. Reinius H, Jonsson L, Gustafsson S, et al. Prevention of atelectasis in morbidly obese patients during general anesthesia and paralysis: a computerized tomography study. *Anesthesiology.* 2009;111(5):979-987.
16. Talab HF, Zabani IA, Abdelrahman HS, et al. Intraoperative ventilatory strategies for prevention of pulmonary atelectasis in obese patients undergoing laparoscopic bariatric surgery. *Anesth Analg.* 2009;109(5):1511-1516.
17. Defresne AA, Hans GA, Goffin PJ, et al. Recruitment of lung volume during surgery neither affects the postoperative spirometry nor the risk of hypoxaemia after laparoscopic gastric bypass in morbidly obese patients: a randomized controlled study. *Br J Anaesth.* 2014;113(3):501-507.
18. Leme Silva P. 1, Pelosi P. 2, Rocco P. R. M. Mechanical ventilation in obese patients *Minerva Anestesiologica* 2012;78(10):1136-45
19. Futier E, Constantin JM, Pelosi P, Chanques G, Massone A, Petit A, Kwiatkowski F, Bazin JE, Jaber S. Noninvasive ventilation and alveolar recruitment maneuver improve respiratory function during and after intubation of morbidly obese patients: a randomized controlled study. *Anesthesiology.* 2011;114(6):1354-63.
20. De Baerdemaeker LE, Van der Herten C, Gillardin JM, Pattyn P, Mortier EP, Szegedi LL. Comparison of volume-controlled and pressure-controlled ventilation during laparoscopic gastric banding in morbidly obese patients. *Obes Surg.* 2008;18(6):680-685.



21. Cadi P, Guenoun T, Journois D, Chevallier JM, Diehl JL, Safran D. Pressure-controlled ventilation improves oxygenation during laparoscopic obesity surgery compared with volume-controlled ventilation.
22. Hans GA, Prégaldien AA, Kaba A, et al. Pressure-controlled ventilation does not improve gas exchange in morbidly obese patients undergoing abdominal surgery. *Obes Surg.* 2008;18(1):71-76.
23. Park, Jin Ha MD; Lee, Jong Seok MD; Lee, Jae Hoon MD, PhD; Shin, Seokyung MD, PhD; Min, Nar Hyun MD; Kim, Min-Soo MD, PhD Effect of the Prolonged Inspiratory to Expiratory Ratio on Oxygenation and Respiratory Mechanics During Surgical Procedures
24. Min-Soo Kim, Na Young Kim, Ki-Young Lee, Young Deuk Choi, Jung Hwa Hong, Sun-Joon Bai, The impact of two different inspiratory to expiratory ratios (1:1 and 1:2) on respiratory mechanics and oxygenation during volume-controlled ventilation in robot-assisted laparoscopic radical prostatectomy: a randomized controlled trial. *Can J Anesth* 2015; 62:979–987
25. Luke E. Hodgson, Patrick B. Murphy, and Nicholas Hart. Respiratory management of the obese patient undergoing surgery. *J Thorac Dis.* 2015 ; 7(5): 943–952.

**May 18, 2017, Thursday**

---

**16:00-17:15 Panel X**

**Anesthesia for Minimal invasive surgery (laparoscopic/robotic)**

**Asuman Uysalel (Turkey)  
Alma Jahic (B&H)  
Tülin Gümüş (Turkey)**

---

Effects of pneumoperitoneum on organ perfusion

Merlina Kalajdjija Cero (B&H)

Anesthetic concern with robotic surgery

Nurdan Bedirli (Turkey)

**Robotic anesthesia: dream or future?**

**Zerrin Özköse Şatırlar (Turkey)**

Hemodynamic and pulmonary Effects of Positioning

Adnan Bayram (Turkey)

---

## **ROBOTIC ANESTHESIA: DREAM OR FUTURE?**

*Zerrin Özköse Şatırlar*

The word robot was defined by the Czech writer Karel Čapek, who used it in the title of his play 'Rossum's Universal Robots' in 1920. Robots have been used to assist in surgery (e.g., DaVinci robotic system), allowing operation of robotic arms with a little force and possible higher precision. The use of robots in anesthesia shows the advantage of eliminating the repetitive part of the workload, allowing the anesthesiologist to focus on patients.

Robots in anesthesia can be divided into 'pharmacological' and 'manual' robots.

### **Pharmacological Robots**

- a. For anesthesia: Pharmacological robots are designed to correctly titrate anesthetic, opioid and muscle relaxant drugs to a preset value and control biological parameters of anesthetic concern. These are closed-loop systems. Over the years, many closed-loop systems developed are able to control only one or two of the three components of anesthesia. But nowadays the closed-loop control has been applied to the three components of anesthesia: hypnosis, analgesia and neuromuscular block.
- b. For sedation: The SEDASYS<sup>®</sup> System is the first FDA-approved Computer-Assisted Personalized Sedation (CAPS) device for simple screenings like colonoscopies or endoscopies. CAPS is a method of sedation that integrates physiological monitoring and drug delivery through a computer interface.

### **Mechanical Robots**

Mechanical robots are designed to give support or replace manual attempt of anesthesiologists. The two main fields of application are endotracheal intubation and regional anesthesia. One of them is the Kepler Intubating System (KIS), designed to utilize video laryngoscopy and a robotic arm to place an endotracheal tube. The *Magellan system* is designed to perform robot-assisted, ultrasound-guided *nerve blocks*.

The other method for robotic anesthesia is teleanesthesia. In this method anesthesia is controlled by internet connection. The first application of transcontinental teleanesthesia

was performed between the Montreal General Hospital, Canada and Cisanello Hospital, Pisa, Italy using closed-loop systems and a standard Internet connection on August 10, 2010. Transcontinental anesthesia was performed on 20 patients undergoing thyroid surgery in Pisa. One of the aims of teleanesthesia is to support anesthesia in remote locations wherein skilled anesthesiologists are not always present; therefore, robots could help nontrained personnel to perform anesthesia and related procedures.

The use of robots in anesthesia may someday lead to the performance of anesthesia by an anesthesiologist at geographical distance from the patient. Decision support systems and teleanesthesia can significantly improve the quality of care and clinical practice. Additional studies are needed to further test the safety of robots and to develop more refined systems of control and monitoring in order to integrate all components of the management of anaesthesia, augmenting their reliability and overcoming the possible limitations related to their use.

The use of robots in medicine has increased during the last decades, and robotic anesthesia is a reality. Robots can improve performance in anesthesia and healthcare. Closed-loop systems are the basis for pharmacological robots. Safe anesthetic care might be delivered through teleanesthesia whenever qualified personnel are not available or need support. To my personnel opinion after developing the vision and monitorizing technologies, robotic anesthesia is not a dream anymore it's the future of anesthesia.

**May 18, 2017, Thursday**

---

**16:00-17:15 Panel X****Anesthesia for Minimal invasive surgery (laparoscopic/robotic)****Asuman Uysalel (Turkey)  
Alma Jahic (B&H)  
Tülin Gümüş (Turkey)**

---

Effects of pneumoperitoneum on organ perfusion

Merlina Kalajdjija Cero (B&amp;H)

**Anesthetic concern with robotic surgery****Nurdan Bedirli (Turkey)**Robotic anesthesia: dream or future?  
Hemodynamic and pulmonary  
Effects of PositioningZerrin Özköse Şatırlar (Turkey)  
Adnan Bayram (Turkey)

---

## **ANESTHETIC CONCERN WITH ROBOTIC SURGERY**

*Dr. Nurdan Bedirli**Gazi University Medical Faculty, Ankara, Turkey*

The robotic approach has become a standard of care for many abdominal surgical procedures in adults. In most cases, general anesthesia is preferred for robotic surgery. For procedures performed in Trendelenburg position, general anesthesia with endotracheal intubation allows optimal ventilatory control and support. As for any anesthetic, standard American Society of Anesthesiologists (ASA) monitors (eg, blood pressure [BP], electrocardiography, oxygen saturation, capnography, and temperature) are applied prior to robotic surgery. Further monitoring (eg, continuous intraarterial pressure) should be added as required by the patient's medical condition, the expected blood loss, and the duration of surgery. Many robotic procedures are performed with the patient's arms tucked at the sides, limiting access for blood sampling, placement of an arterial catheter, or additional venous access during the procedure. A variety of medications and techniques can be used for induction of anesthesia and are chosen based on patient factors.

Robotic surgery is often performed in extreme head-up (ie, reverse Trendelenburg) (eg, for cholecystectomy or gastric surgery) or head-down (ie, Trendelenburg) (eg, pelvic surgery) positions to allow the intraabdominal organs to fall away from the surgical field. Positioning devices are often used to avoid having the patient slide on the operating table with steep Trendelenburg or reverse Trendelenburg positioning. A foot support attached to the end of the operating table is used for laparoscopic cholecystectomy and other procedures that require reverse Trendelenburg positioning. For robotic surgery, once the robotic device is docked with the arms connected to the instruments, the position of the operating table **must not** be changed. With instruments in fixed position, patient movement can result in injury to the abdominal wall and intraabdominal structures. During robotic procedures, deep neuromuscular block should be maintained as long as the robotic device is docked with intraabdominal instruments attached. In this setting, any degree of unexpected patient movement can result in injury. The dynamic changes in pulmonary function during laparoscopy require intraoperative adjustment of mechanical ventilation.

Perioperative fluid therapy is one of the major factors known to influence postoperative outcomes after abdominal surgery and robotic approach is not exceptional. Restrictive fluid therapy with avoidance of fluid excess improves outcome after major robotic gastrointestinal surgery, with avoidance of bowel edema and interstitial fluid accumulation. Pain after robotic surgical procedures may originate both somatic (ie, from port-site incisions) and visceral (ie, from peritoneal stretch and manipulation of abdominal tissues). The degree of pain after robotic surgery is usually low to moderate and is less than the corresponding open procedure, but the degree of pain depends on the specific surgery.

Complications during robotic surgery include those related to the physiologic effects of the laparoscopic approach (eg, hemodynamic compromise, respiratory decompensation), surgical maneuvers (eg, access-related injury; vascular, solid-organ, or bowel injury; carbon dioxide [CO<sub>2</sub>] spread to subcutaneous and intrathoracic spaces; gas embolism), and patient positioning. Hypotension, hypertension, and arrhythmias can occur during robotic surgery as a result of the physiologic effects of the technique. Pulmonary complications during laparoscopy, including hypercarbia and hypoxemia, can relate to the physiologic effects of the technique (eg, altered respiratory mechanics, CO<sub>2</sub> absorption, ventilation perfusion mismatch) or surgical injury (eg, diaphragm or lung injury).

Subcutaneous emphysema can occur during robotic surgery when CO<sub>2</sub> is insufflated into subcutaneous tissues. This can occur during intraperitoneal insufflation with an improperly placed Veress needle or trocar, during extraperitoneal laparoscopy (eg, renal surgery), or during upper abdominal laparoscopy. In rare cases, gas can track into the thorax and mediastinum, thereby resulting in capnothorax, capnomediastinum, and capnopericardium. Venous gas embolism is extremely common during robotic surgery though clinically significant emboli are rare. Studies using transesophageal echocardiography (TEE) during laparoscopic surgery have reported an incidence of subclinical gas embolism between 17 and 100 percent. Complications of surgical instrumentation can occur during abdominal access or during the surgical procedure. The complications of most concern to the anesthesiologist include vascular and abdominal organ injury, both of which can result in significant hemorrhage. Conjunctival, nasal, and laryngopharyngeal edema caused by prolonged steep Trendelenburg positioning is another important problem in robotic surgery and may result in increased upper airway resistance and, rarely, postextubation laryngospasm and airway obstruction.

Robotic surgery is now well established and likely play an increasingly large role in the future of surgical practice. The technology of robotic assistance has overcome the limitations of conventional laparoscopy, thus securing its utility in microsurgical procedures. These advantages include improved surgical precision, better visualization, and more intuitive/ergonomic instrument control thus leading to faster surgical learning curves for surgeons. Anesthesiologists must be aware of these changes and adjust their practice in order to provide safe patient care.

May 19, 2017 Friday

08:30-09:30 Panel XI

ERAS	Ülkü Aypar (Turkey) Ermina Mujicic (B&H)
ERAS protocol for abdominal surgery	Mustafa Aksoy (Turkey)
<b>The influence of different modalities of postoperative analgesia on bowel motility and enhanced recovery after abdominal surgery</b>	<b>Marija Soljakova (Macedonia)</b>
Future perspectives of ERAS	Dilek Kazancı (Turkey)

## **THE INFLUENCE OF DIFFERENT MODALITIES OF POSTOPERATIVE ANALGESIA ON BOWEL MOTILITY AND ENHANCED RECOVERY AFTER ABDOMINAL SURGERY**

*Marija Sholjakova, Durnev V., Trajkova R., Eftimova B., Temenugova I.  
Medical Faculty, UKIM, Skopje. R. of Macedonia*

### **Abstract**

**Objectives:** The goal of this review is to discuss all the modalities of postoperative analgesia after abdominal surgery that can enhance the postoperative recovery.

**Introduction:** The postoperative period after abdominal surgery is specific, because of the presence of severe pain and impaired motility of the bowels (postoperative ileus -POI). The efficient postoperative pain relief is an important element responsible for reduced postoperative recovery.

**Method:** Main method was selection of data concerning the enhanced recovery after surgery (ERAS), using the internet access to the literature across (by) the Pub Med and Cochrane database.

**Results:** More than 50 articles and 3 doctoral thesis concerning the postoperative analgesia and ERAS were consulted.

**Discussion:** The enhanced recovery after surgery (ERAS) is a multimodal approach with the aim to preserve the normal physiological processes (short preoperative starving, early mobilization, early feeding), and to reduce the morbidity enhancing the rate of recovery after surgery. Such approach shortens the postoperative length of stay in the hospital and increases the postoperative satisfaction of the patients.

The standard postoperative analgesia compromises the use of opioids with different mode of action and the ways of administration (PO, IM, IV, via PCA or epidural). All those strategies affect the bowl movement.

The modalities of analgesia proposed on ERAS protocols are supported to pre-emptive analgesic regimes, with the use of NSAIDs, epidurals, NMDA antagonists and other pharmacological agencies that have positive effects on bowel movement.

**Conclusion:** The standard analgesic regimes easily provoke POI and enlarge the time of hospitalization. The use of different analgesic modalities as pre-emptive analgesia and "Opioid sparing techniques" with minimal impairment of GI function, ensure a rapid postoperative recovery after abdominal surgery.

**Key words:** Abdominal surgery, ERAS, postoperative pain relief

## Introduction

The goal towards faster and easier recovery after abdominal surgery prompted a variety of studies on preoperative, perioperative, and postoperative anesthetic management. The postoperative period after abdominal surgery is specific, because, besides the existence of pain, it is burdened by the impaired motility of the bowels, known as postoperative ileus (POI). Enhanced recovery after abdominal surgery (ERAS), a protocol, first proposed by Kehlet et al. in 1994 in the medical literature as “Fast track surgery” and later modified to ERAS, is devoted to this problem [1,2,3]. Today ERAS is a multimodal approach to the abdominal surgery with the aim to decrease variability in practice, reduce morbidity, enhance rate of recovery, shorten the postoperative length of stay and increase the postoperative satisfaction of the patients [4].

The existence of the postoperative pain is an important element responsible for postponed postoperative recovery [5]. The effects of the pain on the body are numerous. Surgery is a potent stressor that threatens homeostasis by the activation of the endocrine, metabolic and inflammatory responses whose consequences are severe catabolic disorders that further lead to organ dysfunction [6]. These facts demonstrate the importance of postoperative pain relief.

The pallet of analgesics suitable for postoperative pain relief has widened. It is extended from NSAIDs' to morphine and its' compounds having different mode of action, way of administration and side effects as well. To provide an ideal analgesic is very difficult. They differ from the intensity of the analgesic effect to the side effects. Opioids produce a strong analgesia but at the same time a dose-dependent drowsiness, respiratory depression, pruritus, urinary retention, constipation, vomiting, emesis and regurgitation. Those side effects make them sometimes inconvenient and are the reasons for some postoperative complications (atelectasis, pneumonitis, deep vein thrombosis, POI and so on) [7]. NSAIDs and its likely compounds, besides its analgesic effects, cause gastrointestinal bleedings, liver and kidney damages, which stipulated that they must be used with precautions. All types of anesthesia have an effect on bowel motility. Atropine, halothane, and enflurane, all of them decrease the gastric emptying, producing postoperative nausea and vomiting, and delayed absorption of medications [8].

Today the postoperative analgesic regimes are focused on preemptive analgesia that comprehends early analgesic treatment (pre- and per-operative together with the anesthetic management). That means, that the use of the modalities as an opioid-sparing anesthesia and analgesia, epidural anesthesia and analgesia, and the use of peripherally acting  $\mu$ -opioid receptor (PAM-OR) antagonists, are the methods of pain relief that affect less the bowel motility. The result of such an approach is the reduction of the gastrointestinal recovery and the duration of the stay in hospital [3].

## Material and methods

This is an academic review written with the aim to analyze and evaluate the effects of different modalities of analgesia on the bowl motility. The method of this study was to consult the contemporary literature concerning this problem from MEDLINE, EMBASE and Cochrane Library Databases and Cobiss as well. The relevant Data, connected to postoperative analgesia and postoperative motility were selected, analyzed and prepared for discussion.

## Discussion

Pain produced from the operative wound is an unpleasant experience that disturbs patients' comfort in the postoperative period. It persists constantly, and is very severe in the

immediate postoperative period with the intention to weaken after three days. The pain sensation is not equal for all patients because a biological variability among individual patients persists [10]. The choice of a right regime for postoperative pain relief depends on the patient's characteristics (cultural, sensitivity to pain and genetic predisposition to efficacy of the drugs) [11]

It is clear that morphine and other opioids attack the digestive system causing constipation, stomach distension, nausea and vomiting. They have an inhibitory effect on bowel motility, specially morphine sulfate who has biphasic effect (first stimulation and second atony). Morphine increases the tone and amplitude of no propulsive contractions and decreases propulsive waves in the colon which causes to further decrease colonic motility [12]. The optimization of the per-operative pain management with reduced use of opioids was a major goal of the ERAS program. That is the reason why in the ERAS protocols, NAIDs, cyclooxygenase-2 (COX-2) inhibitors, and acetaminophen took the prime. ERAS' protocol concerning postoperative analgesia starts in preoperative period; it lasts during anesthesia (anesthetic management) and its peak is in the postoperative period [13, 14].

**Preoperative assessment** is the first contact between the patient and the anesthesiologist when the patient is informed about the anesthetic and surgical procedure and the intention of ERAS approach. Education of the patient is one of the main components of this approach. The preparation of Handouts is necessary where the use of the most modern anesthesia methods and effective pain treatment in the procedure are explained [15, 16].

The use of **Pre-emptive analgesia**, regional anesthetic and analgesics methods and the variety of Opioid sparing techniques are the most convenient methods that can reduce the recovery period after abdominal surgery. Feildheiser and all (2015) published in "The consensus part 2" concerning ERAS, about the use of long-acting sedatives and opioids in the preoperative period which can extend the postoperative bowel movement and are the risk factors for development of POI[16, 17].

Pre-emptive analgesia involves the introduction of an analgesic before the onset of noxious stimuli. According to these findings, NSAIDs became the main drugs used preoperatively for preemptive analgesia (diclofenac) or Pre-emptive analgesia with neuraxial or regional blocks may prevent the intensity and frequency of postoperative wound pain [18-22].

**Intraoperative ERAS component** of anesthesia and postoperative pain are intended to avoid postoperative nausea and vomiting, to avoid too deep anesthesia and to avoid postoperative residual neuro-muscular blockade. On the other side, abdominal surgery is very stressful, burdened with an increase in circulating concentrations of stress hormones and various mediators e.g. cytokines [23]. The interest for modification of this stress response is increasing with respect to the potential beneficial effects on surgical outcome [24]. That's why in the choice of a standard anesthetic regime for abdominal surgery, several factors as their effects on the GI tract and GI recovery should be considered. The use of epidural anesthesia (insertion, location of the epidural), selection of inhaled anesthesia agents, use of neuromuscular reversal agents, must be done carefully. The mode of action of the neuraxial and regional blocks is to block the sympathetic response and to decrease the pain after surgery.

It was proven that the positive effect of an **epidural analgesia** may only be evident when administered in the thoracic region. In general, thoracic epidural analgesia is associated with improved GI recovery compared with lumbar or systemic analgesia [24 -27]. Its analgesic effects in the postoperative period make them the leading components of opioid-sparing analgesia.



### The recommendations of the ERAS protocol for postoperative period

Most of the studies concerning the experiences with the ERAS protocol agree that the insertion and the use of epidural analgesia is one of the beneficial components in pre, intra and postoperatively [28]. There is a consensus that the following postoperative analgesic modalities improve the recovery after abdominal surgery focused on POI, vomits and nausea:

- 1) Opioid-free preemptive thoracic epidural analgesia,
- 2) Opioid-sparing strategies (oral high dose acetaminophen and NSAIDs) and
- 3) The use of opioid antagonists

**Opioid-free preemptive thoracic epidural analgesia** has been discussed previously. Liu SS with its team in 1995 have compared 4 studies about the epidural bupivacaine with epidural opioid, and 3 of these studies demonstrated a significant reduction in the duration of postoperative ileus in the epidural bupivacaine group compared with the epidural opioid group [25, 29].

In a new study conducted by Sarin A and all in 2016 were the efficacy of analgesics and regional techniques in pre-ERAS and ERAS protocols were compared. It was shown that in ERAS protocol patients received preoperative non-opioid analgesics (acetaminophen, diclofenac, gabapentin) as well as scopolamine. The percentage of patients receiving epidurals and transversus abdominis plane (TAP) blocks also increased significantly. The rates of ketamine infusion and ondansetron dosing intraoperatively did not differ significantly between the pre-ERAS and ERAS groups but the use of intraoperative dexamethasone was higher in the ERAS group [14].

It can be concluded that among the other regional analgesic regimes, the use of TAP block as an "opioid spare method" took its place in ERAS protocols. Gildasio S. de Oliveira Jr. et al analyzed ten randomized clinical trials to evaluate the effects of **TAP block** on postoperative pain outcomes in laparoscopic surgery. They did not find a significant effect of TAP block compared with control groups, but the amount of postoperative opioid consumption (up to 24 hours) was significantly reduced. Separately Vlasceanu LG in (2015) and Kartalov (2015) in two deferent trials concluded that TAP is a new technique that improves analgesia and may be an effective tool of multimodal postoperative analgesia after abdominal surgery. Lots of clinical trials have demonstrated its superiority over standard protocols regarding postoperative pain control. TAP block reduces significantly the consumption of opioid in the first 24-h and increases patient's satisfaction after abdominal surgery [29- 31].

That was documented by several trials and it was concluded that the regional techniques used as pre-emptive therapy, before the pain appeared, lead to decreased need of opioids for postoperative analgesia [21]. This was the reason for general agreement that the use of epidural analgesia and other "*Opioid sparing technique*" for postoperative analgesia will improve the bowel motility.

#### **Opioid sparing techniques**

The key of this technique is in the conjunct effects between opioids and other adjuncts that can increase the analgesic effect. The major goals of the ERAS program were to optimize the perioperative pain management with reduction of opioids use.

### **Conjunction opioids & NSAIDS**

The strategy of this approach is to reduce the patient exposure to opioids. The use of non-steroid anti-inflammatory drugs (NSAIDs), cyclooxygenase-2 (COX-2) inhibitors and acetaminophen administered in conjunction with morphine after surgery have the ability to ameliorate the negative effects of opioids. The administration of COX-2 inhibitors blocks the prostaglandin negative effect to bowel motility. In a meta-analysis of 52 randomized placebo-controlled trials, it was found a reduction in morphine consumption from 15% to 55% compared with morphine alone. Moreover, NSAIDs administered in conjunction with morphine reduced the incidence of nausea and vomiting from 28.8% to 22.0% compared with morphine alone [32]. Nonsteroidal anti-inflammatory drug therapy may improve postoperative ileus by allowing the clinician to reduce the amount of opioid given by 20% to 30% [33].

### **Conjunction opioids & N-methyl D-aspartate (NMDA) receptor antagonist**

**Ketamine** is acting as an N-methyl D-aspartate (NMDA) receptor antagonist. Inflammatory response to operative trauma is associated with the release of a number of cytokines and acute-phase proteins. It is known that NMDA plays a pivot role in pain transmission. Ketamin binds to these receptors with a nonselective antagonism, reducing wound hyperalgesia. Besides other effects, it blocks sodium channels in peripheral and central nervous system and interacts with  $\mu$ ,  $\delta$  and  $\kappa$  opioid receptors. Preemptive low dose ketamine (0.25 mg/kg) is able to produce adequate postoperative analgesia and to increase the analgesic effect of tramadol in digestive surgery [40]. Its use decreases the level of the total amount of the used opioids for postoperative pain release and can attenuate the secretion of the proinflammatory cytokine IL-6 during the first postoperative day. Indirectly, the conjunction of ketamin & opioid contribute to early postoperative recover after abdominal surgery [34].

**Magnesium sulfate** is natural antagonist of N- methyl-D-aspartate (NMDA) receptors. As NMDA antagonist, magnesium sulfate may play a role in prevention of pain. Magnesium depresses CNS, blocks peripheral neuromuscular transmission, produces anticonvulsant effects, decreases amount of acetylcholine released at end - plate by motor nerve impulse. Magnesium also stabilizes excitable membranes. In a study, patients who received 20 mg/kg magnesium sulfate after the anesthesia induction, prior to surgical incision were compared with control group. It was found that there was less postoperative pain and analgesics consumption in treated group compared to control group. Magnesium treated patients had lower postoperative pain at rest according to VAS score in the first postoperative hour, and during the first postoperative 48 hours ( $p < 0.05$ ), and consumed fewer analgesics (tramadol) during the first 48 hours ( $p < 0.05$ ). Also, the patients reported that they experienced less discomfort during the first and the second postoperative day without changes in sleeping pattern compared to preoperative sleeping pattern, while the control group showed increase in insomnia during the first and the second postoperative night, compared to preoperatively [35].

### **Conjunction opioids & lignocaine infusion**

Lidocaine as a local anesthetic has several properties, as an analgesic and as a stabilizer of the cell membrane. It was shown that a continuous infusion of lidocaine during the surgery augments the level of postoperative analgesia and can reduce the need for opioids. With the aim to investigate the efficacy of lidocaine in multi-modal opioid-sparing strategies, several studies were conducted. According the meta-analysis review in Cochrane databases it was found: 1. Evidence of effect for intravenous lidocaine on the reduction of postoperative pain;

2. Evidence for the reduction of the gastrointestinal recovery (the time to first flatus) 3. Evidence of positive effects on the length of hospital stay, postoperative nausea, intraoperative and postoperative opioid requirements [36, 37].

**Gabapentin**, a calcium channel modulator, was shown that used 1,200 mg by mouth, 1 hour before surgery can reduce the amount of consumed opioid [38, 39].

#### **Other pharmacological agents**

There are some off labeled data about the use of the alpha-2 agonist **dexmedetomidine** in postoperative pain relief. It is shown that as a single loading dose or a continuous infusion perioperatively, it can reduce the need for opioids [40, 41].

**Tapentadol** is a centrally acting synthetic opioid analgesic for moderate to severe acute pain. The analgesic effect of tapentadol depends to mu-opioid agonist activity and inhibition of norepinephrine reuptake. The affinity of tapentadol to mu-opioid receptors is very low and only 2 to 3 times less potent in producing analgesia. It is reported that its opioid-sparing analgesic effect is potentially beneficial for multimodal regimes [42, 43, 44].

**Alvimopan** is a selective peripherally acting mu-opioid receptor (PAM-OR) antagonist. It is suitable to be used with preemptive opioid analgesics without GI adverse effect. It was approved by the FDA in 2008 and its main affect is the management of POI [45-48].

**Ghrelin and serotonin** receptor agonists should increase transit time in the GI tract by enhancing prokinetic signaling. There is still no evidence of its benefits [49, 50].

Administration of pharmacologic agents initiated in the perioperative period and continued through the postoperative period (e.g., epidural analgesia, PAM-OR antagonists, NSAIDS, and gabapentin) may contribute to faster GI recovery in the postoperative period [33].

#### **Conclusion**

Postoperative pain relief is an important factor for enhanced postoperative recovery. The multimodal techniques compromised joint work of several different teams with the aim to increase the quality of postoperative care. The specificity of the postoperative pathway after abdominal surgery, orders the use of pre-emptive analgesia where the use of regional techniques is crucial. The standard analgesic regimes easily provoke POI that lengthens the hospitalization [51-58]. The use of different analgesic modalities as “**Opioid sparing techniques**” with minimal impairment of GI function, ensures that the patients have rapid postoperative recovery, and early return to their normal lifestyle. The concept of a multimodal postoperative rehabilitation program in which pain relief is a key factor is a major task for the future. The pain management strategy in multimodal protocols is with the use of epidural analgesia, ketamine, acetaminophen, gabapentin and COX-inhibitors.

#### **References:**

1. Kehlet H, Holte K: Effect of postoperative analgesia on surgical outcome; Br J Anaesth 2001; 87 (1): 62-72.
2. Kehlet H: Multimodal approach to control postoperative pathophysiology and rehabilitation. Br J Anaesth 1997;78:606–617
3. Hoffmann H, Kettelhack Ch: Fast-Track Surgery – Conditions and Challenges in Postsurgical Treatment: A Review of Elements of Translational Research in Enhanced Recovery after Surgery; Eur Surg Res 2012; 49:24–34, DOI: 10.1159/000339859
4. Delaney CP, Kehlet H, Senagore A, et al. Postoperative ileus: profiles, risk factors and definitions – a framework for optimizing surgical outcomes in patients undergoing major abdominal and colorectal surgery. Clinical Consensus Update in General Surgery. May. 2006; 1:2006.

5. Desborough JP: The stress response to trauma and surgery; *Br J Anaesth* 2000, 85 (1): 109-117. doi: 10.1093/bja/85.1.109
6. Kehlet H.: The endocrine-metabolic response to postoperative pain. *Acta Anaesthesiol Scand Suppl* 1982; 74:173-175.
7. Gust R, Pecher S, Gust A, Hoffmann V, Bohrer H, Martin E. Effect of patient-controlled analgesia on pulmonary complications after coronary artery bypass grafting. *Crit Care Med* 1999; 27: 2218–23
8. Chan VW, Chung F, McQuestion M, Gomez M. Impact of patient-controlled analgesia on required nursing time and duration of postoperative recovery. *Reg Anesth* 1995; 20 :506–14
9. Bohn L, Raehal K. Opioid receptor signaling: relevance for gastrointestinal therapy. *Curr Opin Pharmacol.* 2006;6:559–63.
10. Peeters M., Brugmans J.; Postoperative pain relief by demand analgesia. *Acta Anaesthesiol Belg* 1980,31 (Suppl) :233-237.
11. Vanja Dzambazovska-Trajkovska, Jordan Nojkov, Andrijan Kartalov, Biljana Kuzmanovska, Tatjana Spiroska, Redzep Seljmani, Gjorgji Trajkovski, Nadica Matevska-Geshkovska, Aleksandar Dimovski; Association of single-nucleotide polymorphism C3435T in the ABCB1 gene with opioid sensitivity in treatment of postoperative pain, *Contributions. Sec. of Med. Sci.* 2016, XXXVII (2–3) :73-80
12. Reisine T, Pasternak G: Opioid analgesics and antagonists. Hardman JG, Limbird LE, eds. *Goodman & Gilman's The Pharmacological Basis of Therapeutics* 9th ed. New York, NY McGraw-Hill Co 1996.
13. Joshi GP, Bonnet F, Kehlet H: *Evidence-based postoperative pain management after laparoscopic colorectal surgery. Colorectal Dis* 2013; 15:146–55.
14. Sarin A, Litonius E.S., Naidu R., Yost C.S., Varma M.G., Chen L.; Successful implementation of an Enhanced Recovery After Surgery program shortens length of stay and improves postoperative pain, and bowel and bladder function after colorectal surgery; *BMC Anesthesiology* BMC 2016, 16:55 doi: 10.1186/s12871-016-0223-0
15. Lassen K, Soop M, Nygren J, Cox PBW, Hendry PO, Spies C: Consensus review of optimal perioperative care in colorectal surgery: Enhanced Recovery After Surgery (ERAS) Group recommendations. *Arch Surg* 2009; 144:961–969.
16. Delaney C, Haber GP: Reducing Postoperative Ileus: A Rational Approach to Improving Outcomes, CME activity 2017, <http://www.medscape.org/view article/872873>
17. Feilldheiser A., Aziz O., Baldini G., et al: Enhanced Recovery After Surgery (ERAS) for gastrointestinal surgery, part 2: consensus statement for anesthesia practice, *Acta Anaesthesiologica Scand*, 2016; 60(4):288-334
18. Hasani A, Sholjakova M., Ustalar-Ozgen SZ.:The management of postoperative pain in children with caudal blocks, *South Afr J Anaesth Analg* 2011;17(6):376-379
19. Hasani A.,Sholjakova M., Jakupaj MH., Ustalar-Ozgen SZ.:Preemptive analgesic effects of midazolam and diclofenac in rat model, *Bosn J Basic Med Sci* 2011; 11(2):113-8
20. Hasani A.,Šholjakova M., Jakupi MH., Ustalar-Ozgen SZ.:Preemptive analgesic effects of diclofenac an experimental study on rats., *Middle East journal of anaesthesiology*, 2011; 21 (3): 355-60
21. Scheinin B., Asantila R., Orko R.:The effect of bupivacaine and morphine on pain and bowel function after colonic surgery, *Acta Anaesthesiologica Scandinavica*, 1987 31, ( 2): 161–164.
22. Holte K., Kehlet H.: Epidural anaesthesia and analgesia—effects on surgical stress responses and implications for postoperative nutrition, *Clinical Nutrition* 2002, 21(3) :199–206.
23. Desborough J.P.: The stress response to trauma and surgery, *Br J Anaesth* (2000) 85 (1): 109-117. doi: 10.1093/bja/85.1.109

24. Kehlet H. Modification of responses to surgery by neural blockade: clinical implications. In: Cousins MJ, Bridenbaugh, eds. *Neural Blockade in Clinical Anesthesia and Management of Pain*, 3rd Edn. Philadelphia: Lippincott-Raven, 1998; 129–71
25. Liu SS, Carpenter RL, Mackey DC, et al. Effects of perioperative analgesic technique on rate of recovery after colon surgery. *Anesthesiology*. 1995;83 :757- 765
26. Asantila R, Eklund P, Rosenberg PH: Continuous epidural infusion of bupivacaine and morphine for postoperative analgesia after hysterectomy. *Acta Anaesthesiol Scand*. 1991;35 :513- 517
27. Jorgensen H, Fomsgaard JS, Dirks J, Wetterslev J, Andreasson B, Dahl JB: Effect of epidural bupivacaine vs combined epidural bupivacaine and morphine on gastrointestinal function and pain after major gynaecological surgery. *Br J Anaesth*. 2001;87 :727- 732
28. Basse L, Madsen JL, Kehlet H: Normal gastrointestinal transit after colonic resection using epidural analgesia, enforced oral nutrition and laxative. *Br J Surg*. 2001;88:1498- 1500
29. Scheinin B, Asantila R, Orko R: The effect of bupivacaine and morphine on pain and bowel function after colonic surgery. *Acta Anaesthesiol Scand*. 1987;31 :161- 164
30. Vlasceanu LG, Constantinescu S, Valcea S, Paduraru DN, Vartic M, Beuran M; TAP block – a new trend in postoperative analgesia after major abdominal surgery? *Proc. Rom. Acad., Series B*, 2015, Supp 1, :254- 257
31. Kartalov A et al: Effect of Adding Dexamethasone as a Ropivacaine Adjuvant in Ultrasound-Guided Transversus Abdominis Plane Block for Inguinal Hernia Repair, *Contributions. Sec. of Med. Sci*. 2015, XXXVI (3):35-41 DOI: 10.1515/prilozi-2015-0076
32. Leslie JB, Viscusi ER, Pergolizzi JR, Panchal SJ: Anesthetic Routines: The Anesthesiologist's Role in GI Recovery and Postoperative Ileus, *Advances in Preventive Medicine*, Volume 2011 (2011), Article ID 976904, 10 pages ; doi.org/10.4061/2011/976904
33. Elia N., Lysakowski C., and Tramèr M. R.; Does multimodal analgesia with acetaminophen, non-steroidal anti inflammatory drugs, or selective cyclooxygenase-2 inhibitors and patient-controlled analgesia morphine offer advantages over morphine alone? *Meta-analyses of randomized trials, Anesthesiology* 2005, 103 (6): 1296–1304.
34. Kartalov A.: The impact of sub anesthetic doses of ketamin on postoperative analgesia and plasma levels of proinflammatory cytokines (TNF  $\alpha$ , IL 1 $\beta$ , IL6) in patients with chronic gold bladder, *Doctoral Thesis UKIM Medical faculty*, 2012
35. Kuzmanovska B et al.: Single dose of magnesium sulfate as an adjuvant to general anesthesia improves pain controll, discomfort and quality of sleep postoperatively, *Makedon Medi Preg. Revue médicale macedonienne* · November 2016, ISSN 0025-1097
36. Grady Ph., Clark N., Lenahan j., Oudekerk C., Hawkins R, Nezat G., Pellegrini JE,: Effect of Intraoperative Intravenous Lidocaine on Postoperative Pain and Return of Bowel Function After Laparoscopic Abdominal Gynecologic Procedures, *AANA Journal* 2012 ; 80(4) :282-288
37. Kranke P, Jokinen J, Pace N, Schnabel A, Hollmann MW, Hahnenkamp K, Eberhart LHJ, Poepping DM, Weibel S: Intravenous infusion of lidocaine starting at the time of surgery for reduction of pain and improvement of recovery after surgery; [www.cochrane.org/CD009642/ANAESTH](http://www.cochrane.org/CD009642/ANAESTH); Published 17 July 2015
38. Dierking G., Duedahl T. H., Rasmussen M. L. et al.; Effects of gabapentin on postoperative morphine consumption and pain after abdominal hysterectomy: a randomized, double-blind trial, *Acta Anaesthesiologica Scandinavica* 2004, 48 (3), : 322–327.
39. Turan A, Karamanlioğlu B, Memiş D, Usar P, Pamukçu Z, and Türe M; The analgesic effects of gabapentin after total abdominal hysterectomy, *Anesthesia and Analgesia* 2004, 98(5), :1370–1373.
40. Luckey, A, Livingston E, Taché Y; Mechanisms and Treatment of Postoperative Ileus, *Arch Surg*. 2003; 138(2) :206-214. doi:10.1001/archsurg.138.2.206

41. Holzer P, Lippe IT: Inhibition of gastrointestinal transit due to surgical trauma or peritoneal irritation is reduced in capsaicin-treated rats. *Gastroenterology*. 1986;91:360- 363
42. Daniels S., Casson E., Stegmann J. U.,: A randomized, double-blind, placebo-controlled phase 3 study of the relative efficacy and tolerability of tapentadol IR and oxycodone IR for acute pain, *Current Medical Research and Opinion* 2009, 25 (6) : 1551–1561
43. Nucynta® (Tapentadol) Prescribing Information, Pricara, Division of Ortho-McNeil-Janssen Pharmaceuticals, Inc., Raritan, NJ, USA, 2010
44. Kurz A. , Sessler D. I.: Opioid-induced bowel dysfunction: pathophysiology and potential new therapies, *Drugs* 2003, 63( 7) :649–671.
45. Clinical Guidelines of Children’s hospital in Melbourne, Post-operative bowel management; [www.rch.org.au/clinicalguideline/constipation](http://www.rch.org.au/clinicalguideline/constipation)
46. Taguchi A, Sharma N, Saleem RM, et al. Selective postoperative inhibition of gastrointestinal opioid receptors. *N Engl J Med*. 2001; 345:935–40.
47. Goodman AJ, Le Bourdonnec B, Dolle RE. Mu opioid receptor antagonists: recent developments. *Chem Med Chem*. 2007; 11:1552–70.
48. Marderstein E., Delaney CP. Management of postoperative ileus: focus on alvimopan. *Ther Clin Risk Manag*. 2008, 4(5): 965–973.
49. Holzer P.: Opioids and opioid receptors in the enteric nervous system: from a problem in opioid analgesia to a possible new prokinetic therapy in humans, *Neuroscience Letters* 2004, 361 ( 1–3) : 192–195.
50. Shigemi D, Nakanishi K, Miyazaki M, Shibata Y, Suzuki Sh: The Effect of the Gelatinous Lactulose for Postoperative Bowel Movement in the Patients Undergoing Cesarean Section, *International Scholarly Research Notices*, 2014 (2014), ID 752862, [doi.org/10.1155/2014/752862](https://doi.org/10.1155/2014/752862)
51. Peeters M, Brugmans J, Postoperative pain relief by demand analgesia. *Acta Anaesthesiol Belg*. 1980; 31 (Suppl) :233-237.
52. Yeager MP, Glass DD, Neff RK, Brinck-Johnsen T. Epidural anesthesia and analgesia in high-risk surgical patients. *Anesthesiology* 1987; 66: 729–36
53. Egbert AM, Parks LH, Short LM, Burnett ML. Randomized trial of postoperative patient-controlled analgesia vs intramuscular narcotics in frail elderly men. *Arch Intern Med* 1990; 150 : 1897–903
54. Kenady DE, Wilson JF, Schwartz RW, Bannon CL, Wermeling D. A randomized comparison of patient-controlled versus standard analgesic requirements in patients undergoing cholecystectomy. *Surg Gynecol Obstet* 1992; 174: 216–20
55. Boulanger A, Choiniere M, Roy D, Boure B, Chartrand D, Choquette R, Rousseau P. Comparison between patient-controlled analgesia and intramuscular meperidine after thoracotomy. *Can J Anaesth* 1993; 40 :409 –15
56. Colwell CW Jr, Morris BA. Patient-controlled analgesia compared with intramuscular injection of analgesics for the management of pain after an orthopaedic procedure. *J Bone Joint Surg Am Vol* 1995 ; 77: 726–33
57. Nitschke LF, Schlosser CT, Berg RL, Selthafner JV, Wengert TJ, AVECILLA CS. Does patient-controlled analgesia achieve better control of pain and fewer adverse effects than intramuscular analgesia? A prospective randomized trial. *Arch Surg* 1996; 131: 417–23
58. Rodgers A, Walker N, Schug S, *et al*. Reduction of postoperative mortality and morbidity with epidural or spinal anaesthesia. Results from overview of randomised trials. *Br Med J* 2000; 321: 1493–7

---

**May 19, 2017 Friday**

**08:30-09:30 Panel XI**

**ERAS**

**Ülkü Aypar (Turkey)**

**Ermina Mujicic (B&H)**

ERAS protocol for abdominal surgery  
The influence of different modalities  
of postoperative analgesia on bowel  
motility and enhanced recovery after  
abdominal surgery

Mustafa Aksoy (Turkey)

Marija Soljakova (Macedonia)

**Future perspectives of ERAS**

**Dilek Kazancı (Turkey)**

## **FUTURE PERSPECTIVES OF ERAS**

*Ass. Prof. Dilek Kazancı M.D*

*Turkey Advanced Speciality Education and Research Hospital, Anesthesiology and Reanimation Clinic, Ankara, 2017. bu nasıl yazılacaktı???*

ERAS approach (Enhanced Recovery After Surgery) is a multimodal, perioperative care pathway designed to achieve early recovery after surgery (erassociety.org) (1). This multidisciplinary approach was being designed after 1990 'ies. Pioneers of ERAS were Prof. Henrik Kehlet and his co-workers who was a colorectal surgeon in Hvidovre University Hospital from Denmark. They developed a multidisciplinary pathway which combines and supports all perioperative time periods with an algorithmic and patient-saving model to allow patient going home as soon as possible with no pain and no risk related to surgical procedure (2).

Major surgery can readily bring a physiological stress response. This response can induce organ dysfunction, some disturbances in neurological and hormonal system. Enhanced recovery programmes are mainly concerned to improve outcomes after major surgery through protocol driven optimization of postoperative analgesia (thoracic epidural), early mobilization, and early feeding.

Usual perioperative care principles can be ordered as prolonged fasting, bed rest, using high amount opioids and analgesics, bowel discharge before surgery . These may be unnecessary and and may cause some other physical deterioration. ERAS regimens suggests preoperative energy rich supplements till to 6 hour before operations, early mobilization after surgery , pain control in a opioid-spare policy and no bowel discharge .

Since Eras protocols covers preoperative, intraoperative and postoperative periods, some of ERAS items can be ordered as anesthesia/analgesia, goal-directed fluid therapy, prevention of nausea and ileus, thromboembolic prophylaxis, minimally invasive techniques, temperature monitoring, early nutrition, and early mobilization Because of evidence on the positive effects of this approach, ERAS has now extended to several types of surgeries. But the main success point is the implementation and audit the ERAS protocols. the ERAS Society (<http://www.erassociety.org>) has played an important role in helping to provide guidelines, educational meetings, and additional support. The ERAS Society promotes implementation of evidence-based perioperative care.

Regional anesthesia and pain control promotes early postoperative recovery. Prevention of surgical stress response is the main success point in ERAS regimens. This point can be

reached by several regional anesthetic techniques which prolongs from preoperative settings to discharge from the hospital .

Minimal invasive techniques in surgery has brought dramatic improvement in vital functions after major surgery and earlier return of patients to normal function. However, some of the improvements seen were actually because of changed perioperative care attitudes.

Since many innovations in surgery and anesthesia is being developed it is supposed to have many changes in philosophy of ERAS towards patient-specific approach. We aimed to focus some future perspectives of ERAS in this small discussion.

### **ERAS Successful History**

Kehlet and colleagues published a paper describing a multimodal rehabilitation program for 60 patients (average age 74, 20 patients ASA III–IV) undergoing elective open colon resection. The postoperative care program included thoracic epidural, enforced early nutrition, and mobilization, with a median 2-day hospital stay and 15 % readmissions . This was the beginning of the “fast track” concept, with significant comparative research since then investigating the approach. And then a systematic review from 2014 identified 38 randomized trials in colorectal (18 studies), genitourinary (5 studies), joint (5 studies), thoracic (3 studies), and upper GI (6 studies) surgery. The review concluded that the use of an ERAS procedure was associated with reduced hospital stay (standard mean difference 1.14 days) without an increase in readmissions. ERAS procedures were also associated with a 30 % reduction in complications at 30 days, with no increased risk of major complications or death.(3) So the benefit of ERAS programmes and protocols was validated ERAS society published many guidelines about urologic, gastric, biliary and pancreatic , colon , rectal , gynecologic , and bariatric surgery . All guidelines are intended to reduce surgical stress and complications, thus speeding up recovery and reducing hospital stay.

Enhanced Recovery Programs (ERPs) facilitate introduction of evidence-based practice, foster interdisciplinary collaboration and culture. decrease unwanted variability between practitioners. ERPs decrease hospital stay by improving care organization, supporting function, and decreasing morbidity. reduce costs and improve the value of surgical care for patients.

### **FUTURE ERAS STRATEGIES**

Future ERAS strategies should shift their concerns from the endpoints of early recovery and shortened LOS in order to place more focus on post-discharge problems. Since post-discharge problems can cause hospital readmissions , pointing of specific problems and focus on solutions must be clearly researched

To minimize surgical response to surgery, preoperative high dose glucocorticoid use seems to have powerful analgesic effect due to decreased inflammatory response but some adverse effects on wound healing and infectious complications remained unanswered. Also some other studies says that preoperative dexamethasone use can decrease PONV.

Postoperative pain seems to be the most annoying problem . Although many new developments in multi-modal opioid sparing analgesia has occurred , pain management still stayed open to research especially in surgery specific base.

Goal-directed fluid management which is one of the main cornerstones of ERAS programmes , is also needed to lighten some indications about balanced use of crystalloids and colloids.

Prolonged prophylaxis against thromboembolic events may longer LOS and can cause some hemorrhagic disturbances. The risk of thromboembolic complications may not require the conventional extended prophylaxis if early postoperative mobilization can be provided



especially after orthopedic surgery.

Postoperative delirium and late cognitive dysfunction may be seen after surgery and usually have multifactorial etiology like sleep disturbances, stress inflammatory response, increased opioid use and refractory pain. Sleep disturbances have wide diagnostic and therapeutic models.

The other problem is orthostatic intolerance after surgery and anesthesia. Some authors find this relevant with sympathovagal imbalance during mobilization, and some others think about hypovolemia in early and late postsurgical period.

Preoperative and postoperative muscle dysfunctions and rehabilitation programmes to improve this trouble remain an area for further investigations.

Few studies investigated use of ERAS procedures in emergency surgeries. Since ERAS programmes were prepared for elective procedures, potential benefit of these protocols could not be denied on patient who undergone urgent and major surgeries. Roulin et al. have studied the application of ERAS in urgent colectomy, and successfully demonstrated that many of the ERAS items can be applied for such situation, and no significant adverse effect was observed despite higher American Society of Anesthesiologists (ASA) status, Portsmouth-POSSUM (P-POSSUM) scores, and more stressful procedures in urgent patients (4).

Major cancer surgeries seem to be another large area for future invading ERAS strategies. Pre and postoperative adjuvant therapies make very harmful impacts on body functions, integrity of immune system is unintentionally spoiled. Further developments in ERAS programs are needed to increase cancer survival. Protective effects of regional anesthesia in cancer recurrence have been asserted in last years. A limiting factor in cancer outcome is *Persistent Postsurgical Pain* (PPSP), which may condition long-term opioid therapies and more difficult access to life-saving therapies (radiotherapy and chemotherapy). Innovative anesthetic regimens that rely on completely opioid-free, anti-hyperalgesic techniques (including strong neuraxial block) aimed at reducing the impact of hyperalgesia and limiting the development of central sensitization and PPSP. And finally reduction in medical morbidity in colorectal ERAS programs brings long-term survival as shown in early postoperative studies.

Perioperative blood management has a major role related to intraoperative and postoperative adverse reactions. Pre-operative anemia if remains untreated can cause increase in LOS, and hospital readmissions for transfusions.

Pain and risk free operation must be the main target after surgery which will bring undoubtedly shorter hospital stay, lower costs, and improved patient satisfaction and increment in value of surgical procedures. Basic pathophysiological mechanisms can determine postoperative morbidity and mortality so preventive strategies and more innovations about perioperative care must be provided. ERAS programs need multidisciplinary collaboration among all consultant physicians, anesthesiologist, surgeons, surgical nurses and physiotherapists and more. All clinics can prepare an optimal ERAS protocol which can be suitable for their surgical procedure. Detailed multicentre cohort studies and randomised controlled trials will be very helpful in lightening future aspects.

## Referances

- 1- <http://erassociety.org/>
- 2- Kehlet H. Multimodal approach to control postoperative pathophysiology and rehabilitation. *Br J Anaesth* 1997; 78: 606-17.
- 3- Nicholson A, Lowe MC, Parker J, Lewis SR, Alderson P, Sith AF. Systematic review and

meta-analysis of enhanced recovery programmes in surgical patients. *Br J Surg.* 2014;101(3):172–88.

4- D. Roulin, C. Blanc, M. Muradbegovic, D. Hahnloser, N. Demartines, and M. Hübner, “Enhanced recovery pathway for urgent colectomy,” *World Journal of Surgery*, vol. 38, no. 8, pp. 2153–2159, 2014.

---

**May 19, 2017 Friday**

---

**09:30-10:30 Panel XII**

**Abdominal anesthesia in pediatrics** **Onur Özlü (Turkey), Lejla Dedic (B&H)**

Pediatric and Neonatal Abdominal Saniye Ekinci (Turkey)

Procedures

**Keys in pediatric abdominal anesthesia** **Antigona Hasani (Kosovo)**

Challenges in Pediatric Laparoscopic Dilek Özcengiz (Turkey)

Surgeries

---

**10:30-11:00 Coffee Break**

---

## **KEYS IN PEDIATRIC ABDOMINAL ANESTHESIA**

*Antigona Hasani*

*Professor of Anesthesiology and Reanimation,*

*Faculty of Medicine, University of Prishtina, Prishtina, Kosovo*

Children differ from adults in several aspects. Most of time, they are healthy and do not have cardiopulmonary problems, when they undergo surgery and anesthesia for the first time. However, the children are fragile and underlying pathology may lead to rapid alteration in their conditions. Pediatric abdominal anesthesia, minor or major, is covered by large number high-risk interventions, with great importance.

The three key moments during management of pediatric abdominal anesthesia are included in this review:

1. Preoperative patient preparation – premedication and preoperative fasting.
2. Perioperative- anesthesia choice (inhalation or intravenous) and fluid management.
3. Postoperative problems–postoperative pain.

### **1. Preoperative patient preparation:**

**Premedication:** Anesthesiologists prefer the quite, calm child in the operating room. The question is whether the premedication is the only way or we could use other methods without medication?

Premedication is the application of midazolam, ketamine, clonidine and recently dexmedetomidine, for children before surgery, to reduce preoperative stress, to provide sedation and anxiolyses. There are many studies that improve the role of premedication (1-4). But, in recent years rise the concerns about the medications given for preoperative preparation.

Midazolam, the drug mostly uses for premedication, blocks explicit memory, but implicit memory remains intact and the children unconsciously remember the stressful events (venipuncture, mask induction etc.) and they are unable to call them consciously (5). This results in later behavioral problems in children, emergence delirium and continuous anticipatory anxiety. As alternative, there are many non-pharmacological methods, like cloves, smart phones and video games (6,7). We could force the copying style of children or supporting the child's copying style. Cumino et al. (8) in their recent study demonstrate the effectiveness of smartphone use in preoperatively anxious children.

In our institution, we use premedication in more than 90% children; all cases are premedicated with midazolam, which effectively reduces anxiety. We provide friendly atmosphere in operating theatre. Parenteral presence is elective. I propose child selective premedication.

**Preoperative fasting:** The children often suffered from long hours of preoperative fasting. Existing ESA guideline are usually not respected from anesthesiologists. The fasting time is prolonged from 14 hours for solids and 6.9 hours for clear fluids (9). Most of the children before surgery are very hungry (56%) or very thirsty (27%) (10). Shorter fasting times may improve patient comfort (“stop drinking on demand”). Recent data suggest that shorter pre-anesthetic fluid fasting (1 hour) may be applicable. However, we need further research and discussions.

## **2. Perioperative anesthesia:**

**Inhalation or/and intravenous anesthesia:** General anesthesia has still the leading role during abdominal surgery in children. Sevoflurane is the mostly used inhalation anesthetics. The fast induction, cardiovascular stability and rapid emergence, made this anesthetic popular and excellent for many years. Later, it is described as the epileptiform activity of sevoflurane below 6% and increased incidence of emergence delirium. In recent years, animal studies improved the increased incidence of neuronal apoptosis during the neonatal period and infancy, which may lead to long-term cognitive and behavioral deficits (11). Holzki (12) in his review article sounds that is on the side of older anesthetics, and put into question the role of sevoflurane concerning the cardiovascular stability. Cardiovascular stability of sevoflurane in comparison with halothane is described in few articles but is not supported by literature. The MAC values of sevoflurane and halothane compared in many studies show that they are not equal, and the halothane is overdosed. The use of sevoflurane needs an experienced anesthesiologist with the good knowledge about the side effects. Emergence agitation and delirium is frequently seen after sevoflurane anesthesia. The child exhibits non-purposeful restlessness and agitation, thrashing, crying or moaning, and is disorientated while awakening from anesthesia. It is very unpleasant for the patient, the family members, and the anesthesiologist. Epidemiological studies have revealed a 5.3% incidence of EA for all postoperative patients, with higher rates in children (approximately 10–50%). The reported incidence after sevoflurane anesthesia is up to 80% (13). Transition to propofol at the end of sevoflurane anesthesia reduces the incidence of EA and improves the quality of emergence (14).

Propofol is a short-acting intravenous anesthetic very popular during TIVA, widely used in pediatric anesthesia. His high blood-tissue solubility allows a rapid induction and rapid emergence. Propofol has  $\gamma$ -aminobutyric acid agonist activity and produced dose dependent central nervous system depression resulting in hypnosis and sedation. A great disadvantage of propofol for children is frequently appearing intense pain, when it is injected intravenously. Significant drops in blood pressure with propofol induction remain an important clinical problem (15). Propofol was used in high doses and often for long periods in intensive care units. Propofol infusion syndrome (PRIS) is not uncommon. Only a small number of these cases were reported in the literature (16). It was thought that only doses higher than 4 mg/kg/hr and infusion periods greater than 48 hrs caused this lethal side effect, but now there is evidence that far lower doses can be followed by PRIS (16). Propofol has postoperative analgesic effect, clinically.

The use of regional anesthesia in conjunction with general anesthesia would allow for a significant reduction in the requirements for volatile anesthetic agents and decrease the

total dose of intravenous anesthetic agents while maintaining surgical anesthesia.

**Fluid management:** The consensus-based fundamental statement of German anesthesiologist published in Pediatric Anesthesia Journal (17) is based on concepts that intraoperative infusion therapy must maintained or reestablish the child's normal physiological state (normovolemia, normal tissue perfusion, normal metabolic function, normal electrolytes, and acid–base status) and to avoid hyponatremia, hyperchloremia and lipolysis. The isotonic electrolyte balanced solutions (BS) with 1-2.5% glucose are the first choice, during intraoperative fluid replacement. BS without glucose additional use of colloids (albumin, gelatin, hydroxyethyl starch can be used in patients with circulatory instability. The simple recommendations are: avoid hypovolemia; avoid fluid overload after major surgery in patients at risk of high ADH secretion; and, hidden fluid administration such as fluids used to dilute antibiotics or analgesics, should be taken into account. Composition of fluids is a compromise between high sodium requirements, energy requirements and osmolality of the solution. Plasma sodium and glucose concentrations should be monitored. However, during abdominal surgery we must concern about heat and fluid loss from abdomen and the problems raised from this situation, like metabolic acidosis and decreased organ perfusion.

### 3. Postoperative problems - pain

Postoperative pain in children is still untreated. The Danish group study, in 316 children, aged 1month-18 years, reported none to mild pain in 72% of children, and 8.5% experienced moderate to severe pain (18). Opioids and no steroid anti-inflammatory drugs are frequently used. Single-shot caudal or lumbar epidural blockade is one of the most widespread techniques to provide intra and postoperative analgesia in pediatric patients, which is relatively easy to perform. Caudal or lumbar epidural block with catheter placement can be performed prior to surgery in combination with general anesthesia, or after surgery to be used for postoperative analgesia. ilioinguinal and iliohypogastric blocks are also used in abdominal surgery, peri or postoperatively.

**Early postoperative pain treatment - old compounds in new treatment:** Intravenous lidocaine for postoperative analgesia became popular 10 years ago. There were a few papers published about the great analgesic effect of intravenous lidocaine especially during and after abdominal surgery. Preoperatively given lidocaine in adult surgical patients seem to decrease the opioid and anesthesia requirement and postoperatively provided the effective analgesia and enhance postoperative recovery. But, after that hopeful findings, started the quite period of lidocaine, until two years ago when the attention to lidocaine is raised due to the literature review of Brazilian group of authors. They concluded: "Systemic lidocaine was able to promote great analgesia in surgical procedures. It is a low cost and very convenient alternative on perioperative pain treatment". Non-local effects of lidocaine are analgesia, anti-inflammatory and antibacterial effects, neuro- and cardio-protective effects. Some of the beneficial effects related to the continuous application by peripheral or epidural catheters may be caused by the systemic uptake. The optimal dose and duration of application is unknown. The global experience is still limited (19).

This way, lidocaine has other effects than blocking sodium channels. Clinical and experimental evidence have shown that their non-anesthetic effects are significant and have opened fascinating research fields.

### References

1. Fortier MA, Martin SR, Chorney JM, et al. Preoperative anxiety in adolescents & undergoing surgery: a pilot study. *Pediatr Anesth* 2011; 21:969 – 973.
2. Kain ZN, Mayes LC, Bell C, et al. Premedication in the United States: a status report. *Anesth*

- Analg 1997; 84:427–432.
3. Kain Z, Hofstadter M, Mayes L, et al. Midazolam: effects on amnesia and anxiety in children. *Anesthesiology* 2000; 93:676 – 684
  4. Strom S. Preoperative evaluation, premedication, and induction of anesthesia in infants and children. *Current Opinion in Anaesthesiology* 2012 25(3): 321–325.
  5. Arndt J, Passannante A, Hirshman E. The effect of midazolam on implicit and explicit memory in category exemplar production and category cued recall. *Memory* 2004; 12:158-73.
  6. Yip P, Middleton P, Cyna AM, et al. Nonpharmacological interventions for assisting the induction of anaesthesia in children. *Evid Based Child Health* 2011; 6:71–134.
  7. Cumino, Débora O.; Vieira, Joaquim E.; Lima, Luciana C.; More. Smartphone-based behavioural intervention alleviates children's anxiety during anaesthesia induction: A randomised controlled trial. *European Journal of Anaesthesiology* 2017; 34(3):169-175.
  8. Marechal C, Berthiller J, Tosetti S, Cogniat B, Desombres H, Bouvet L, Kassai B, Chassard D, de Queiroz Siqueira M. Children and parental anxiety in paediatric ambulatory surgery: a randomized controlled study comparing 0.3 mg kg<sup>-1</sup> midazolam to tablet computer based interactive distraction. *Br J Anaesth* 2017; 118 (2): 247-253.
  9. Schmitz A, Kellenberger CJ, Liamlahi R, Fruehauf M, Klaghofer R, Weiss M. Residual gastric contents volume does not differ following 4 or 6 h fasting after a light breakfast - a magnetic resonance imaging investigation in healthy non-anaesthetised school-age children. *Acta Anaesthesiol Scand.* 2012 May; 56 (5):589-94.
  10. Thomas M., Engelhardt T. Think drink! Current fasting guidelines are outdate. *Br J Anesth* 2017 Mar 1; 118(3):291-293.
  11. Goeller JK, Bhalla T, Tobias JD. Combined use of neuraxial and general anesthesia during major abdominal procedures in neonates and infants. *Paediatr Anaesth* 2014 Jun; 24(6):553-60. doi: 10.1111/pan.12384. Epub 2014 Mar 10.
  12. Holzki J. Recent advanced in pediatric anesthesia. *Korean J Anesthesiol* 2011; 60 (5): 313-322.
  13. Vljakovic GP, Sindjelic RP. Emergence delirium in children: Many questions, few answers. *Anesth Analg.* 2007; 104:84–91.
  14. van Hoff SLO'Neill ES, Cohen LC, Collins BA. Does a prophylactic dose of propofol reduce emergency agitation in children receiving anesthesia? A systematic review and meta-analysis. *Paediatr Anaesth.* 2015 Jul; 25(7):668-76.
  15. Chukwuemeka A, Ko R, Ralph-Edwards A. Short-term low-dose propofol anaesthesia associated with severe metabolic acidosis. *Anaesth Intensive Care* 2006; 34: 651-5.
  16. Laguay N, Prieur S, Gre B, Meyer P, Orliaguet G. Propofol infusion syndrome. *Ann Fr Anesth Reanim* 2010; 29: 377-86.
  17. Robert Sümpelmann, Karin Becke, Sebastian Brenner, Christian Breschan, Christoph Eich, Claudia Höhne, Martin Jöhr, Franz-Josef Kretz, Gernot Marx, Lars Pape, Markus Schreiber, Jochen Strauss and Markus Weiss. Perioperative intravenous fluid therapy in children: guidelines from the Association of the Scientific Medical Societies in Germany. *Pediatric Anesthesia* 2017; 27 (1), 2017: 10–18.
  18. Janne Rømsing, Camilla Dremstrup Skovgaard, Susanne M. Friis and Steen W. Henneberg. Procedure- related pain in children in a Danish University Hospital. A qualitative study. *Pediatric Anesthesia* 2014; 24(6): 602–607.
  19. Fabrício T M, Mariana C R, Jordana A A, Luíse A C. Systemic Lidocaine for Perioperative Analgesia: A Literature Review. *J Anest & Inten Care Med.* 2015;1(1): 555551.

May 19, 2017 Friday

11:00-12:30 Panel XIII

Complications after abdominal surgery	Feyhan Ökten (Turkey) Lejla Mujkic (B&H) Hektor Sula (Albania)
Pulmonary embolism after abdominal surgery	Seda B Akıncı (Turkey)
Transfusion related acute lung injury (TRALI)	Işıl Özkoçak (Turkey)
Management of postoperative nausea and vomiting	Jülide Ergil (Turkey)
Intraabdominal hypertension and abdominal compartment syndrome	Seda B Akıncı (Turkey)
Impact of the CVP on kidney graft function in the early postoperative period	Semir Imamovic (B&H)

## Pulmonary Embolism After Abdominal Surgery

*Seda Banu Akinci, Professor, MD  
Hacettepe University Faculty of Medicine  
Department of Anesthesiology and Critical Care Medicine  
Director of Intensive Care Unit*

### What's the problem?

Venous thromboembolism (VTE), which includes deep vein thrombosis (DVT) and pulmonary embolism (PE), remains one of the most common causes of preventable death and increased hospital length of stay. In the perioperative thromboprophylaxis era, pulmonary embolism (PE) is still a significant cause of morbidity and mortality after abdominal surgery. It is widely understood that chemical prophylaxis independently reduces rates of VTE by 50%. However, prophylaxis rates (47% in general surgery patients) are still suboptimal and VTE prevention continues to be a top priority in healthcare quality actions. The reported rate of PE (0.1-7% ) changes depending on the patient characteristics (obesity, cancer, a history of thromboembolic events, severe abdominal complications) on the duration and type of surgery (cancer, ventral hernia repair, hepatic surgery, pancreatic resection, laparoscopy), type and duration of anticoagulation (conventional, extended) and whether the PE was silent or symptomatic. The mortality rate also changes considerable depending on the coexisting diseases, whether it is segmental, or massive or the time and type of the presentation. Pulmonary embolism causes a high mortality rate ranging from 3% to 12%.

### Who's at risk?

Correctly identifying the risk group for VTE prophylaxis is very important to reduce the incidence of pulmonary embolism. High risk patients including but not limited to patients undergoing bariatric surgery or pancreatic resection should be assessed individually by risk factor assessment tools. The risk stratification involves the use of individual risk assessment models (RAMs) that take into account the total number of risk factors, which are associated with the condition of the individual patient and the nature of the surgery being performed. Of all RAMs published, the most validated is the model by Caprini and its modified version. In a Russian study in which 48% of the patients had abdominal surgery, the standard

prophylaxis, consisted of above-knee graduated compression stockings with 18 to 21 mm Hg pressure and subcutaneous low-dose unfractionated heparin three times per day, starting on the first or second through the fifth postoperative day depending on the risk of bleeding. Despite the background standard prophylaxis, in the 77 patients with a Caprini score of <11, DVT occurred in 2 patients (3%). In contrast, in the 63 patients with a score of  $\geq 11$ , DVT occurred in 37 patients (59 %). PE that was confirmed with autopsy was found in 13 patients (9%). A score  $\geq 11$  can identify a subgroup of patients at “extremely high” risk, in which the prophylactic approach used, was inadequate.

In a systematic review by Stern, it was found that the relative risk for pulmonary embolism of patients undergoing bariatric surgery is 2.21, being females below 40 years of age at higher risk. Although the VTE and PE risk is high in morbidly obese patients undergoing bariatric surgery there is no consensus regarding the type or the dosage of the low molecular weight heparin to be used. Patients mostly have also intermittent pneumatic compression or use elastic stockings.

### **What’s the way to reduce risk?**

Several guidelines (American College of Chest Physicians Evidence-Based Clinical Practice Guidelines, UK National Institute of Health and Care Excellence, American Society of Clinical Oncology Clinical Practice Guideline) regarding prophylaxis in patients undergoing surgery have been published. An increased risk of perioperative bleeding should definitely be considered when planning VTE prophylaxis. Prevention of VTE can include one or both of mechanical or pharmacological measures. Graduated compression stockings should be worn by all surgical patients until independent mobilization is achieved, unless contraindicated. Contraindications include severe peripheral vascular disease (ankle: brachial pressure index <0.8), following lower limb revascularization, significant peripheral neuropathy, acute severe congestive cardiac failure, weeping dermatoses or cutaneous sepsis. Intermittent pneumatic compression devices are certainly effective in preventing VTE; they are more effective when combined with pharmacological prophylaxis. They should be used for at least 18 hours a day when prescribed. Early mobilization following surgery is paramount and any intervention that facilitates this will help reduce perioperative DVT and PE. Adequate analgesia, preventing and treating postoperative nausea and vomiting, adequate hydration, minimizing the motor block associated with using regional anesthesia and good nursing care are all fundamental. The main indication of an inferior vena cava filter is for the prevention of recurrent PE in the presence of failed anticoagulation. The ACCP guidelines recommend IVC filters should not be used for primary prevention of VTE, either as sole therapy or in conjunction with anticoagulation, unless there is no other option. NICE suggests they be considered only if the patient is very high risk, with contraindications to both pharmacological and mechanical prophylaxis.

Although there are many perioperative prophylaxis options subcutaneously administered unfractionated heparin, enoxaparin are the most commonly used options for major abdominal surgery. The unfractionated heparin (UFH) is used SC 5000 U three times a day. The initial 40 mg enoxaparin dose is given 2 h before surgery and is continued for 7–10 d or 4 weeks for extended prophylaxis.

The recommendations regarding pharmacological prophylaxis after cancer surgery can be summarized as below.



- Patients undergoing major cancer surgery should receive prophylaxis starting before surgery and continuing for at least 7 to 10 days.
- Extending postoperative prophylaxis up to 4 weeks should be considered in those undergoing major abdominal or pelvic surgery with high-risk features.
- Low molecular weight heparin (LMWH) is recommended for the initial 5 to 10 days of treatment of established deep vein thrombosis and pulmonary embolism as well as for long-term secondary prophylaxis for at least 6 months.

### **How to recognize it?**

Asymptomatic presentations of venous thromboembolism may cause misdiagnosis and therefore inadequate treatment and follow up in the postoperative period. As mentioned in many reports, most PE in ICU patients was clinically silent. Melloul et al observed, in a prospective study of PE after liver resection, that 33% of the patients with PE were asymptomatic. In a recent study, TE can be identified in 31.9% of ICU patients as incidental finding on computerized tomography that was performed for detecting septic foci. 61.9% of all TE were not diagnosed at the time of CT investigations. Identified PE was found in 13% of surgical and 6.3% of non surgical patients. Early detection of PE may be problematic because the signs and symptoms indicating thrombosis and thromboembolism are often silent or masked by other disorders. In most patients, PE is suspected on the basis of dyspnea,

chest pain, pre-syncope or syncope, and/or haemoptysis. Arterial hypotension and shock are rare but important clinical presentations, since they indicate central PE and/or a severely reduced hemodynamic reserve. The ACCP guidelines suggest assessing the probability of suspected disease using the Wells criteria for DVT, or the Wells and Geneva criteria for PE before ordering investigations. Those classified low to moderate risk have a D-dimer assay and if this is positive undergo imaging. Patients with a high pretest probability proceed directly to imaging, without requiring D-dimer assay.

The recommended imaging for PE it is CT-pulmonary angiography or ventilation perfusion scanning.

### **How to treat it?**

The most clinically relevant aspects of the 2014 version of the ESC Guidelines on the management of acute pulmonary embolism are summarized below.

Acute right ventricle failure with resulting low systemic output is the leading cause of death in patients with high-risk PE. Therefore, supportive treatment is vital in patients with PE and right ventricle failure. Use of vasopressors is often necessary, in parallel with (or while waiting for) pharmacological, surgical, or interventional reperfusion treatment. Hypoxemia and hypocapnia, which may require supplemental oxygen (from nasal probes to high flow oxygen systems) and mechanical ventilation, are frequently encountered in patients with PE, Extracorporeal cardiopulmonary support can be an effective procedure in massive PE.

In patients with acute PE, anticoagulation is recommended, with the objective of preventing both early death and recurrent symptomatic or fatal VTE. The standard duration of anticoagulation should cover at least 3 months. Within this period, acute-phase treatment consists of administering parenteral anticoagulation [UFH, LMWH, or fondaparinux] over the first 5–10 days. Parenteral heparin should overlap with the initiation of a vitamin K

antagonist; alternatively, it can be followed by administration of one of the new oral anticoagulants: dabigatran or edoxaban. The dosage and administration of warfarin must be individualized for each patient according to the particular patient's PT/INR response to the drug: target INR: 2.5 (range 2–3). If rivaroxaban or apixaban is given instead, oral treatment with one of these agents should be started directly or after a 1–2 day administration of UFH, LMWH or fondaparinux. UFH is recommended for patients in whom primary reperfusion is considered, as well as for those with serious renal impairment (creatinine clearance, 30 mL/min), or severe obesity. The dosing of UFH is adjusted, based on the activated partial thromboplastin time.

Thrombolytic treatment of acute PE restores pulmonary perfusion more rapidly than anticoagulation with UFH alone. Routine use of primary systemic thrombolysis is not recommended in patients without shock or hypotension, but close monitoring is recommended in patients with intermediate- to high-risk PE to permit early detection of hemodynamic decompensation. Thrombolytic therapy should be considered for patients with intermediate- to high-risk PE and clinical signs of hemodynamic decompensation. Surgical pulmonary embolectomy or percutaneous catheter-directed treatment may be considered as alternative, 'rescue' procedures for patients with intermediate- to high-risk PE, in whom hemodynamic decompensation appears imminent and the anticipated bleeding risk under systemic thrombolysis is high such as in the early postoperative period.

IVC filters should be considered in patients with acute PE and absolute contraindication for anticoagulation.

### **How to improve quality and management?**

The adherence to the recommended guidelines is still low due to the subjective perception of elevated bleeding risk and the variable grade of recommendation in different guidelines. Appropriate prophylaxis based on ACCP guidelines for the correct type, dose, and duration was identified in only 18-32% of all surgical patients. Performance measures and quality improvement programs should help establish VTE/PE -prevention policies that close the gap between guideline recommendations and clinical practice in a greater number of hospitals.

It is recommended that every hospital has a written, institution-wide thromboprophylaxis policy.

Educational programs should be instituted to improve the compliance with recommended guidelines of extended thromboprophylaxis during 4 weeks with LMWH rather than limited-duration of 7 days in patients undergoing abdominal surgery for cancer because most VTE events (54-66%) occurs after hospital discharge.

Adequate documentation is also very important for defining the real incidence and the impact of the VTE/PE, after which control measures can be taken and the results of the active measures can be monitored.

The integration of the scoring system into the electronic inpatient medical record may allow reduction of the incidence of PE. Such electronic systems make an automatic calculation on the basis of all selected factors according to the Caprini model, place each patient into one of five risk categories, and prescribe a standardized prophylaxis regimen with a suggested duration.

Web-based resources and online support systems also provide valuable impetus to adopt consensus standards for hospitals trying to improve performance.

### Selected References:

- Ajay K. Kakkar, Giancarlo Agnelli, William Fisher, Daniel George, Michael R. Lassen, Patrick Mismetti, Patrick Mouret, Judith Murphy, Francesca Lawson, Alexander G.G. Turpie; for the SAVE-ABDO Investigators. Preoperative Enoxaparin Versus Postoperative Semuloparin Thromboprophylaxis in Major Abdominal Surgery. A Randomized Controlled Trial. *Ann Surg* 2014;259:1073–1079
- Andrei Fagarasanu, Ghazi S. Alotaibi, Ramona Hrimiuc, Agnes Y. Y. Lee, Cynthia Wu. Role of Extended Thromboprophylaxis After Abdominal and Pelvic Surgery in Cancer Patients: A Systematic Review and Meta-Analysis. *Ann Surg Oncol* (2016) 23:1422–1430.
- Cohen AT, Tapson VF, Bergmann JF, et al. Venous thromboembolism risk and prophylaxis in the acute hospital care setting (ENDORSE study): a multinational cross-sectional study. *Lancet* 2008;371:387–94.
- Dominik Schramm, Andreas Gunter Bach, Hans Jonas Meyer, Alexey Surov. Thrombotic events as incidental finding on computed tomography in intensive care unit patients. *Thrombosis Research* 141 (2016) 171–174.
- Fernando Javier Va´zquez, Mari´a Soledad Bilbao, Javier Saimovici, Carlos Vaccaro, Improving Adherence Rate of Extended Prophylaxis for Venous Thromboembolic Disease After Abdominal and Pelvic Oncologic Surgery: A Pilot Educational Study. *Clinical and Applied Thrombosis/Hemostasis* 2015, Vol. 21(8) 750-754.
- Gary H. Lyman, Kari Bohlke, Alok A. Khorana, Nicole M. Kuderer, Agnes Y. Lee, Juan Ignacio Arcelus, Edward P. Balaban, Jeffrey M. Clarke, Christopher R. Flowers, Charles W. Francis, Leigh E. Gates, Ajay K. Kakkar, Nigel S. Key, Mark N. Levine, Howard A. Liebman, Margaret A. Tempero, Sandra L. Wong, Mark R. Somerfield, and Anna Falanga. Venous Thromboembolism Prophylaxis and Treatment in Patients With Cancer: American Society of Clinical Oncology Clinical Practice Guideline Update 2014. *J Clin Oncol* 2015;33:654-656.
- Gould MK, Garcia DA, Wren SM, et al. Prevention of VTE in nonorthopedic surgical patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*. 2012; 141(2 suppl):e227S-e277S.
- James Muntz. Duration of deep vein thrombosis prophylaxis in the surgical patient and its relation to quality issues. *The American Journal of Surgery* 2010;200,413–421.
- Kirill Lobastov, Victor Barinov, Ilya Schastlivtsev, Leonid Laberko, Grigoriy Rodoman, Valeriy Boyarintsev. Validation of the Caprini risk assessment model for venous thromboembolism in high-risk surgical patients in the background of standard prophylaxis. *J Vasc Surg: Venous and Lym Dis* 2016;4:153-60
- Laurent Papazian, Amanda Corley, Dean Hess, John F. Fraser, Jean-Pierre Frat, Christophe Guitton, Samir Jaber, Salvatore M. Maggiore, Stefano Nava, Jordi Rello, Jean-Damien Ricard, Franois Stephan, Rocco Trisolini, Elie Azoulay. Use of high-flow nasal cannula oxygenation in ICU adults: a narrative review. *Intensive Care Med* DOI 10.1007/s00134-016-4277-8.
- Lily Wang, B.A., Aurora D. Pryor, Maria S. Altieri, Jamie L. Romeiser, M.P.H., Mark A. Talamini, Laurie Shroyer, Dana A. Telem,. Perioperative rates of deep vein thrombosis and pulmonary embolism in normal weight vs obese and morbidly obese surgical patients in the era post venous thromboembolism prophylaxis guidelines. *The American Journal of Surgery* (2015) 210, 859-863
- Melloul E, Donde´ro F, Vilgrain V, et al. Pulmonary embolism after elective liver resection: A prospective analysis of risk factors. *J Hepatol*. 2012;57:1268Y1275.

- Ravindra Cooray, Caroline Lake. Prevention of deep vein thrombosis and pulmonary embolism. *Anaesthesia and Intensive Care Medicine* 2015; 16:9:457-461.
- Stein PD, Beemath A, Olson RE. Obesity as a risk factor in venous thromboembolism. *Am J Med.* 2005;118:978-80.
- Takashi Kokudo, MD, Emilie Uldry, MD, Nicolas Demartines, MD, and Nermin Halkic, MD. Pulmonary Embolism Specific Risk Factor After Pancreas Resection?. *Pancreas* 2014;43: 891Y894
- The Task Force for the Diagnosis and Management of Acute Pulmonary Embolism of the European Society of Cardiology (ESC). 2014 ESC Guidelines on the diagnosis and management of acute pulmonary embolism. *European Heart Journal* (2014) 35, 3033–3080
- Zhan C, Miller MR. Excess length of stay, charges, and mortality attributable to medical injuries during hospitalization. *JAMA* 2003;290:1868–74.

---

**May 19, 2017 Friday**

---

**11:00-12:30 Panel XIII**

**Complications after abdominal surgery**

**Feyhan Ökten (Turkey)  
Lejla Mujkic (B&H)  
Hektor Sula (Albania)**

---

Pulmonary embolism after abdominal surgery

Seda B Akıncı (Turkey)

Transfusion related acute lung injury (TRALI)

Işıl Özkoçak (Turkey)

Management of postoperative nausea and vomiting

Jülide Ergil (Turkey)

Intraabdominal hypertension and abdominal compartment syndrome

Seda B Akıncı (Turkey)

Impact of the CVP on kidney graft function in the early postoperative period

Semir Imamovic (B&H)

---

## **Transfusion-related acute lung injury (TRALI)**

*Prof.Dr.Işıl Özkoçak Turan*

*S.B.Ü. Ankara Research and Education Hospital (SUAM)*

Transfusion-related acute lung injury (TRALI) is a rare but potentially fatal complication of blood product transfusion. TRALI has been DEFINED as a new acute lung injury (ALI)/acute respiratory distress syndrome (ARDS) occurring during or within six hours after blood product administration. When a clear temporal relationship to an alternative risk factor for ALI/ARDS coexists, a formal diagnosis of TRALI cannot be made. In these circumstances, the diagnostic terminology to be used is either "possible TRALI". Prior to the institution of TRALI risk mitigation strategies, plasma components and apheresis platelet concentrates conferred the highest risk of TRALI.

The epidemiology, pathogenesis, risk factors, clinical features, management, and prevention strategies for TRALI are presented in this presentation. The following pre-transfusion TRALI risk factors were identified for TRALI:

- Liver transplantation surgery
- Chronic alcohol abuse
- Shock
- Higher peak airway pressure while being mechanically ventilated
- Current smoking
- Higher interleukin (IL)-8 levels
- Positive fluid balance

**Although** all blood components have been associated with TRALI, whole blood derived platelets, cryoprecipitate, and granulocytes, intravenous immune globulin preparations, and allogeneic stem cells are more suspected.

The treatment of TRALI is supportive and prevention measures are more important. Generally postoperative TRALI resolves in 48-72 hours but the period in ICU may be longer.

In conclusion, anaesthetists have to be aware about TRALI in patients with blood transfusion developing respiratory failure in several hours intraoperatively or postoperatively.

May 19, 2017 Friday

11:00-12:30 Panel XIII

Complications after abdominal surgery	Feyhan Ökten (Turkey) Lejla Mujkic (B&H) Hektor Sula (Albania)
Pulmonary embolism after abdominal surgery	Seda B Akıncı (Turkey)
Transfusion related acute lung injury (TRALI)	Işıl Özkoçak (Turkey)
Management of postoperative nausea and vomiting	Jülide Ergil (Turkey)
Intraabdominal hypertension and abdominal compartment syndrome	Seda B Akıncı (Turkey)
Impact of the CVP on kidney graft function in the early postoperative period	Semir Imamovic (B&H)

## POSTOPERATIVE NAUSEA AND VOMITING

*Dr Jülide Ergil*

*Ministry of Health, Diskapi Yildirim Beyazit Training and Research Hospital*

Nausea, vomiting, and retching are a frequent, predictable, dissatisfying but avoidable concern. Postoperative nausea and vomiting (PONV) is a patient-important outcome; patients often rate PONV as worse than postoperative pain and they are willing to pay to avoid it. PONV may require unanticipated hospital admission and delay recovery room discharge. In addition, vomiting or retching can result in wound dehiscence, esophageal rupture, aspiration, dehydration, increased intracranial pressure, and pneumothorax. Incidences of PONV is 12-38% in all post-surgical and patients and up to 80% in high-risk patients.

Evidence based analysis of risk factors for PONV are consist of three main categories; patient risk factors, anesthetic factors and type of surgery. In adults, several risk factors have been identified such as female gender, non-smoking status, age, history of motion sickness, certain agents used in perioperative period, intraabdominal surgeries especially ginekologic and laparoscopic procedures.

Central or peripheral emetogenic signals are generated by various receptors which are targeted by anti emetic drugs. Chemoreceptor trigger zone (CTZ) is placed at area postrema under the fourth ventricle. Serotonin type-3 (5 HT3), histamine type-1 (H1), muscarinic colinergic type-1 (M1), dopamine type-2 (D2), neurokinin type-1 (NK-1), and opioid reseptors are located in CTZ and activated by various stimulants. Also afferent impulses from CTZ arrived to nucleus tractus solitarius (NTS) in the brainstem. NTS is an important center collecting vagal impulses from gastrointestinal and vestibular system. Finally vomiting center located in lateral reticular formation of medulla oblongata results in vomiting.

Although relation between pneumoperitoneum and PONV is not exactly known, during laparoscopic surgeries (LS), carbon dioxide insufflation leads to the dilatation of intestinal loops which stimulates mechanoreceptors in the gut wall, leading to increased serotonin synthesis. The overall incidence of PONV in LS is 40% -75%, up to 53-72% in laparoscopic cholecystectomy.

PONV incidence was 79% in laparoscopic bariatric surgery. Intense gastric stimulation causing the release of 5-hydroxytryptamine from the stomach enterochromaffin cells increases the (5 HT<sub>3</sub>).

Society of Ambulatory Anesthesia (SAMBA) advised to use the simplified risk score for PONV that was created by Apfel, et al. to evaluate adults preoperatively, and base the preventive strategy on the resulting degree of predicted risk. The simplified risk score is easy to use and accurately predicts the risk for PONV in adult patients. The components of the simplified risk score include the following four highly predictive risk factors:

- Female gender
- Nonsmoker
- History of motion sickness or previous PONV
- Expected administration of postoperative opioids

This risk score has been validated within and across institutions; the presence of 0, 1, 2, 3, and 4 of these risk factors corresponds to risk of PONV of 10, 20, 40, 60, and 80 %, respectively.

The management strategy must include preventive measurements, risk stratification, reduction of baseline risk and use of antiemetic drugs and non pharmacologic techniques. After employing multimodal opioid sparing strategy for postoperative pain control, SAMBA advises to determine the risk for PONV. If there is low risk, no prophylaxis indicated, in moderate risk 1-2 interventions, in high risk multimodal prophylaxis indicated.

The absolute benefit of an antiemetic depends on the degree of baseline risk, such as commonly used antiemetics reduce the risk of PONV by approximately 25 %. Serotonin antagonists, Corticosteroids, Dopamine antagonists, Neurokinin-1 receptor antagonists are classified as first line antiemetics. Whereas Metoclopramide, Haloperidol, Dimenhydrinate and Transdermal scopolamine are second line antiemetics.

Rescue therapy for PONV that occurs in the postanesthesia care unit should include a drug from a different class than those that have already been administered unless the effect of the first drug has worn off or a potentially inadequate dose has been administered.

Postdischarge nausea and vomiting may occur in as many as 37% of adults who undergo same day surgery. Prophylaxis may include administration of longer-acting antiemetics, or repeat, scheduled doses of the shorter-acting antiemetics.



In conclusion, risk stratification should be done, prevention measures should be implemented, outcome benefits should be measurable and the most effective and cost-effective antiemetic single drug and combination therapy must be applied.

#### REFERENCES

1. Macario A, Weinger M, Carney S, Kim A. Which clinical anesthesia outcomes are important to avoid? The perspective of patients. *Anesth Analg* 1999; 89:652.
2. Fortier J, Chung F, Su J. Unanticipated admission after ambulatory surgery--a prospective study. *Can J Anaesth* 1998; 45:612
3. Feinleib J, Kwan LH, Yamani A et al. Postoperative nausea and vomiting. [www.uptodate.com@2017](http://www.uptodate.com@2017) UpToDate
4. Hooper VD. SAMBA consensus guidelines for the management of postoperative nausea and vomiting: An executive summary for perianesthesia nurses 2015; 30(5): 377-382
5. Gan TJ, Diemunsch P, Habib AS et al. Consensus guidelines for the management of postoperative nausea and vomiting. *Anesth Analg* 2014; 118: 85-113.
6. Horn CC, Wallisch WJ, Homanics GE et al. Pathophysiological and neurochemical mechanisms of postoperative nausea and vomiting. *Eur J Pharmacol* 2014; 722:55.
7. Apfel CC, Läärä E, Koivuranta M, et al. A simplified risk score for predicting postoperative nausea and vomiting: conclusions from cross-validations between two centers. *Anesthesiology* 1999; 91:693.
8. Apfel CC, Heidrich FM, Jukar-Rao S, et al. Evidence-based analysis of risk factors for postoperative nausea and vomiting. *Br J Anaesth* 2012; 109:742
9. Apfel CC, Korttila K, Abdalla M, et al. A factorial trial of six interventions for the prevention of postoperative nausea and vomiting. *N Engl J Med* 2004; 350:2441
10. Pan PH, Lee SC, Harris LC. Antiemetic prophylaxis for postdischarge nausea and vomiting and impact on functional quality of living during recovery in patients with high emetic risks: a prospective, randomized, double-blind comparison of two prophylactic antiemetic regimens. *Anesth Analg* 2008; 107:429

May 19, 2017 Friday

---

14:00-15:15 Panel XIV

<b>Management in ICU following abdominal surgery</b>	<b>Remzi İşcimen (Turkey), Nermina Rizvanovic (B&amp;H)</b>
Current concept of nutritional support in elective (adult) surgery".	Alan Sustic (Croatia)
TPN following abdominal surgery	Gordana Jovanović (Serbia)
<b>HBO and abdominal critical care</b>	<b>Hristo Bozov (Bulgaria)</b>
Analgo-sedation in ICU	Sanja Maric (B&H)

## **HYPERBARIC OXYGEN THERAPY AND ABDOMINAL CRITICAL CARE**

*Prof. Hristo Bozov, MD, PhD*

*Director Clinic of Anaesthesiology, Hyperbaric and Intensive Medicine  
MBAL – Varna (Naval Hospital), MMA, Bulgaria*

**Hyperbaric oxygen therapy (HBO)** is a clinical method for treatment with oxygen under elevated pressure. In the treatment of many diseases HBO is a self-healing factor, while in the therapy of other enter into the complex of therapeutic measures. Hyperbaric oxygen therapy involves intermittent inhalation of 100% Oxygen in the chambers under the pressure more than 1 atmosphere absolute (ATA). Hyperbaric oxygen is administered either in mono- or multiplace chambers. Monoplace chamber accommodates only one patient and the chamber was pressurized to about 2 to 2.5 ATA with 100% Oxygen. In multiplace chamber can accommodate several patients and / or medical personnel. The chamber is compressed by air up to 2.5 ATA, while the patient breathes 100% Oxygen through an oxygen tent, a face mask or endotracheal tube. In both cases, the arterial PO<sub>2</sub> reaches 1500 mmHg.

**Clinical and physiological effects of hyperbaric oxygen are:**

- Normalization of the energy balance of the cells .
- Activation of biosynthetic and reparative processes.
- Prevention of formation of toxic metabolites and activation of their destruction
- Adjustment of functional and metabolic activity of the cells
- Inhibition the viability of microorganisms
- Potentiates the action of the diuretic, antiarrhythmic, antibacterial, cytostatic agents
- Release the inactivated hemoglobin, myoglobin and citochromoxidasases.
- Stimulation or suppression of the activity of the immune system

- Increase radiosensitivity the cells of malignant tumors
- Reduction of cranial pressure, improve cerebral blood flow in the area of injury
- Reduction in the volume of the gases, found in the intestine.

### **Treatment Protocols**

Oxygen, when breathed under increased atmospheric pressure, is a potent drug. Besides the beneficial effects discussed above, hyperbaric oxygen can produce noticeable toxic effects if administered indiscriminately. Safe time-dose limits have been established for hyperbaric oxygen exposure, and these profiles form the basis for today's treatment protocols. It is only quite recently that disease-specific hyperoxic dosing has been introduced. The precise number of treatments often depend upon the clinical response of each patient. Transcutaneous oximetry can provide more exacting dose schedules for wound healing referrals, thereby improving clinical outcomes and cost effectiveness. Periods of exposure usually last approximately two hours.. Treatments may be given once, twice or occasionally three times daily.

### **Hyperbaric chambers**

Hyperbaric oxygen therapy is administered in a pressurized chamber. Two distinct types of chambers are available.

**Multiplace Chambers** - These units can accommodate between 2-18 or more patients, depending upon configuration and size. They commonly incorporate a minimum pressure capability of 6.0 atmospheres absolute. Patients are accompanied by hyperbaric staff members, who may enter and exit the chamber during therapy via an adjacent access lock or compartment. The multiplace chamber is compressed on air. Patients are provided with oxygen via an individualized delivery system. Dedicated air compressors and high pressure volume receivers provide the chamber air supply. A specialized fire suppression system is necessary.

Advantages include constant patient attendance and evaluation and multiple patients treated per session.

Disadvantages include

relatively high starting price;- more staff; - more difficult to serve the sick unconscious

**Monoplace Chambers** - These units, first introduced in the 1960's are designed for single occupancy. They are usually constructed of acrylic, have a pressure capability of 3.0 atmospheres absolute, and are compressed with 100% oxygen. Technical innovations have allowed critically-ill and ventilatory-dependent patients to undergo therapy in the monoplace chamber. The high flow oxygen requirement is ideally supplied via a hospital's existing liquid oxygen system.

Advantages include most cost efficient delivery of hyperbaric oxygen (capitalization and operating costs), and no risk of decompression sickness.

Disadvantages include relative patient isolation and increased fire hazard.

### **Indications for HBO**

In 1976 was created UMS, which was later renamed UHMS - Underwater and Hyperbaric Medical Society. One of its tasks is to present indications for HBO. In 1977 commissioned by the Financial administration to the Health Department of the United States, the Committee of UMS present a list of 12 diseases with proven effect of the application of HBO. Later they were increased to 13. They are:

1. Air and gas embolism.
2. Intoxications with carbon monoxide and cyanide.
3. Gas gangrene.
4. Crush syndrome, compartment syndrome and other traumatic injuries
5. Decompression sickness.
6. Difficult to heal wounds, incl. Diabetic foot.
7. Anemic conditions.
8. Necrotizing soft tissue infections.
9. Refractory osteomyelitis.
10. Radiation tissue damage.
11. Skin grafts.
12. Thermal burns.
13. Adjunctive hyperbaric therapy in intracranial abscess.

Recent trends in hyperbaric medicine are primarily focused on the construction and use of multiplace chambers, mostly because of their economically advantages. Multiplace one is also a hyperbaric chamber at the Clinic for hyperbaric therapy and marine physiology in Naval Hospital - Varna. Since opening in 1992 it has been continuous increase in the number of treated patients - around 5800, with the number of treatment sessions - about 60 000 by the end of 2016, including 26 patients with peritonitis.

### **What are the beneficial mechanisms by the patients with abdominal critical care?**

Several beneficial mechanisms are associated with intermittent exposure to hyperbaric doses of oxygen by the patients with abdominal critical care . Either alone, or more commonly in combination with other medical and surgical procedures, these mechanisms serve to enhance the healing process of treatable conditions.

HYPEROXYGENATION provides immediate support to poorly perfused tissue in areas of acutely compromised blood flow. The elevated pressure within the hyperbaric chamber results in a 10-15 fold increase in plasma oxygen concentration. While this form of

hyperoxygenation is only a temporary measure, it will often serve to buy time and maintain tissue viability until corrective measures can be implemented or a new blood supply established.

NEOVASCULARIZATION represents an indirect and delayed response to serial hyperbaric oxygenation. Therapeutic effects include enhanced fibroblast division, neoformation of collagen, and capillary angiogenesis.

Hyperoxia enhanced ANTIMICROBIAL ACTIVITY has been demonstrated at a number of levels. Hyperbaric oxygen causes toxin inhibition and toxin inactivation in Clostridial perfringens infections (gas gangrene). Hyperoxia enhances phagocytosis and white cell oxidative killing and aminoglycoside activity. It prolongs the post-antibiotic effect, when hyperbaric oxygen is combined with tobramycin against Pseudomonas aeruginosa.

DIRECT PRESSURE utilizes the concept of Boyle's Law to reduce the volume of intravascular or other free gas. That way HBO reduces the volume of the intestinal gases.

**Peritonitis** is an inflammation of the peritoneum. In most cases of perforation of a hollow viscus, mixed bacteria are isolated; the most common agents include Gram-negative bacilli (e.g., Escherichia coli) and anaerobic bacteria (e.g., Bacteroides fragilis). In most cases, mixed bacteria are isolated; the most common agents include cutaneous species such as Staphylococcus aureus, and coagulase-negative staphylococci, but many others are possible, including fungi such as Candida.

Depending on the severity of the patient's state, the management of peritonitis may include general supportive measures such as vigorous intravenous rehydration and correction of electrolyte disturbances. Antibiotics are usually administered intravenously, but they may also be infused directly into the peritoneum. The empiric choice of broad-spectrum antibiotics often consist of multiple drugs, and should be targeted against the most likely agents, depending on the cause of peritonitis. Surgery (laparotomy) is needed to perform a full exploration and lavage of the peritoneum, as well as to correct any gross anatomical damage that may have caused peritonitis. The exception is spontaneous bacterial peritonitis, which does not always benefit from surgery and may be treated with antibiotics in the first instance.

#### **Treatment of abdominal critical care patients in multiplace chamber**

A major problem is the treatment of patients with a change in consciousness or coma, because of equalizing pressure during compression. Therefore we invented and applied a special methodology. It consists of several components:

a) Medical examination of the ENT specialist in order to identify and document the status of the tympanic membrane. It, unless medically, is dictated by moral and ethical reasons. Significant is the answer to deontological question: how will react patient with a saved life

but with perforation of the tympanic membrane. So in such a situation it should carefully consider whether to make artificial paracentesis.

b) X-ray of the lungs. It should exclude the following diseases:

- pneumothorax;
- voids and cavities in the lung;
- bronchospasm.

c) X-ray of the skull and facial bones - Detection accompanying sinusitis or craniocerebral trauma.

d) Consult with a neurologist for objectification of consciousness.

e) ECG and if necessary consultation with a cardiologist.

f) Ensuring the presence of medical team inside the chamber during the stay of the patient.

In connection with the actions of the team in terms of increased pressure, has the following requirements:

1. Medical team is composed of a physician and nurse, physically and mentally fit to work with oxygen under increased pressure.
2. The equipment to comply with safety rules to work under high pressure in oxygen environment.
3. Close space in the chamber does not affect the quality of the actions of the medical team.

In the team equipment are used only devices that do not bear danger of fire and explosion. For security reasons, can not use items that could be damaged by changes in the pressure as unopened ampoules, clocks, blood pressure monitors, thermometers. The "Methodology for the treatment of patients with abdominal critical care in a multiplace hyperbaric chamber " includes the following algorithm:

1. Medical examination from ENT specialist and finding out artificial paracentesis.
2. Medical team accompanies the patient inside the decompression chamber. It is equipped with AMBU mask, foot aspirator and medication at the discretion of each individual patient, pre-drawn into a syringe.
3. Meticulous view of medical supplies for patients: venous line, intubation tube, urethral catheter, drains. Balloon of the intubation tube could be inflated with fluid. Urethral catheter is pinched with a surgical instrument. If there are closed drains, they should be opened.

4. By unconscious patient, whom it has not place a paracentesis, it is necessary to stimulate swallowing and opening the mouth of the patient.

5. Actions of the team in complications -if the patient has problems in respiratory function and/or circulation, the team starts CPR with AMBU, connected to an oxygen source and cardiac massage, if necessary, than urgent decompression and after completion and if necessary the patient is intubated or defibrillated.

**In our case:**

Adequate surgery and parenteral antibiotic treatment in conjunction with HBO therapy at 2.5 ATA for 120 minutes, every day was used in all patients.

The average number of HBO treatments was 12.6. There were no HBO related complications. We have positive results in 21 patients, which resulted in a success rate of 81%.

**CONCLUSIONS:** Hyperbaric oxygen therapy is effective and safe for peritonitis, provided that patients had received appropriate medical and surgical management.

**May 19, 2017 Friday****14:00-15:15 Panel XIV**

<b>Management in ICU following abdominal surgery</b>	<b>Remzi İřcimen (Turkey), Nermina Rizvanovic (B&amp;H)</b>
Current concept of nutritional support in elective (adult) surgery".	Alan Sustic (Croatia)
TPN following abdominal surgery	Gordana Jovanović (Serbia)
HBO and abdominal critical care	Hristo Bozov (Bulgaria)
<b>Analgo-sedation in ICU</b>	<b>Sanja Maric (B&amp;H)</b>

## **ANALGOSEDATION IN ICU (INTENSIVE CARE UNIT)**

*Sanja S. Maric, MD, PhD, anesthesiologist*

*Center of Anaesthesia, Restitution, Intensive Care and Pain Medicine,  
University Hospital Foca, Republic of Srpska, Bosnia and Herzegovina*

*sanja\_djm@yahoo.com*

### **Abstract**

The goals of ICU analgesia and sedation are to facilitate mechanical ventilation, prevent patient and caregiver injury, and avoid the psychological and physiologic consequences of inadequate treatment of pain, anxiety, agitation, and delirium.

Most ICU patients, especially the surgical and trauma ones, routinely experience pain at rest and with routine procedures. Treating pain in ICU patients depends on a clinician's ability to perform a reproducible pain assessment and to monitor patients over time to determine the adequacy of therapeutic interventions to treat pain. Implementation of behavioral pain scales improves ICU pain management and clinical outcomes, including better use of analgesic and sedative agents and shorter durations of mechanical ventilation and ICU stay. Opioids are the primary medications for managing pain in critically ill patients. Multimodal approach to pain management in ICU patients has been recommended.

Sedatives are commonly administered to ICU patients to treat agitation and its negative consequences. Sedation strategies using nonbenzodiazepine sedatives (propofol or dexmedetomidine) may be preferred over sedation with benzodiazepines (midazolam or lorazepam) to improve clinical outcomes in mechanically ventilated adult ICU patients. It is recommended daily sedation interruption or a light target level of sedation be routinely used in adult intensive care patients using mechanical ventilation. Delirium affecting up to 80% of mechanically ventilated adult ICU patients.

ICU protocols that combine routine pain and sedation assessments, with pain management and sedation-minimizing strategies, along with delirium monitoring and prevention, may be the best strategy for avoiding the complications of oversedation. Protocolized pain, agitation and delirium assessment (PAD ICU), is significantly associated with a reduction in the use of analgesic medications, ICU length of stay, and duration of mechanical ventilation.

Key words: pain, intensive care unit, analgesia, sedation



## **Introduction**

ICU (Intensive Care Unit) patients often suffer from undertreated and unrecognised pain, with potentially serious physical and psychological effects [1]. The accurate assessment of pain in ICU is very difficult. ICU patients are less able to communicate their pain to us than non-ICU patients and they are frequently sedated. Pain management is an essential component of the delivery of quality care for a critically ill patient. Being ill in an ICU is nearly always very frightening and may require a number of painful or uncomfortable procedures [2].

The reasons why do we need pain control and sedation are: patient comfort, early mobilization, facilitate patient-ventilator synchrony, optimize oxygenation, delirium and delusional memories influence the likelihood of patients having long term psychological effects, judicious use of sedative agents, decrease length of mechanical ventilation, reduce ICU length of stay (LOS), and, pain therapy is basic human right[2,3]! But, how much do we really think about ICU patient's personality!?

Pain, agitation, and delirium are all extremely common in ICU patients that they've been termed the "ICU triad" (Fig. 1). No one knows exactly how common each is, because ICU patients are often too delirious to complain of pain; or their agitation hides their delirium; or their unidentified pain may cause their agitation [3].

## **Pain in ICU patient**

According to numerous studies up to 70% of patients complained moderate or severe pain after surgery and up to 50% of patients complained traumatic memory of their ICU stay. Most ICU patients, especially the surgical and trauma ones, routinely experience pain at rest and with routine ICU procedures (B). Adequate analgesia should be a fundamental part of this approach. Sedation should never be given as a substitute for analgesia [3,4].

Unrelieved pain has serious side-effects, therefore the containment of such a stressor is vital. The chronic activation of the catabolic process of the stress response can ultimately cause multiple system dysfunction. The physiological changes of unrelieved pain have an impact on the cardiovascular, gastrointestinal, respiratory, genitourinary, musculoskeletal and immune systems. Increased heart and breathing rates facilitate the increasing demands of oxygen and other nutrients to vital organs. The physiological changes that take place can also induce vomiting and potentially can pre-empt chronic pain conditions. Psychological and cognitive adverse effects are also relatively common. Good acute pain management, including an expert knowledge of analgesic drugs and an understanding of the physiological effects of pain, is an essential element of ICU pain management [5].

## ***Pain Assessment***

Routine pain assessments in adult ICU patients are associated with improved clinical outcomes. Pain assessment, especially if protocolized, has been significantly associated with a reduction in the use of analgesic medications, ICU length of stay (LOS), and duration of mechanical ventilation [6,7]. Pain assessment is essential for appropriate treatment, especially when part of a comprehensive pain management protocol. Although the quality of

evidence is moderate, a strong recommendation for performing routine pain assessments in all ICU patients is appropriate, as the benefits strongly outweigh the risks [3].

Physiological indicators such as hypertension and tachycardia correlate poorly with more intuitively valid measures of pain, but pain scales such provide structured and repeatable assessments and they are currently the best available methods for assessing pain. The Behavioral Pain Scale (BPS) and the CriticalCare Pain Observation Tool (CPOT) are the most valid and reliable behavioral pain scales for monitoring pain in medical, postoperative, or trauma (except for brain injury) adult ICU patients who are unable to self-report, and in whom motor function is intact and behaviors are observable, according to the available evidence (B) [3,7]. The BPS has three categories of behaviour: the patient's facial expression, the movement of their upper limbs, and their compliance with mechanical ventilation. The BPS provides descriptions of different behaviours which may be observed and assigns a score to each one. Higher scores are associated with greater pain. An overall pain score is then calculated, ranging from three (no pain) to twelve (worst possible pain). CPOT is very similar to the BPS, but includes vocalisation as an additional category of behaviour [3,6].

### ***Treatment of Pain***

Treating pain in ICU patients depends on a clinician's ability to perform a reproducible pain assessment and to monitor patients over time to determine the adequacy of therapeutic interventions to treat pain. Implementation of behavioral pain scales improves ICU pain management and clinical outcomes, including better use of analgesic and sedative agents and shorter durations of mechanical ventilation and ICU stay [3,8].

Opioids are the primary medications for managing pain in critically ill patients because of potency, concomitant mild sedative and anxiolytic properties, and their ability to be administered by multiple routes. The optimal choice of opioid and the dosing regimen used for an individual patient depends on many factors, including the drug's pharmacokinetic and pharmacodynamic properties [1,3,9]. Recommended opioids include fentanyl, remifentanyl, morphine and hydromorphone. The choice of intermittent vs. continuous IV strategies may depend on drug pharmacokinetics, frequency and severity of pain and the patient's mental status [1,3,8,9].

Several other types of analgesics or pain-modulating medications, such as local and regional anesthetics (e.g., bupivacaine), nonsteroidal anti-inflammatory medications (e.g., ketorolac, ibuprofen), IV acetaminophen, and anticonvulsants, can be used as adjunctive pain medications to reduce opioid requirements (Table 1). However, their safety profile and effectiveness as sole agents for pain management have not been adequately studied in critically ill patients. Regional or neuraxial modalities may also be used for postoperative analgesia following selected surgical procedures. Adverse effects of epidural analgesia are more common with morphine than fentanyl. The incidence of respiratory depression is equivalent with epidural and intravenous morphine [3,8].

Complementary, nonpharmacologic interventions for pain management, such as music therapy and relaxation techniques, may be opioid-sparing and analgesia-enhancing; they are low cost, easy to provide, and safe. Few studies have been published on the effectiveness of nonpharmacologic interventions in these patients [3,8,9].

It is suggested that for other types of invasive and potentially painful procedures in adult ICU patients, preemptive analgesic therapy and/or nonpharmacologic interventions may also be administered to alleviate pain (+2C) [3].

Multimodal approach to pain management in ICU patients has been recommended [3].

### **Agitation and Sedation**

Agitation and anxiety occur frequently in critically ill patients and are associated with adverse clinical outcomes. Sedatives are commonly administered to ICU patients to treat agitation and its negative consequences. A small percentage of critically ill patients requires deep sedation. Patients undergoing mechanical ventilation usually receive some degree of pharmacologic sedation, because of the anxiety and discomfort that are widely attributed to the experience [10].

ICU patients have historically been oversedated, unnecessarily extending ventilator days and ICU stays. Only a minority of critically ill patients require deep sedation, for conditions such as severe respiratory failure (e.g. ARDS), intracranial hypertension, refractory status epilepticus, and those receiving neuromuscular blocking agents. Patients undergoing mechanical ventilation usually receive some degree of pharmacologic sedation, because of the anxiety and discomfort that are widely attributed to the experience [3,10,11].

Of the sedation scales described, The Richmond Agitation-Sedation Scale (RASS) and Sedation-Agitation Scale (SAS) are the most valid and reliable sedation assessment tools for measuring quality and depth of sedation in adult ICU patients (B). For the majority of patients undergoing mechanical ventilation in an ICU, an appropriate target is a score of 3 to 4 on the Riker Sedation–Agitation Scale (which ranges from 1 to 7, with scores of <4 indicating deeper sedation, a score of 4 indicating an appearance of calm and cooperativeness, and scores of ≥5 indicating increasing agitation) or a score of –2 to 0 on the Richmond Agitation–Sedation Scale (which ranges from –5 to +4, with more negative scores indicating deeper sedation and more positive scores indicating increasing agitation, and with 0 representing the appearance of calm and normal alertness) [3,10,11].

Sedatives that are commonly used in the ICU are the benzodiazepines midazolam and lorazepam (and to a lesser extent, diazepam), the short-acting intravenous anesthetic agent propofol, and dexmedetomidine. Sedation strategies using nonbenzodiazepine sedatives (propofol or dexmedetomidine) may be preferred over sedation with benzodiazepines (midazolam or lorazepam) to improve clinical outcomes in mechanically ventilated adult ICU patients. Propofol infusion syndrome is an adverse drug event associated with high doses (>4 mg/kg per hour or >67 µg/kg per minute) and long-term (>48 hours) use of propofol [11].

It is recommended daily sedation interruption or a light target level of sedation be routinely used in adult intensive care patients using mechanical ventilation and it is suggested that analgesia-first sedation be used in mechanically ventilated adult ICU patients (+2B) [3,11].

Benzodiazepines are associated with an increased duration of mechanical ventilation and ICU length of stay when compared with propofol or dexmedetomidine, and may be associated with a greater incidence of delirium [3,13].

It is suggested non-pharmacological sedation therapy: Good communication with regular reassurance from nursing staff; Environmental control such as humidity, lighting, temperature, and noise; Explanation prior to procedures, touching and message; Management of thirst, hunger, constipation, and full bladder; Variety for the patient (e.g. radio) [3,13].

### **Delirium**

Cognitive impairment after anesthesia and surgery (postoperative cognitive dysfunction) is a recognized clinical phenomenon. As early as 1955, it was described by Bedford in the Lancet under the designation “adverse cerebral effects of anaesthesia on old people [14].

Delirium, as a manifestation of acute brain dysfunction, is an important independent predictor of negative clinical outcomes in ICU patients, including increased mortality, hospital LOS, cost of care, and long-term cognitive impairment consistent with a dementia-like state. Acute central cholinergic deficiency is one of the most widely-accepted explanatory theories and decreased GABA-ergic activity [14].

Four baseline risk factors are positively and significantly associated with the development of delirium in the ICU: preexisting dementia; history of hypertension and/or alcoholism; and a high severity of illness at admission. Benzodiazepine use may be a risk factor for the development of delirium in adult ICU patients (B) [3,14].

ICU personnel often underestimate the presence of delirium in patients because it frequently presents as hypoactive rather than hyperactive delirium. The Confusion Assessment Method for the ICU (CAM-ICU) and the Intensive Care Delirium Screening Checklist (ICDSC) are the most valid and reliable delirium monitoring tools in adult ICU patients (A) [3].

It is recommended performing early mobilization of adult ICU patients whenever feasible to reduce the incidence and duration of delirium (+1B) [3]. It is suggested that in adult ICU patients with delirium unrelated to alcohol or benzodiazepine withdrawal, continuous IV infusions of dexmedetomidine rather than benzodiazepine infusions be administered for sedation in order to reduce the duration of delirium in these patients (+2B). There is no evidence to support haloperidol [3,14].

### **Conclusion**

The goals of ICU analgesia and sedation are to facilitate mechanical ventilation, prevent patient and caregiver injury, and avoid the psychological and physiologic consequences of inadequate treatment of pain, anxiety, agitation, and delirium. Optimal analgo-sedation strategy in the critically ill should achieve effective analgesia, targeted sedation and reduced risk of delirium and agitation. Protocolized pain, agitation and delirium (PAD) assessment, is significantly associated with a reduction in the use of analgesic and sedative medications, ICU length of stay, and duration of mechanical ventilation.

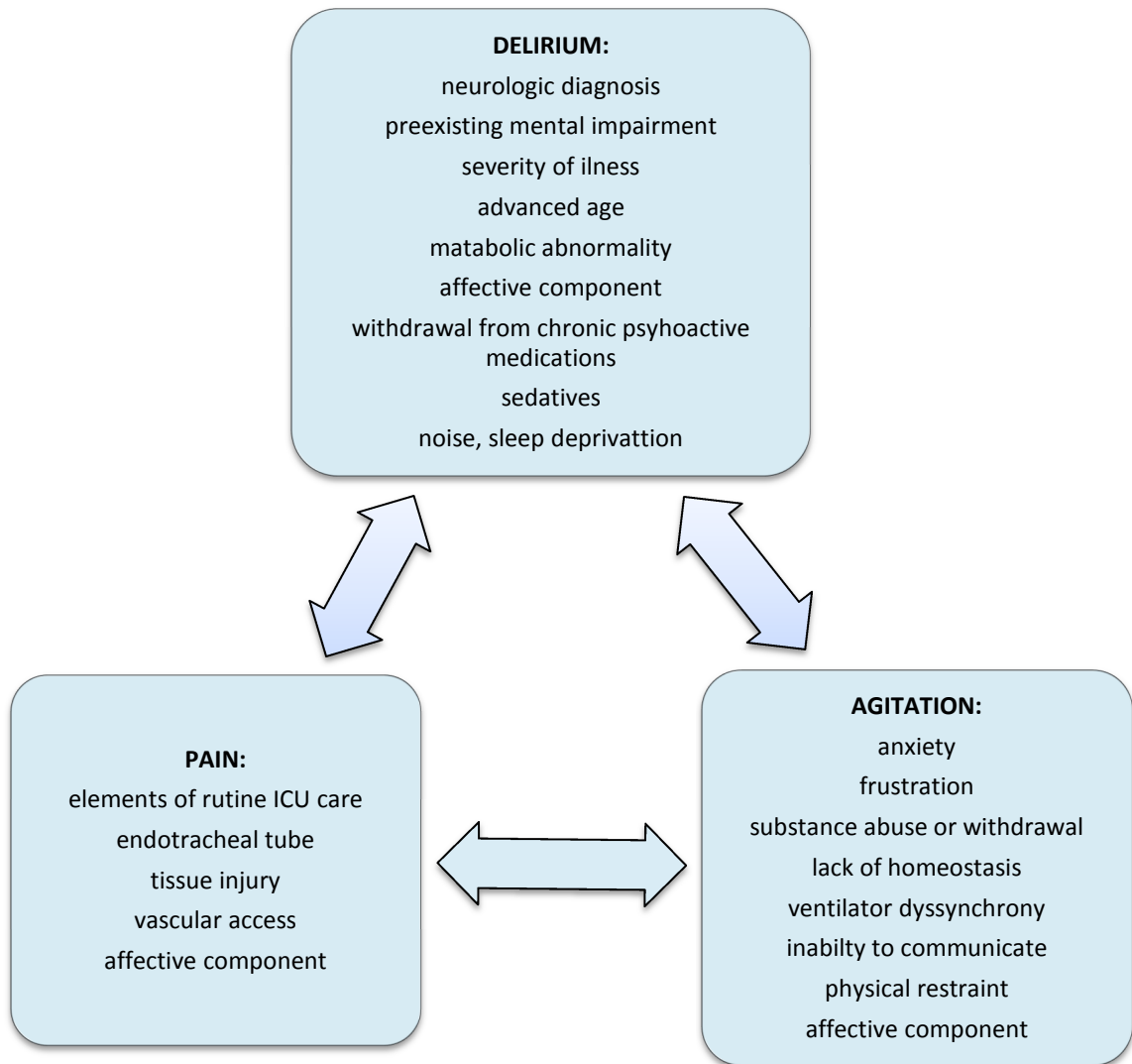


Figure 1. Causes and Interactions of Pain, Agitation, and Delirium (PAD) [Adapted from Reade MC].

Table 1. Sedative and Analgesics in Common Use in the ICU [Adapted from 3, 10].

Agent	Onset After IV Loading Dose	Metabolism/Elimination	Adult Dose (IV)	Side Effects
Midazolam	2–5 min	Liver oxidation via CYP450; metabolism impeded by other drugs metabolised by CYP450 Active metabolite 1-hydroxymethyl-midazolam. Extensive protein binding Half-life 3–11 hr	Bolus dose 1 – 5 mg (0,03 mg/kg/h)  Continuous infusion not recommended; increase in context sensitive half-life	Respiratory depression at high doses, or in combination with opioids.hypotension
Lorazepam	15–20 min	Liver glucuronidation to inactive metabolites Half-life 8–15 hr	Bolus dose 2 – 4 mg every 2 - 4 h	Independent risk factor for developing delirium Propylene glycol accumulation with prolonged use leading to metabolic acidosis and hyperosmolality
Diazepam	2–5 min	Metabolized by hepatic desmethylation and hydroxylation Half-life 20–120 hr	Bolus 1-5 mg	Respiratory depression, hypotension, phlebitis
Propofol	1–2 min	Conjugation in liver to inactive metabolites	0,5 - 3 mg/kg/h	Pain on injection, Hypotension and respiratory depression in cardiomyopathy, sepsis, elderly patients and with concurrent opioids use, Hyperlipidaemia Increased risk of infection, Metabolic acidosis in children, Propofol infusion syndrome
Dexmedetomidine	5–10 min	Complete biotransformation in liver Half-life 1.8–3.1 hr	Loading dose 1 µg/kg over 10 min Maintenance 0,05 - 0,7 µg/kg/h	Biphasic cardiovascular effect: transient hypertension and bradycardia with loading dose; hypotension and bradycardia is then seen, especially in hypovolaemic patients; loss of airway reflexes
<i>Morphine</i>	15 – 20 min	Hepatic metabolism - 80% morphine-3-glucuronide with no analgesia - 20% morphine-6-glucuronide with potent analgesia	Loading dose 1 – 1,5 mg iv every 5 min Maximum 0,5mg/kg Maintenance 2 – 4 mg/h Infusions lead to prolonged elimination half-life.	Respiratory depression Histamine release with hypotension
<i>Fentanyl</i>	2 – 5 min	Hepatic metabolism to non-active metabolites Accumulation due to organ-dependent metabolism	Loading dose 0,5 - 1 µg/kg iv every 5 min Maximum 2 µg/kg Infusion 5 – 10 µg/kg/h titrated at 1 – 2 µg/kg/h increments	Respiratory depression
<i>Remifentanyl</i>	1 min	Metabolised by non-specific esterase in plasma, red blood cells and interstitial tissue	Starting infusion 6 – 9 µg/kg/h Titrate 1,5 µg/kg/h	Respiratory depression Hypotension
<i>Ketamine</i>	1 min	Metabolised in liver to norketamine Excreted in urine and bile Elimination half-life 2,5 - 3,5 h	Metabolised in liver to norketamine Excreted in urine and bile	Neuropsychiatric effects seldom a problem at low doses

Table 2. “ICU pain, agitation, and delirium (PAD) care bundle”, adapted from Barr J. [3].

<p><b>•Pain:</b></p> <ul style="list-style-type: none"> <li>–ICU patients routinely experience pain at rest and with ICU care (B). Procedural pain is common in ICU patients (B).</li> <li>–Assess and treat pain first, then sedate (analgo-sedation)</li> <li>–The BPS and CPOT are the most valid and reliable behavioral pain scales (B).</li> <li>–Treat significant pain: NRS <math>\geq</math> 4, BPS <math>\geq</math> 6, or CPOT <math>\geq</math> 3</li> <li>–Use appropriate pain management strategies (patient specific)</li> <li>–Administer pre-procedural analgesia</li> <li>–Multimodal therapy should be considered</li> </ul>
<p><b>•Agitation/Sedation:</b></p> <ul style="list-style-type: none"> <li>–Minimize sedative use, avoid over-sedation</li> <li>–Sedation goals: patient is responsive, aware, and able to purposely follow commands* (RASS = 0 to -2 or SAS = 3 to 4)</li> <li>–Maintaining lighter levels of sedation in ICU patients is associated with improved clinical outcomes (B)</li> <li>–Choose sedatives that minimize side effects (patient-specific)</li> </ul>
<p><b>•Delirium:</b></p> <ul style="list-style-type: none"> <li>– Delirium risk factors include: pre-existing dementia, HTN, history of alcoholism, and a high severity of illness at baseline (B); coma (B); and benzodiazepine use (B).</li> <li>– Routinely monitor ICU patients for delirium (1B). The CAM-ICU and ICDSC are the most valid and reliable instruments for this purpose (A).</li>   <li>– When sedation is required in delirious ICU patients, suggest using dexmedetomidine rather than benzodiazepine infusions for sedation in these patients (2B).</li> </ul>
<p>*Performs 3 out of 5 commands: <i>opens eyes, maintains eye contact, squeezes hand, sticks out tongue, wiggles toes.</i></p>

**REFERENCES:**

1. Granot M, Weissman-Fogel I: The effect of post-surgical neuroplasticity on the stability of systemic pain perception: a psychophysical study. 2012; *Eur J Pain*. 16: 247-255.
2. Sessler, C.N: Progress towards eliminating inadequately managed pain in the ICU through interdisciplinary care. *Chest*, 2009; 135, 894-896. doi:10.1378/chest.08-2834.
3. Barr J et al: Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit. *Critical Care Medicine* 2013; 41:263-306
4. Brennan F et al: Pain management: a fundamental human right. *Anesth Analg* 2007; 105(1): 205–21
5. Vadivelu N, Mitra S, Narayan D: Recent Advances in Postoperative Pain; *Yale J Biol Med*. 2010; 83(1): 11–25.
6. Gélinas C, Puntillo KA, Joffe AM, Barr J: A validated approach to evaluating psychometric properties of pain assessment tools for use in nonverbal critically ill adults. *Semin Respir Crit Care Med*. 2013; 34(2):153-68.
7. Payen JF, Bosson JL, Chanques G, et al; DOLOREA Investigators: Pain assessment is associated with decreased duration of mechanical ventilation in the intensive care unit: A post Hoc analysis of the DOLOREA study. *Anesthesiology* 2009; 111:1308–1316

8. Erstad BL, Puntillo K, Gilbert HC, et al: Pain management principles in the critically ill. *Chest* 2009; 135:1075–1086
9. Gélinas C, Johnston C. Pain assessment in the critically ill ventilated adult: validation of the Critical-Care Pain Observation Tool and physiologic indicators. *Clin J Pain*. 2007; 23:497–505.
10. Reade MC, Finfer S. Sedation and delirium in the intensive care unit. *N Engl J Med* 2014;370:444-454.
11. AM Travers: Refresher Course: Sedation in the ICU, *Southern African Journal of Anaesthesia and Analgesia*, 2010; 16:1, 96-100, DOI: 10.1080/22201173.2010.10872647
12. Jaber S, et al. A prospective study of agitation in a medical-surgical ICU: incidence, risk factors, and outcomes. *Chest* 2005 Oct;128(4):2749-57
13. Jakob SM , et al. Dexmedetomidine vs Midazolam or Propofol for Sedation During Prolonged Mechanical VentilationTwo Randomized Controlled Trials FREE; *JAMA*. 2012;307(11):1151-1160. doi:10.1001/jama.2012.304.
14. Ghoneim MM, Block RI. Clinical, methodological and theoretical issues in the assessment of cognition after anaesthesia and surgery: a review. *Eur J Anaesthesiol*. 2012;29:409–422.



---

May 19, 2017 Friday

15:45-17:00 Panel XV

Focus on infections

Ahmet Coşar (Turkey), Semir Imamovic (B&H), Mihal Kerçi (Albania)

New sepsis guidelines: What's new? Necmettin Ünal (Turkey)

Preoperative antibiotic prophylaxis in elective surgery İsmail Cinel (Turkey)

**SIRS and CARS in surgical patients** Jasmina Smajic (B&H)

Procalcitonin interpretation in acute pancreatitis. Radmilo Jankovic (Serbia)

---

## SIRS AND CARS IN SURGICAL PATIENTS

*Asst Prof Jasmina Smajic MD, PhD,  
Specialist in anaesthesiology and resuscitation,  
Clinic for Anaesthesiology and Resuscitation,  
University Clinical Center Tuzla, Bosnia and Herzegovina*

### INTRODUCTION

The stress response is the name given to the hormonal and metabolic changes which follow injury or trauma. The 'surgical stress' response reflects a combination of endocrinological, immunological, and hematological changes occurring after injury/trauma. The degree of the response is proportional to the magnitude of injury and reflects increased demands on organ function<sup>1</sup>. The 'stress' response begins by activation of the hypothalamic-pituitary-adrenal (HPA) axis and sympathetic nervous system, via afferent nerves from the site of tissue damage. This results in secretion of ACTH, cortisol, catecholamines, aldosterone, AVP, and glucagon in an effort to provide the host with energy, retain fluid and salt, and maintain cardiovascular homeostasis. This high 'stress' state, however, can result in harmful outcomes to the host such as hyperglycemia, cardiovascular instability (hypertension, tachycardia), and immunosuppression<sup>2,3</sup>.

### SYSTEMIC INFLAMMATORY RESPONSE SYNDROM (SIRS)

Initially when a patient suffers a traumatic injury, undergoes surgery, critical illness like sepsis (sepsis syndrome), or intense inflammatory process like pancreatitis the insult triggers a systemic response: SIRS. When a sufficiently severe proinflammatory insult occurs, the patient typically experiences a constellation of vital sign and laboratory changes (tachycardia, tachypnea, abnormal temperature, leukocytosis) that is termed the Systemic Inflammatory Response Syndrome (SIRS). Systemic inflammatory response syndrome is an inflammatory state affecting the whole body. SIRS is a serious condition related to systemic inflammation, organ dysfunction, and organ failure. It is a subset of cytokine storm, in which there is abnormal regulation of various cytokines. Clinically, the *Systemic Inflammatory Response Syndrome* (SIRS) is the occurrence of at least two of the following criteria: fever >38.0°C or hypothermia <36.0°C, tachycardia >90 beats/minute, tachypnea >20 breaths/minute, leukocytosis >12\*10<sup>9</sup>/l or leucopenia <4\*10<sup>9</sup>/l. SIRS can be incited by ischemia, inflammation, trauma, infection or a combination of several "insults"<sup>4</sup>.

SIRS, independent of the etiology, has the same pathophysiology with minor differences in inciting cascades. That is a self defense mechanism, which uses inflammation as the body's response to nonspecific insults that arise from chemical, traumatic or infectious stimuli.

Trauma, inflammation or infections lead to the activation of the inflammatory cascade. The inflammatory cascade is complex and involves humoral and cellular responses, complement and the cytokine cascades. When SIRS is mediated by an infectious insult, the inflammatory cascade is often initiated by endotoxin or exotoxin. The postoperative stress response is related to neural input from surgical wounds and cytokines released during and after surgery. Systemic inflammatory response syndrome (SIRS) is insult dependent and is common after surgery. The effects of surgery, surgical stress, anesthesia, and subsequent intensive care unit (ICU) resuscitation may affect the components of the systemic inflammatory response syndrome (SIRS) score<sup>5</sup>.

Tissue macrophages, monocytes, mast cells, platelets and endothelial cells are able to produce a multitude of cytokines. Cytokines Tissue Necrosis Factor- $\alpha$  (TNF) and interleukin 1 (IL-1) are first released and initiate several cascades. The release of IL-1 and TNF (or the presence of endotoxin or exotoxin) leads to cleavage of the Nuclear Factor Kappa B (NF- $\kappa$ B) inhibitor. Once the inhibitor is removed, NF- $\kappa$ B is able to initiate the production of mRNA that will induce the production of other pro-inflammatory cytokines. Interleukins 6 (IL-6) and 8 (IL-8) and Interferon-gamma are the primary pro-inflammatory mediators induced by NF- $\kappa$ B. TNF and IL-1 have been shown to be released in large quantities within 1 hour of an insult and have both local and systemic effects. They are responsible for fever and the release of stress hormones (norepinephrine, vasopressin and activation of the renin-angiotensin-aldosterone system). Other cytokines, especially IL-6, stimulate the release of acute phase reactants such as C-reactive protein. Infection has been shown to induce a greater release of TNF than does trauma, which therefore leads to a greater release of IL-6 and IL-8. This is suggested to be why there is higher fever associated with infection than trauma. The cumulative effect of this inflammatory cascade is an unbalanced state with inflammation and coagulation dominating<sup>6</sup>.

The correlation between inflammation and coagulation is critical to understanding the potential progression of SIRS. IL-1 and TNF- $\alpha$  directly affect endothelial surfaces, leading to the expression of tissue factor. Tissue factor initiates the production of thrombin, thereby promoting coagulation, and is a proinflammatory mediator itself. Fibrinolysis is impaired by IL-1 and TNF- $\alpha$  via production of plasminogen activator inhibitor-1. Proinflammatory cytokines also disrupt the naturally occurring anti-inflammatory mediators antithrombin and activated protein-C (APC). If unchecked, this coagulation cascade leads to complications of microvascular thrombosis, including organ dysfunction. The complement system also plays a role in the coagulation cascade. Infection-related procoagulant activity is generally more severe than that produced by trauma<sup>7</sup>.

The cumulative effect of this inflammatory cascade is an unbalanced state with inflammation and coagulation dominating. To counteract the acute inflammatory response, the body is equipped to reverse this process via the counter-inflammatory response syndrome (CARS). IL-4 and IL-10 are cytokines responsible for decreasing the production of TNF- $\alpha$ , IL-1, IL-6, and IL-8. In fact, this proinflammatory and anti-inflammatory activation mirrors other homeostatic processes, like coagulation, anticoagulation, complement activation, and complement suppression. The balance of SIRS and CARS is a critical factor in determining a patient's outcome<sup>8</sup>.

### COMPENSATORY ANTIINFLAMMATOY RESPONSE SYNDROME (CARS)

The most severe cases of hyperinflammation (e.g. septic shock), the acute morbidity and mortality result not from overwhelming infection or injury but from the systemic *immune response* to that noxious stimulus. In short order (likely < 24 hours later) compensatory mechanisms come into play and shut down the immune system's inflammatory response, often through the induction of anti-inflammatory cytokines. This phenomenon is referred to as the Compensatory Anti-inflammatory Response Syndrome (CARS). The compensatory anti-inflammatory response syndrome (CARS) is a complex pattern of immunologic responses to severe infection or injury. CARS is a global deactivation of the immune system tasked with restoring homeostasis. The difference is that while SIRS is a proinflammatory syndrome that seemed tasked with killing infectious organisms through activation of the immune system, CARS is a systemic deactivation of the immune system tasked with restoring homeostasis from an inflammatory state. Moreover, it has become apparent that CARS is not simply the cessation of SIRS, it can exist separately from SIRS<sup>9</sup>.

The inflammation can be triggered in two main ways, either by infections with pathogens like bacteria, or by the products of tissue destruction. The innate immune system describes a network of immune cells and their surface receptors designed to recognize and react to either dead tissue or pathogens. When elements of either of these encounter certain lymphocytes or monocytes, they bind to pre-existing receptors and cause activation (lymphocytes) or are ingested and then presented on cell surface receptors to activate other cells (monocytes). What follows is an expansion and activation of several immune cell lines such as polymorphonucleocytes (PMNs) and B lymphocytes stimulated by the proinflammatory cytokines interleukin (IL)-1 and tumor necrosis factor (TNF). The presence of these cytokines also leads to other clinical manifestations of infection such as fever, capillary leak, vasodilation, and the expression of heat shock proteins from the liver<sup>10</sup>.

The CARS response essentially reverses many of these processes and has been characterized over the last several decades to include:

- Cutaneous anergy
- Hypothermia
- Leukopenia
- Susceptibility to infection
- Failure to clear infection
- Reduction of lymphocytes by means of apoptosis
- Decreased cytokine response of monocytes to stimulation
- Decreased numbers of human leukocyte antigen (HLA) antigen-presenting receptors on monocytes
- Expression of cytokines such as IL-10 that suppress TNF expression

Just as the SIRS response is characterized by many different and sometimes redundant cytokines, the CARS response also seems to involve many cytokines. The most important however is clearly IL10. IL10 first was characterized around 1990 and was shown to regulate T-cell populations. It now has been established that IL-10 has multiple immunosuppressive roles, with its most important being the down-regulation of TNF. Interleukin-10 (IL-10) is considered to be a central anti-inflammatory cytokine. IL-10 was initially characterized as a cytokine that inhibited interferon (IFN)- $\gamma$  synthesis, but IL-10 also has other important down-regulatory functions in relation to other proinflammatory cytokines. IL-10 inhibits the

production of TNF- $\beta$ , IL-1, IL-6 and IL-8. IL-10 suppresses free oxygen radical release and nitric oxide activity of macrophages and the production of prostaglandins. A major stimulus for the production of IL-10 is inflammation itself, and IL-1E and TNF- $\beta$  can stimulate IL-10 production directly. Several cell types can produce IL-10, including CD4+ and CD8+ T cells, macrophages, monocytes, B cells, dendritic cells and epithelial cells. Excessive production of IL-10 may mediate detrimental immunosuppressive actions<sup>11</sup>.

An elementary feature in the modulation of the individual immune response is the functional diversity of T helper lymphocytes. CD4+ T-helper (Th) lymphocytes can differentiate into functionally two different subsets of Th cells depending on the microenvironment of the cell. Precursor T helper (Th0) cells can develop either to Th1 or Th2 cells, which produce distinct patterns of cytokines. Th1 cells secrete interleukin-2 (IL-2) and interferon- $\gamma$  (IFN- $\gamma$ ), thus creating a proinflammatory response, whereas Th2 cells produce anti-inflammatory response by secreting IL-4, IL-5, IL-6, IL-10, and IL-13. A major characteristic of the CARS response is a Th1 – Th2 switch, however recent studies in post sepsis and peritonitis patients have observed in some patients down regulation of both Th1 and Th2 responses, suggesting a complete down regulation rather than a shift to an anti-inflammatory response<sup>12</sup>.

**CONCLUSION.** Although anti-inflammatory reactions seem to have an important protective function in critical illness, individual patients may undergo many stages during which either pro- or anti-inflammatory reactions may be dominant. Age, immune status, type of infection, severity of injury and genetic predisposition modifies the inflammatory response during the intensive care period. A timely characterization of both systemic inflammatory and compensatory anti-inflammatory reactions can influence on therapy and outcome of treatment.

## REFERENCES

1. Giannoudis P, Dinopoulos H, Chalidis B, Hall G. Surgical stress response. *Injury, Int. J. Care Injured* 2006; 37S: S3-S9.
2. Giannoudis P, Dinopoulos H, Chalidis B, Hall G. Surgical stress response. *Injury, Int. J. Care Injured* 2006; 37S: S3-S9.
3. Desborough J. The stress response to trauma and surgery. *British Journal of Anaesthesia* 2000; 85: 109-117.
4. Bone RC, Balk RA, Cerra FB, Dellinger RP, Fein AM, Knaus WA, Schein RM, Sibbald WJ. *Chest*. 1992; 101(6):1644-55.
5. Baue AE, Durham R, Faist E, et al. Systemic inflammatory response syndrome (SIRS), multiple organ dysfunction syndrome (MODS), multiple organ failure (MOF): are we winning the battle? *Shock*. 1998. 10(5):383–384.
6. Bone RC: Toward a theory regarding the pathogenesis of the systemic inflammatory response syndrome: what we do and do not know about cytokine regulation. *Crit Care Med* 1996;24:163-172.
7. McGilvray I D, Rotstein O D. The role of the coagulation system in local and systemic inflammation. *World J Surg.* (1998);22:179–186.
8. Bone RC. Sir Isaac Newton, sepsis, SIRS, and CARS. *Crit Care Med*. 1996;24(7):1125–1128.

9. Ward NS, Casserly B, Ayala A. The compensatory anti-inflammatory response syndrome (CARS) in critically ill patients. Clin Chest Med. 2008 Dec;29(4):617-625, viii. doi: 10.1016/j.ccm.2008.06.010.
10. Oberholzer A, Oberholzer C, Moldawer LL. Sepsis syndromes: understanding the role of innate and acquired immunity. Shock. 2001;16(2):83–96.
11. Steinhilber ML, Hogaboam CM, Kunkel SL, Lukacs NW, Strieter RM, Standiford TJ. IL-10 is a major mediator of sepsis-induced impairment in lung antibacterial host defense. J Immunol. 1999 Jan 1; 162(1):392-399.
12. Gogos CA, Drosou E, Bassaris HP, Skoutelis A. Pro- versus anti-inflammatory cytokine profile in patients with severe sepsis: a marker for prognosis and future therapeutic options. J Infect Dis 2000; 181: 176-180.

## **ORAL PRESENTATIONS**

**OP-001****THE EFFECTS OF ANAESTHETIC INDUCTION WITH PROPOFOL OR THIOPENTAL ON  
OXIDATIVE STRESS PARAMETERS IN PATIENTS UNDERGOING LAPAROSCOPIC  
CHOLEXYSTECTOMY SURGERY**Ayşegül Çeliksü, Ş. Mustafa AksoyAtatürk Training and Research Hospital, Anesthesiology and Reanimation Clinic, Ankara,  
TURKEY

The aim of this study is to find out which of the uses – propofol or thiopental – in the anaesthetic induction in the events of laparoscopic cholecystectomy could have a more positive effect on oxidative stress and to investigate the relation between the events' haemodynamic parameter variables and oxidative stress.

Planned as randomized and prospective, our study was carried out with 60 patients in the operating theatre of Ankara Atatürk Training and Research Hospital. Patients were randomly divided into two equal groups. In the anaesthetic induction of the patients, in Group 1 thiopental 4-7 mg/kg iv and in Group 2 propofol 2-3 mg/kg iv were used. The other drugs used were the same.

Hemodynamic data were recorded at designated times. In order to measure serum thiol-disulphide, TAS (total antioxidant status), TOS (total oxidant status), PON1 (paraoxonase) and ARES (arylesterase) levels, blood was drawn from the patients two times – one being before the general anaesthesia induction and the other in the recovery room.

While the thiol levels that include TOS, ARES and SH are effected similarly in both groups, TAS level was found to be unchanged in thiopental group but to increase in propofol group, and PON1 level was found to be unchanged in propofol group and to decrease in thiopental group. Moreover, when the patients whose anaesthesia ended in the morning and in the afternoon were studied within themselves in terms of changes in the oxidative stress parameters before and after operation, determination of the fact that there was a meaningful increase in the post-operative TAS values of patients whose anaesthesia ended in the morning and that there was a more meaningful decrease in post-operative PON1, ARES and thiol levels in patients whose anaesthesia ended in the afternoon gave rise to the thought that oxidative stress was higher in the afternoon. In our study, a positive correlation between post-operative TAS, PON1 and ARES and general blood pressure values; between post-operative TOS values and KAH values in induction; between ETCO<sub>2</sub> values on the fifth minute of the operation and TOS values; between ARES value and post-extubation SpO<sub>2</sub> and a negative correlation between PON1 and ARES values and KAH values were determined.

In our study, we came to the conclusion that propofol would be a preferable iv anaesthetic agent as it caused an increase in TAS level. It was found out that post-operative antioxidant defence systems were higher in patients that underwent an operation in the morning and post-operative oxidative stress were higher in patients who were operated in the afternoon. Furthermore, in our study it was decided that we needed to avoid conditions such as hypertension, uncontrolled hypotension, tachycardia, hypercapnia, and hypoxia in order to reduce the oxidative stress.

**OP-002****IS KHINE'S FORMULA ACCURATE FOR PREDICTION OF TRACHEAL TUBE SIZE IN TURKISH CHILDREN?**

S.Taştan, E.Kesimci, C. Döğ̈er, M. Aksoy  
Atatürk Training and Research Hospital, Anesthesiology and Reanimation Clinic, Ankara,  
TURKEY

**Introduction-Aim:**

The appropriate size of endotracheal tube (ETT) for intubation in pediatric age group can be predicted by various methods. The size of a child's trachea, age, height, weight, and fifth finger diameter have been used clinically for estimation of ETT size. However, these have been mainly tried in American and/or European children. In this study, we aimed to evaluate the suitability of the "Khine's formula  $[\text{age (years)}/4 + 3]$ " for Turkish children in determining the appropriate size of ETT.

**Material and Methods:**

After institutional ethical committee approval and with parental consent, pediatric ASA I-II patients of either sex, undergoing general anesthesia with oral endotracheal intubation for minor pediatric surgery were enrolled. The choice of the size of the ETT was made by calculation according to the Khine's formula. The main criterion of judgment for accuracy was the comparison of the leak before and after inflating the cuff at a pressure of 20 cmH<sub>2</sub>O. Demographic data, tracheal tube size used predicted by Khine's formula and post-extubation complications were recorded.

**Results:**

The study included 125 patients ranging in age from 2-12 years, with a mean age of  $6.6 \pm 3.1$ . Mean body weight and height of the children were  $24.9 \pm 10.9$  kg and  $118.4 \pm 19.8$  cm, respectively. The projected tube size correspondence to the size of the tube used was accurate in 59.2% of the patients. However, used ETT size was smaller than the projected size in 19.2% , while it was greater in 21.6% of the patients of our population.

**Discussion and Conclusion:**

The Khine's formula has moderate-high accuracy in predicting the appropriate ETT size in Turkish children. However, we recommend three ETT sizes to be available for each intubation attempt as 0.5 mm smaller and 0.5 mm greater size for a harmless tracheal intubation.



**OP-003****THE COMPARISON OF SUGAMMADEX AND NEOSTIGMINE FOR REVERSAL OF ROCURONIUM-INDUCED NEUROMUSCULAR BLOCKADE IN PATIENTS UNDERGOING ROBOTIC PROSTATECTOMY**

S.Ellik, T.Gümüş, E. Erkilic, E.Kesimci, M.Aksoy, O. Kanbak  
Atatürk Training and Research Hospital, Anesthesiology and Reanimation Clinic, Ankara,  
TURKEY

**Introduction-Aim:**

The acetylcholinesterase inhibitor neostigmine is commonly used for reversal of moderate neuromuscular blockade. Sugammadex, a modified gamma-cyclodextrin, is more recently developed reversal agent with much more rapid and predictable reversal than neostigmine. In this study, we aimed to compare efficacy and safety of sugammadex with neostigmine in patients undergoing robotic prostatectomy with steep Trendelenburg position and abdominal CO<sub>2</sub>-insufflation. Besides, we wondered whether awakening provided by sugammadex had positive effects on cognitive functions in the early postoperative period.

**Material and Methods:**

After institutional ethical committee approval and with patient consent, 66 patients of ASA I-II undergoing robotic prostatectomy were enrolled. Mini Mental Tests (MMT) were performed before and after surgery. Standard anesthesia monitorization with TOF and BIS was applied. Rocuronium was used as a neuromuscular blocking agent. We recorded the time for TOF's being 0-25- 90%. The patients were divided into two at the end of the operation with regard to the reversal agent used as; Group S (sugammadex) and Group N (neostigmine). The Modified Aldrete Scores, VAS scores, arterial blood gas values (before and after extubation, and at post anesthesia care unit-PACU-) were recorded.

**Results:**

The duration of anesthesia and operation was similar in both groups (Group S: 212.2±43.8 min-192.5±55.9 min/ Group N: 224±44.2 min-194.8±43.8 min). The time for TOF's being 90% was significantly shorter in Group S. The PaCO<sub>2</sub> values had a decreasing trend in Group S, that made a significant difference. The time for discharge from PACU was significantly longer in Group N. MMT scores obtained postoperatively were similar between the groups.

**Discussion and Conclusion:**

In this study, when compared with neostigmine, following sugammadex administration patients awakened earlier and had shorter recovery times. This could provide advantage in these cases. However, better cognitive performance could not be proved in the sugammadex patients compared to the neostigmine patients.

**OP-004****THE ROLE OF SONOGRAPHIC EVALUATION OF DIAPHRAGM IN INVESTIGATING THE CAUSE OF DIFFICULT WEANING: A CASE REPORT**

Banu Kılıçarslan\*, İsmail Kerem Gelir\*, Seda Banu Akıncı\*, Melike Mut Aşkun\*\*

\*Hacettepe University Faculty of Medicine, Department of Anesthesiology and Reanimation

\*\*Hacettepe University Faculty of Medicine, Department of Neurosurgery

Liberation from the mechanical ventilation in critical ill patients is not always easy. It is the task of clinician try to determine underlying causes in patients in whom this process is difficult. The diaphragm is the principal respiratory muscle, and its dysfunction predisposes to respiratory complications and can prolong the duration of mechanical ventilation. When the diaphragm is the only muscle involved, determining aetiology requires a high clinical suspicion. Bedside lung ultrasound(LUS) can be informed about diaphragm function in this stage.

**Case**

A 63-year-old male patient underwent operation due to brain metastasis of prostate cancer and while being followed in neurosurgery clinic. Over the next few days, Acute Respiratory Failure (ARF) developed and the patient was mechanically ventilated. It was thought that ARF may be associated with seizure and medical treatment was regulated. In follow up evaluations, patient was extubated but he had failed spontaneous breathing trials and intubated again. He was referred to our clinic in view of difficulty in weaning off ventilator. At presentation, his vital signs stable, conscious and co-operative but limb movements were gradually declining. Echocardiography, before weaning, showed good ejection fraction without regional wall motion abnormalities. When spontaneous breathing trial was attempted Rapid Shallow Breathing Index(RSBI) was >105, tachycardia and hypertension developed and patient desaturated. Tidal volume was found to be 150 ml. He was assessed ultrasonographically for movements of the diaphragm. It was established that there was bilateral pleural effusion, atelectasis and diaphragm was bilaterally dysfunctional. In fluoroscopy; bilateral diaphragm paralysis was proved. Electromyography(EMG) was performed and acute inflammatory demyelinating polyneuropathy was detected. He was treated with plasmapheresis and IVIG therapy. On follow-up the patient, bedside LUS examinations were repeated for the evaluation of the diaphragmatic functions. His diaphragm movements and rate of excursion value made a gradually recovery after 3<sup>th</sup> plasmapheresis. After 5<sup>th</sup> plasmapheresis, tidal volume increased markedly. Tracheotomy was opened due to prolonged intubation and then patient was weaned off the ventilator.

**Discussion**

We detected diaphragm paralysis with LUS examination in this patient who was followed for 10 days due to weaning failure. He was diagnosed with Gullianne-Barre syndrome after EMG examination. Sonography receives increasing recognition as a fast, easy and accurate method of noninvasively evaluating diaphragmatic function at the bedside. Therefore, bedside LUS could be carried out while evaluating respiratory parameters in critically ill patients

**References**

1. Zambon, M., et al., *Assessment of diaphragmatic dysfunction in the critically ill patient with ultrasound: a systematic review*. Intensive Care Med, 2017. **43**(1): p. 29-38.
2. Mongodi, S., et al., *Usefulness of combined bedside lung ultrasound and echocardiography to assess weaning failure from mechanical ventilation: a suggestive case\**. Crit Care Med, 2013. **41**(8): p. e182-5.
3. van Doorn, P.A., L. Ruts, and B.C. Jacobs, *Clinical features, pathogenesis, and treatment of Guillain-Barré syndrome*. The Lancet Neurology, 2008. **7**(10): p. 939-950.

## OP-005

### BODY SURFACE AREA IS NOT A RELIABLE PREDICTOR OF TRACHEAL TUBE SIZE IN CHILDREN

Filiz Uzunçugil<sup>\*</sup>, Emre Can Celebioglu<sup>\*\*</sup>, Demet Basak Ozkaragoz<sup>\*</sup>, Aysun Anay Yilbas<sup>\*</sup>,  
Basak Akca<sup>\*</sup>, Nazgol Lotfinagsh<sup>\*</sup>, Bilge Celebioglu<sup>\*</sup>

<sup>\*</sup> Hacettepe University Faculty of Medicine, Department of Anesthesiology and Reanimation,  
Ankara, Turkey

<sup>\*\*</sup> Karabük University Department of Radiology, Karabük, Turkey

#### Background and aim

The age-based Cole formula is used for the estimation of endotracheal tube (ETT) size in children due to its ease of use, but it lacks the estimation of speed of growth. The growth and development of children are commonly assessed by body surface area (BSA). The percentile charts for weight- and height-for-age are also used for monitoring the growth and development in children. BSA was reported to be useful for determining the ETT length in children, whereas, pathologically short stature children (<5% of height-for-age) were reported to be suitable for both height-based and age-based estimations of ETT size.<sup>1,2</sup> USG has also proven to be an effective technique for estimation of ETT size.<sup>3</sup> We aimed to investigate the correlation between outer-diameter of uncuffed ETT (ETT-OD) and BSA in patients at 24-96 months of age as primary outcome.

#### Methods

127 patients at 24-96 months of age with ASA grade I-II were evaluated. Age, height, weight and BSA were recorded. Subglottic airway transverse diameters were obtained by USG before intubation. Patients' ETT sizes were determined by Cole formula and leak test was performed to determine the correct size. Age, height, weight, BSA, USG measurement and Cole formula were evaluated for their correlations with correct ETT size. The maximum allowed error for estimation of ETT size was  $\leq 0.3$  mm. The growth percentiles of weight-for-age and height-for-age were evaluated for their correlation with tube exchange rates.

#### Results

A total of 114 patients were included. BSA was positively correlated with ETT-OD (CC: 0.689;  $p < 0.001$ ). Independent from age, ETT-OD increased 0.374 mm (95%CI: 0.300-0.447) by every 0.1 m<sup>2</sup> increase in BSA. Cole formula had lowest estimation at 1<sup>st</sup> attempt (25.7%) at  $\geq 72$  months of age. Cole formula, USG and BSA had successful estimation rates of 50% (95%CI; 40.8-59.2), 47.4% (95%CI; 38.2-56.5) and 44.7% (95%CI; 35.6-53.9), respectively. The ETT exchange rates were not correlated with percentiles for weight- and height-for-age.

#### Conclusion

We suggest that BSA is not reliable to use in clinical practice to predict uncuffed ETT size.

#### References

1. Neunhoffer F, Wahl T, Hofbeck W, Renk H, Esslinger M, Hanelt M, Kumpf M. A new method for determining the insertion depth of tracheal tubes in children: a pilot study. *Br J Anaesth* 2016; 116(3): 393-7

2. Daugherty RJ, Nadkarni V, Brenn BR. Endotracheal tube size estimation for children with pathological short stature. *Ped Emerg Care* 2006; 22(11): 710-717
3. Bae JY, Byon HJ, Han SS, Kim HS, Kim JT. Usefulness of ultrasound for selecting a correctly sized uncuffed tracheal tube for paediatric patients. *Anaesthesia* 2011; 66: 994-998

## OP-006

### AWAKE FIBEROPTIC INTUBATION IN A PATIENT WITH SEVERE MAXILLOFACIAL TRAUMA

Ankay Yilbas A., Pamuk AG., Solak Yalcin M., Canbay O., Kanbak M., Saricaoglu F.  
Hacettepe University, Faculty of Medicine, Department of Anaesthesiology, Ankara, Turkey

#### Introduction

Failure to secure the airway is one of the most common causes of mortality in maxillofacial trauma patients (1). The aim of this case report is to share and discuss our experience of airway management in a patient with severe maxillofacial trauma and multiple fractures due to gunshot injury.

#### Case Report

A 39 year-old, ASA I, male patient was scheduled for emergency maxillofacial trauma surgery following suicide attempt with a gunshot through the inferior region of mandibula. The patient was conscious and spontaneously breathing. Mask ventilation was impossible and difficult intubation was anticipated due to severe damage including bony structures and massive hemorrhage (Figure 1). Following standard monitoring and appropriate local anesthesia with lidocaine spray, awake nasal fiberoptic intubation was performed. No sedatives were given during the procedure. Anesthesia induction was performed after the patient's trachea was intubated and end-tidal carbon dioxide was monitored. The mandibular and maxillar reconstruction was completed uneventfully and the patient was transferred to post-anesthesia care unit with a tracheostomy.



**Figure 1.** Maxillofacial trauma due to suicide attempt with gunshot

#### Discussion

In maxillofacial trauma patients; airway management should start with careful but quick planning regarding spontaneous breathing, damage to bony structures, soft tissue edema, foreign bodies, hemorrhage, mouth opening, cervical instability and pressure on airway due to the risk of total compromise (1). In cases of anticipated difficult mask ventilation and intubation as our patient, awake fiberoptic intubation or surgical front of neck access are among the most safe interventions. Appropriate local anesthesia can help avoiding the usage of sedative agents which can make the situation more challenging and complex.

#### References

1. Krausz AA, El-Naaj IA, Barak M. Maxillofacial trauma patient: coping with the difficult airway. *World J Emerg Surg.* 2009 May 27;4:21.

**OP-007****MANAGEMENT OF DESCENDING NECROTIZING MEDIASTITIS AS A COMPLICATION OF PERITONSILLAR ABSCESES: A CASE REPORT**

İsmail Kerem Gelir\*, Koray Altun\*\*, Banu Kılıçaslan\*, Seda Banu Akıncı\*, Bilge Çelebioğlu\*,  
Meral Kanbak\*

\*Hacettepe University Faculty of Medicine, Department of Anesthesiology and Reanimation

\*\*Mehmet Akif Ersoy Training and Research Hospital

Descending Necrotizing Mediastinitis(DNM) is a polymicrobial, dangerous and often fatal process, with the most common origins of infection including odontogenic or peritonsillar abscesses and spreading along the deep fascial cervical planes, descending into the mediastinum. It can rapidly progress to sepsis and can frequently lead to death. The infection spreads into the pleural and pericardial cavities and causes empyemas, through the cavities of the deep fascia.

**Case**

A 40-year-old male patient presented emergency department with fever and difficulty swallowing complaints and was admitted to the Ear-nose-throat ward with diagnosis of peritonsillar abscess. The abscess was emptied by puncture and samples were collected for culture, adequate antimicrobial therapy. Computed tomography(CT) scan of the neck showed abscess in the parapharyngeal areas. Surgical drainage was applied. After surgery, patient had chest pain with tachypnea, tachycardia, and hypotension. Emergency thorax CT showed mediastinitis with empyema. On the second day of hospitalization, thymus tissue and mediastinal fat tissue were displaced with sternotomy. The empyema cleared in pleura and mediastinum. The pericardium was divested from the anterior region. The mediastinum and the thorax tube were placed. Cultures were positive for *streptococcus anginosus*.

After surgery, patient was admitted in intensive care unit(ICU). The general condition was poor habit, hypotensive and tachycardia. Multiple organ failure had developed. We rapidly initiated treatment of sepsis/septic shock and escalated antibiotics to vancomycin and meropenem. Patient promptly recovered with improvement of the clinical status and laboratory findings. Tracheotomy was opened due to prolonged intubation and then patient was weaned off the ventilator. On following days, his vital signs continued to stabilize. Thirty two days later, patient was discharged from the hospital without major sequelae.

**Discussion**

Acute DNM is a rare and potentially fatal complication of oropharyngeal infections. The first signs of infection are retrosternal pain, swelling, stiffness and infection that are usually caused by cervical infection. Early evaluation by means cervicothoracic CT is useful for diagnosis and surgical planning. Infection is usually caused by streptococci. In our case; we did aggressive cervical drainage and sternotomy. Appropriate antibiotics were applied. Septic shock and multiple organ failure were treated in intensive care unit. Early diagnosis and treatment, including antibiotics and taking a surgical approach decision, has allowed to us a low mortality rate.

**OP-008****EVALUATION OF THE EFFICACY OF LOCAL ANESTHETIC WOUND INFUSION ON POSTOPERATIVE PAIN AFTER THORACOTOMY: A RETROSPECTIVE OBSERVATIONAL STUDY.**

Ömer Özsancağtar\*, Basak Akca\*, Meral Kanbak\*,  
Aysun Yılbaş\*, Filiz Üzümcügil\*, Erkan Dikmen\*\*, Bilge Çelebioğlu\*

\* Hacettepe University, Faculty of Medicine, Department of Anaesthesiology and  
Reanimation, Ankara, Turkey

\*\* Hacettepe University, Faculty of Medicine, Department of Thoracic Surgery, Ankara,  
Turkey

**Introduction**

Thoracotomy is one of the most painful surgical procedures. Surgical incision, pulmonary parenchymal, costal and pleural injury, intercostal neural damage, inflammation of thoracic wall structures in incision neighborhood or placement of chest tube may contribute to this pain. Post thoracotomy pain affects pulmonary functions and leads to morbidities unless treated effectively. Opioid and non-opioid analgesics, epidural infusion, patient-controlled analgesia (PCA), intercostal nerve blockade and local anesthetic wound infusions could be used in postoperative pain management after thoracotomy.

The purpose of the study is to compare the pain scores, opioid consumptions and opioid side effects, additional analgesic requirements, duration of ICU and hospital stay, arterial blood gas analysis of patients in postoperative 48 hours after thoracotomy.

**Method**

After obtaining ethic committee approval and patient informed consent, a total of 60 patients, of whom 28 received i.v. morphine PCA (group Control (C)) and 32 received morphine PCA and local anesthetic wound infusion (group LA), were included in the study. Demographic parameters (age, gender, weight, American Society of Anaesthesiology (ASA) score, comorbidities), clinical parameters (duration of anesthesia and surgery, type of surgical procedure, endotracheal tube size, side of thoracotomy incision) and , postoperative management (pain management (analgesic drugs used, bolus morphine dosages, pain scores, opioid consumptions and opioid side effects, additional analgesic requirements), duration of ICU and hospital stay, arterial blood gas analysis of patients) were recorded. Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) for Windows 22 (IBM SPSS Inc., Chicago, IL).

**Results and Discussion**

Majority of the patients were male (65%) and average age is 57. Numerical rating scale (NRS) is used to evaluate the pain of the patients. The NRS score at rest and during coughing was significantly lower in the group receiving local anesthetic wound infusion ( $p < 0,05$ ). Additional analgesic requirements (pethidine) and number of morphine boluses were also lower in this group. Opioid side effects, duration of ICU stay, arterial blood gas analysis of patients were similar among groups. Although the duration of hospital stay of patients in group LA was not statistically different there was this 1,5 day of difference between groups which we assume to be clinically meaningful.



As a result we can conclude that, local anesthetic wound infusion could be effectively used in postthoracotomy pain management.

**References:**

1. Simon Fortier, Halim A. Hanna, Alain Bernard and Claude Girard. Comparison between systemic analgesia, continuous wound catheter analgesia and continuous thoracic paravertebral block: a randomised, controlled trial of postthoracotomy pain management. *Eur J Anaesthesiol.* 2012 Nov;29(11):524-30. doi: 10.1097/EJA.0b013e328357e5a1.
2. Jaroszewski DE, Temkit M, Ewais MM, Luckritz TC, Stearns JD, Craner RC, Gaitan BD, Ramakrishna H, Thunberg CA, Weis RA, Myers KM, Merritt MV, Rosenfeld DM. Randomized trial of epidural vs. subcutaneous catheters for managing pain after modified Nuss in adults. *J Thorac Dis.* 2016 Aug;8(8):2102-10. doi: 10.21037/jtd.2016.06.62
3. Concha M, Dagnino J, Cariaga, Aguilera J, Aparicio R, Guerrero M. Analgesia after thoracotomy: Epidural Fentanyl/ Bupivacaine Compared With Intercostal Nerve Block Plus Intravenous Morphine. *J Cardiothorac Vasc Anesth.* 2004 Jun;18(3):322-6.

**OP-009****THE EFFECT OF METHYLPREDNISOLONE USE ON SUGAMMADEX REVERSAL OF NEUROMUSCULAR BLOKADE-A PROSPECTIVE OBSERVATIONAL STUDY.**

Kav M., Pamuk A.G., Akça B., Ankaş Yılbaş A., Üzümcügil F.  
Hacettepe University Faculty of Medicine, Department of Anesthesiology and Reanimation

Cyclopentanoperhydrophenanthrene ring of rocuronium molecule is trapped by sugammadex and sugammadex provides effective and rapid reversal of neuromuscular blockade induced by rocuronium bromide. Corticosteroids are the group of drugs that are commonly used in perioperative practice of anesthesia for different purposes and share the same structure with rocuronium. Although drug interaction of sugammadex is rare, in an in-vitro study dexamethasone was reported to suppress sugammadex activity. Our aim in this study is to investigate whether methylprednisolone, a molecule similar to dexamethasone, has similar effect on the activity of sugammadex.

In this prospective observational study, a total of 71 patients undergoing thyroid/breast surgery and simple intraabdominal surgeries were included after obtaining approval of the ethics committee. Standard monitoring was applied and rocuronium-related neuromuscular relaxation was monitored by TOF monitoring. After the induction of anesthesia all patients received rocuronium (0,6 mg/kg i.v.) and at the end of surgery all patients were given a bolus dose of sugammadex (4 mg/kg). Patients were divided into two groups: methylprednisolone group (Group M) and control group (Group C). Patients in Group M received methylprednisolone (2 mg/kg) after induction. Demographic parameters, duration of surgery and anesthesia, time to tracheal extubation were recorded.

Our primary outcome, time to tracheal extubation after sugammadex administration (TOF > 0.9) were compared between groups. The extubation time after sugammadex administration was  $5,561 \pm 4,065$  min in Group M and  $3,364 \pm 2,194$  min in Group C. The extubation time in Group M was found to be significantly higher than Group C ( $p = 0,017$ ). Since the duration of surgery was also significantly different between groups, the effect of the time to achieve a TOF > 0,9 and methylprednisolone administration on the extubation time after administration of sugammadex was evaluated by regression analysis and it was shown that methylprednisolone usage independently affected the time of extubation after sugammadex administration ( $p = 0,011$ ).

In conclusion, while the use of methylprednisolone is thought to be effective on the duration of extubation after the administration of sugammadex, studies are needed in larger series with patients in the same depth of neuromuscular blockade and where the plasma methylprednisolone concentrations are also evaluated.

**OP-010****THE EFFECT OF AUDIOVISUAL PREOPERATIVE INFORMATION ON PARENTAL ANXIETY IN THE CASES OF ELECTIVE PEDIATRIC SURGERY**

Sengul Özmert \*, Feyza Sever\*, Galip Özmert\*\*, Gülser Şenses Dinç \*\*\* , Gülsen Keskin\* ,  
Dilek Kahraman Öztaş\*\*\*\*, Jale Karakaya\*\*\*\*\* , Özden Şükran Üneri\*\*\*

\*Ankara Children's Haematology Oncology Training and Research Hospital,  
Department of Anaesthesiology, Ankara, Turkey

\*\*Etlik Zübeyde Hanim Gynecology Training and Research Hospital  
Department of Anaesthesiology, Ankara, Turkey

\*\*\*Ankara Children's Haematology Oncology Training and Research Hospital,  
Department of Psychiatry, Ankara, Turkey

\*\*\*\*Ankara Atatürk Training and Research Hospital /

Yıldırım Beyazıt University Medical Faculty Department of Public Health

\*\*\*\*\*Hacettepe University Medical Faculty Department of Biostatistics

**Introduction-Aim**

Preoperative anxiety negatively affects surgery, anesthesia and postoperative healing. The anxiety of parents is a factor that can change the child's anxiety positively or negatively. The purpose of this questionnaire is to determine the effect of audiovisual information given to the families of the cases on whom elective pediatric surgery is planned about the anesthesia to be applied on parental anxiety and their satisfaction level.

**Material-Method**

ASA I-III cases for whom elective surgery is planned in Pediatric Surgery Clinic were included in our study. For the preoperative evaluation, 210 patients who applied to the anesthesia clinic were randomly divided into two groups. STAI I-II were applied on parents. In addition, parents were asked to answer the questionnaire before the briefing. The control group was only given written and oral briefing and the visual group was given both written-oral and visual briefing. On the day of surgery, the parents were asked to fill the STAI –I scale again and to reply the survey about their satisfaction.

**Results**

A significant difference couldn't be found in pre-operation STAI-I evaluation of parents between groups. It was concluded that there was a statistically significant decrease in the STAI-I levels given before the operation one day after the briefing for both groups but there was no difference between the groups. In addition, when asked to parents whether there was a change in their anxiety, it was determined that those who answered positively in group visual were found to be significantly higher than those in group control. When they were asked about their satisfaction for briefing, while the satisfaction of mothers in group visual were determined to be significantly higher, there was no significant difference for fathers between the groups.

### **Discussion and conclusion**

Although parents in the visual group responded more positively to the question of whether there was a change in their anxiety levels after briefings, this feature wasn't reflected on the STAI-I scoring. When our study findings are evaluated as a whole, visual and/or verbal briefing is useful and necessary in the preoperative period.

**OP-011****COMPARISON OF ANALGESIC EFFECTS OF MORPHINE, REMIFENTANIL AND MEPERIDINE IN PATIENTS WITH CORONARY ARTERY BYPASS SURGERY**

Nevriye Salman\*, Alper Gürbüz\*\*\*, Barış Durukan\*\* , H. İbrahim Uçar\*\*\*, Sumru Şekerci\*, Cem Yorgancıoğlu \*\*\*

\*Yüksek İhtisas Ankara Training and Research Hospital, Ankara, TURKEY,

\*\*Medical Park Hospital, Usak, TURKEY,

\*\*\*Memorial Hospital, Ankara, TURKEY

**Aim**

The aim of postoperative pain management is to minimize the side effects while providing analgesia. Many drugs are used for this purpose and especially for moderate-severe postoperative pain, usually opioid analgesics are drugs of choice.

In this study postoperative meperidine, remifentanyl, and morphine were compared for analgesic effects, side effects, awareness and discharge time in patients who underwent coronary bypass graft surgery (CABG).

**Material and Methods**

ASA II-III patients who underwent elective CABG surgery were included in the study retrospectively.

Demographic data, intraoperative parameters, postoperative parameters and VAS, sedation, mobilization score were all compared.

**Results**

101 remifentanyl, 100 meperidine and 99 morphine iv analgesia using patients were included in the study. Demographic data of groups intraoperative and postoperative parameters were found to be similar. But sedation/sleepy state was higher in remifentanyl group; vomiting was higher in morphine group; additional meperidine usage was higher in morphine and meperidine group and least in remifentanyl group. Additional analgesic usage was highest in meperidine group. ICU duration was highest in meperidine group and least in morphine group. Duration of hospitalization was higher in morphine group and least in remifentanyl group. mobilization scores on 1<sup>st</sup> day was best in meperidine group and worst in morphine group, on 2<sup>nd</sup> day best in remifentanyl group and worst in morphine group, on 3<sup>rd</sup> day best in morphine group and worst in meperidine group. VAS was found to be least on meperidine group and highest in morphine group on 1st, 2nd and 3rd days. Sedation scores was found to be highest in morphine group and lowest in meperidine group.

**Conclusion**

In CABG surgery, remifentanyl can be a drug of choice because it produces enough postoperative analgesia and mobilization even though postoperative sedation is more frequent; also it has shorter duration of hospitalization compared to morphine and meperidine.

## OP-012

### USE OF VIDEO LARYNGOSCOPE IN DIFFUCULT INTUBATION DUE TO VOCAL CORD ANOMALIES:2 CASE REPORTS

Nevriye SALMAN, Seyhan YAĞAR, Sumru ŞEKERCİ  
Yüksek İhtisas Ankara Training and Research Hospital, Ankara, TURKEY

#### Instroduction

Diffucult intubation is one of the most common mortality and morbidity reason for anesthesia; its prevalance is 0.05-18% according to different studies. Video laryngoscopy which took its place in diffucult intubation guidelines is used more frequently in such cases and lets us intubate in a shorter time.

#### Case 1

An ASA II, 55-year-old female patient who had operation due to mitral valve insufficiency had no complications except reoperation thyroidectomy, and the mallampati score was I. After anesthesia induction she was found to have diffucult intubation. When video laryngoscopy was done, her left vocal cord was fixed on midline due to recurrent nerve paralysis.

#### Case 2

An ASA III, 35-year-old male patient with pulmonary stenosis, tricuspid insufficiency, and PFO required ENT consultation at preoperative evaluation. Her vocal cords could not be visualized because of arytenoid cartilage subluxation and she was diagnosed to have difficult intubation, furthermore tracheostomy might be required.

Unexpected and expected difficult intubation cases were managed with video laryngoscopy. Patients who did not have any intraoperative problems were extubated after appropriate postoperative preparation and then followed up and discharged from the hospital.

#### Conclusion

Video laryngoscopy is a more appropriate choice compared to direct laryngoscopy because of its ease of use, shorter duration of intubation, success on first trial according to Corcmak Lehane score and in cases of difficult intubation risk factors. Therefore, it is a device that can be safely chosen in vocal cord anomalies especially in expected and unexpected difficult intubation cases.

**OP-013****THE EFFECTS OF SEVOFLURANE AND PROPOFOL ON THE INTRAOCULAR PRESSURE IN BARIATRIC SURGERY**

Münire Babayiğit, Mehmet Erol Can, Hakan Buluş, Necla Dereli, Esra Özayar, Aysun Kurtay, Mustafa Alparslan Babayiğit, Seda Ilhan, Eyüp Horasanlı  
Kecioren Education and Training Hospital, Ankara, Turkey

**Objective**

Intraocular pressure alters during bariatric surgery according to body position, anesthetic agents and intraabdominal pressure. This study investigates the comparison of the effects of sevoflurane and TIVA procedure on IOP in bariatric surgery.

**Method**

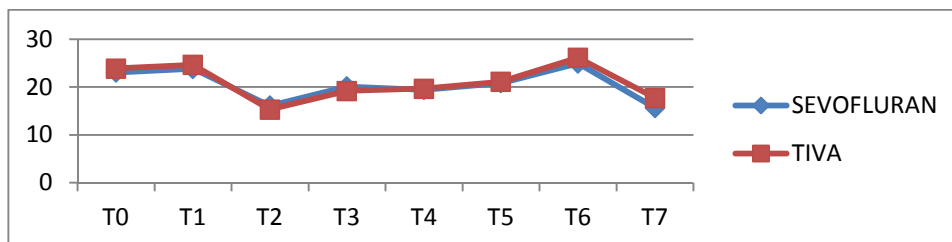
Following local ethics committee approval, in ASA I-III physical status 55 patients were included. Patients were randomly allocated two groups: Group P (n:28) and Group S (n:27). Anesthesia was induced with propofol  $2 \text{ mg kg}^{-1}$ , fentanyl  $2 \text{ } \mu\text{g kg}^{-1}$  and rocuronium  $0.6 \text{ mg kg}^{-1}$ . For the maintenance of anesthesia; 1 MAC Sevoflurane in Group S and  $5\text{-}10 \text{ mg kg}^{-1}\text{h}^{-1}$  propofol infusion in Group P and  $0,1\text{-}0,3 \text{ } \mu\text{g kg}^{-1} \text{ dk}^{-1}$  remifentanyl infusion in both groups was administered.

In all patients, mean arterial pressure (MAP), heart rate (HR), and IOP measured at the following time points: Sitting position before the induction of anesthesia (T0), supine position before induction (T1), after induction (T2), 5 min after intubation (T3), 10 min after pneumoperitoneum during head down position (T4), 5 min after terminating pneumoperitoneum during supine position (T5), 5 min after extubation (T6) and postoperative 24. Hours (T7).

**Results**

There were no statistically significant differences between groups in demographic data, MAP and HR. There were statistically significant decreases in IOP after induction of anesthesia in both groups ( $p < 0.05$ ). IOP levels between groups had no statistically significant differences ( $p > 0.05$ ).

**Conclusions:** This study reveals that Sevoflurane and TIVA procedures have similar effects on IOP in bariatric surgery.



**OP-014****COMPARISON OF C-MAC D BLADE AND FAST-TRACH LARYNGEAL MASK AIRWAY FOR INTUBATION CONDITIONS IN CERVICAL DISCECTOMY: A PRELIMINARY STUDY**

Derya Özkan, Savaş Altınsoy, Murat Sayın, Habip Dolgun, Jülide Ergil, Aslı Dönmez  
University of Health Sciences, Diskapi Yildirim Beyazıt Training and  
Research Hospital, Ankara, Turkey

**Purpose**

In patients with cervical spine disorders or hernia, in-line stabilization and immobilization during tracheal intubation is recommended to avoid spinal injury. With direct laryngoscopy, cranio-cervical motion may result with an injury. In simulated or clinical settings of restricted neck mobility, videolaryngoscopes and fastrach LMA have performed well but neck motion can be unavoidable. The aim of the study is to compare two different devices (C-Mac D blade vs. fastrach LMA) for cervical motions during intubation.

**Methods**

Seventeen patients undergoing cervical discectomy were randomized to receive either a C-Mac D Blade intubation (group V, n = 8) or Fast-Trach intubation (group F, n = 7). After anesthesia induction endotracheal intubation was performed under fluoroscopy in lateral view. During intubation period neck motion angles of the patients were recorded. The angles were assessed on fluoroscopy images. A Angle: Angle of the line between occipital protuberance and anterior process of the foramen magnum with the line between central point of spinous process C1 vertebrae and the anterior process of foramen magnum. B Angle: Angle of the line between central point of spinous process of C1 vertebrae and the central point of corpus of C1 with the occipital protuberance and the central point of C1 vertebrae corpus. C Angle: Angle of the line between mandibular mentum and tragus with the horizontal line. Angle C also will be assessed with goniometer. The groups will be compared statistically.

**Results**

In both groups the angle changed from beginning compared with the moment of intubation (Group V : A Angle basic  $14.8^{\circ} \pm 4.5^{\circ}$ , A Angle during intubation  $8.3^{\circ} \pm 3^{\circ}$ , B Angle basic  $15.9^{\circ} \pm 4.3^{\circ}$ , B Angle during intubation  $8.6^{\circ} \pm 3.1^{\circ}$ ) (Group F: A Angle basic  $11.8^{\circ} \pm 3.6^{\circ}$ , A Angle during intubation  $8.9^{\circ} \pm 2.8^{\circ}$ , Angle B basic  $13.7^{\circ} \pm 3.8^{\circ}$ , Angle B during intubation  $10.4^{\circ} \pm 3.5^{\circ}$ ). Difference between the induction and the intubation angles were greater in the videolaryngoscope group ( $p < 0.05$ ).

**Conclusion**

Videolaryngoscopes, although in clinically safe limits, change the spinal angles during intubation with respect to fast-trach LMA. Videolaryngoscope and fast-trach LMA could provide safe intubation condition in cervical discectomy.



**OP-015****PROLONGED INFRACLAVICULAR BRACHIAL PLEXUS BLOCK IN A DIABETIC PATIENT**

Sevtap Cemaloglu, Ceyda Ozhan Caparlar, Derya Ozkan, Mehmet Murat Sayin, Haluk Gumus

University of Health Sciences, Diskapi Yildirim Beyazit Training and Research Hospital,  
Ankara, Turkey

**INTRODUCTION**

Perioperative neurological complications may be due to surgical procedure, anesthetic technique, patient-related factors during peripheral nerve blocks (PNB). We present a diabetic patient with poor glycemic control who had prolonged sensory and motor block after the infraclavicular brachial plexus block (IBPB).

**CASE REPORT**

A 63-year-old woman with a diabetes mellitus, hypertension, familial mediterranean fever, asthma had been insulin treatment. HbA1c and blood glucose levels were 8.8 % and 114 mg/dL. Flexor tendon intersection was planned. The inferolateral of the subclavian artery (SA) was targeted with a 85 mm peripheral nerve stimulator needle by the ultrasound guidance. A local anesthetic 87.5 mg 0.5 % bupivacaine, 50 mg 2 % lidocaine, 5 mL of saline in a total of 25 mL, was injected the perimeter of SA with intermittent aspiration technique. The patient was transferred to the ward after 40 minutes of operation. Without any complications sensory and motor block was observed at the 24th and 48th hours postoperatively. On the third day, there was no evidence of sensory and motor block in physical examination. The motor block was lasted at the 50th and the sensory block was lasted at the 60th hour.

**DISCUSSION and CONCLUSION**

Surgical procedures, technical errors in PNB, nerve trauma directly, infection, hematoma, drug toxicity or underlying pathologies were the neurological complications in PNB. Complications may be associated with diabetic neuropathy, neurotoxic chemotherapy, decreased neuronal blood flow (hypoperfusion). These patients are more sensitive to LA toxicity and neural damage. Especially in diabetic patients, poor glycemic control has been associated with prolonged blockade. We ruled out the complications of the surgical procedure and PNB-related complications in this case. The patient's prolonged sensory and motor block duration was thought to be due to poor glycemic control.

**OP-016****THE PROGNOSTIC VALUE OF NEUTROPHIL-TO-LYMPHOCYTE RATIO AND ACTIVATED PARTIAL THROMBOPLASTIN TIME CLOTTING IN CRITICALLY PATIENTS AFTER ABDOMINAL SURGERY**

Hilal Ayođlu\*, Özcan Pişkin\*, Hüseyin Öztoprak\*, Gamze Küçükosman\*, Bengü Gülhan Aydın\*, Dilek Okyay\*, Ferruh Niyazi Ayođlu\*\*

\* Department of Anesthesiology and Reanimation, Bülent Ecevit University, Faculty of Medicine Zonguldak, Turkey

\*\* Department of Public Health, Bülent Ecevit University, Faculty of Medicine Zonguldak, Turkey

**Introduction-Aim**

After abdominal surgery (AS) which patients need intensive care unit (ICU) admission is associated with high morbidity and mortality. The use of neutrophil-to-lymphocyte ratio (NLR) and activated partial thromboplastin time clotting (aPTT) have been reported to predict surgical and survival outcomes in ICU. The aim of our study was to investigate the NLR, aPTT and outcomes in patients admitted to ICU after AS.

**Material and Methods**

The local ethical committee approved the study but waived the need for informed consent because of the retrospective nature of study. Fifty patients who were admitted to ICU after AS between January 2013-December 2016 were reviewed. Patients without complete biological or clinical data were excluded. Patients were divided into two groups according to their outcome; death (Group D) and alive (Group A) in the hospital. Demographic data at admission were recorded, including ASA risk status, type of AS and SOFA scores, length of mechanical ventilation, dialysis and inotropic regimen, ICU and hospital stay, survival data and diagnosis of sepsis. On the preoperative, postoperative and first day of ICU we retrieved the platelet, white blood cell and neutrophil counts and the hemoglobin, ALT, AST, urea, creatinine, PT, aPTT, INR, sedimentation, serum CRP concentrations. Statistical analysis was performed using SPSS 19.0. The data are presented as the mean±SD and frequency. Mann-Whitney U test, Chi-square test and Fisher's exact test were used,  $p < 0.05$  was considered statistically significant.

**Results**

Twelve patients were dead. Length of the mechanical ventilation, dialysis and inotropic regimen were higher in the Group D ( $p < 0.05$ ). Postoperative aPTT levels was significantly higher in Group D ( $p < 0.05$ ). There was no significant difference between the groups in accordance with the other measurements ( $p > 0.05$ ). NLR levels were higher in Group D then Group A but there were no statistical differences.

**Discussion and Conclusion**

Our study demonstrated that the increased aPTT levels may be a useful biomarker for predicting decreased survival outcome of patients who admitted to ICU after AS. Also NLR may be additive predictor of worse survival. This marker is simple, easily measured and easy to use in daily practice.

**OP-017****POSTOPERATIVE ACUTE RESPIRATORY FAILURE IN A PATIENT WITH HEMOPHILIA: CASE REPORT AND DIFFERENTIAL DIAGNOSIS**

Sevtap Cemaloglu, Başak Gulel, Savas Altinsoy, Zeynep Koc, Mustafa Yildirim, Dilek Unal, Mehmet Murat Sayin  
University of Health Sciences, Diskapi Yildirim Beyazıt Training and Research Hospital, Ankara, Turkey

**Introduction**

To present a case with hemophilia which was complicated with transfusion-associated lung injury (TRALI) and diffuse alveolar hemorrhage and to discuss the differential diagnosis of acute respiratory failure in these patients.

**Case report**

A 36-year-old man previously diagnosed with hemophilia presented to the intensive care unit (ICU) postoperatively. The patient's history revealed hospitalization with melena, anemia. His hemoglobin value was 4.9 g/dL; activated partial thromboplastin time was 68.4s; FVIII activity was reduced to 0.25%. A gastric tumor was detected by endoscopy. Initial treatment consisted of FVIII and 8 units packed red blood cell (RBC) transfusion and activated recombinant FVII (rFVIIa) was added to the treatment as the bleeding continued (Table 1, 2). On the 8th day the patient showed signs of hemorrhagic shock; laparotomy was performed and the gastric tumor was resected. During surgery the patient received 4 units of RBC. On admission to the ICU, blood pressure was 110/70 mmHg; heart rate was 124 beat/min; pulmonary auscultation revealed diffuse rales; PaO<sub>2</sub>/FiO<sub>2</sub> was 280, bilateral infiltrates were detected on his chest X-Ray (Figure 1). The patient was diagnosed for TRALI and protective lung ventilation was initiated. On the second day in the ICU, body temperature increased; cultures were obtained; antibiotherapy was initiated (Table 2). The patient's condition improved, pathological X-Ray findings disappeared, the rFVIIa dose was reduced, the patient was extubated on day 6 and ventilatory support was continued noninvasively (Figure 2). Two days later the patient became desaturated, simultaneously melena, bleeding from the surgical incision and endotracheal tube was observed. Chest X-Ray showed diffuse bilateral infiltrates, the coagulation tests were prolonged (Figure 3). Bronchoscopy was performed; the patient was diagnosed with diffuse alveolar hemorrhage; the rFVIIa dose was increased. Ventilatory support was continued noninvasively. This therapy continued until day 14 and the patient was discharged with recovery (Table 2, Figure 4).

**Discussion-Conclusion**

Epidemiological studies reported 28.3% acute respiratory failure in patients with hemophilia. Anesthesiologist's should consider TRALI and diffuse alveolar hemorrhage due to massive transfusion and inadequate factor replacement in patients with hemophilia presenting with acute respiratory failure and noninvasive ventilation may be effective in these circumstances.



Figure 1. Postoperative day 1



Figure 2. Postoperative day 6

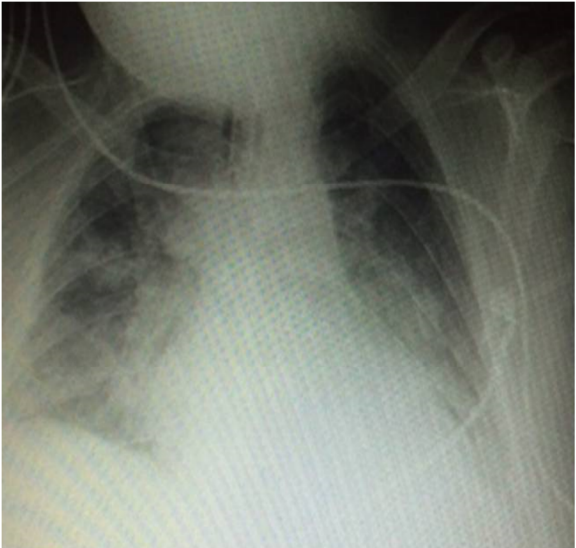


Figure 3. Postoperative day 8



Figure 4. Postoperative day 14

**Table 1. Clinical and Laboratory Results of The Case**

	Heart rate beat/min	BP mmHg	SpO <sub>2</sub> %	Hb gr/dL	CRP mg/L	PT	aPTT sec	INR	Procalcitonin ng/mL	pH	PO <sub>2</sub> mmHg	PCO <sub>2</sub> mmHg
Emergency Room	97	120/70	96	6.9	-	13.2	68.4	1.14	-	-	-	-
Internal ward	100	110/70	95	6.5	-	14	62.7	1.2	-	-	-	-
Preoperative visit	135	95/67	92	7.2	-	15	110.7	1.3	-	-	-	-
Intraoperative	120	90/60	95	6.1	-	-	-	-	-	7.26	140	37.8
Intensive Care Unit												
<b>Day 1</b>	124	110/70	95	7.2	69.4	*	73.1	*	5.4	7.04	138	35
<b>Day 4</b>	90	120/60	96	10.2	9	*	143.2	*	1.85	7.48	112	34.4
<b>Day 8</b>	88	120/75	97	8.2	15	*	*	*	0.66	7.45	87.1	34.8
<b>Day 14</b>	72	110/65	98	9.2	9	*	83.2	*	0.62	7.42	85	35.3

**BP: blood pressure; SpO<sub>2</sub>: peripheral oxygen saturation; Hb: hemoglobin; CRP: C-reactive protein; PT: prothrombin time; aPTT: activated partial thromboplastin time; INR: international normalized ratio; BE: base excess;**

**\*Exceeds reference limits.**

**Tablo 2. Olguya uygulanan tedaviler**

	Transfusion	FVIII	rFVIIa	Mechanical Ventilation			
				Mode	FiO2 %	TV 7 mL/kg	Frequency min
Emergency Room	2 U RBC	-	-	spontaneous			
Internal ward	12 U RBC 6 U platelets 6 U FFP	3500 U loading 1500 U infusion	12 X 90 mcg/kg/day	spontaneous oxygen with nasal canula			
Preoperative visit	-	-	-	spontaneous oxygen with nasal canula			
Intraoperative	4 U RBC 4 U TDP	1500 U	-	SIMV	50	480	12
Intensive Care Unit							
Day 1	2 U RBC 3 U FFP	-	8 X 6 mg	SIMV	50	480	14
Day 4	-	-	4 X 6 mg	SIMV	30	480	12
Day 8	-	-	6 x 6 mg	NIMV	30		8
Day 14	-	-	4 x 6 mg	NIMV	30		8

*rFVIIa: activated recombinant factor 7; RBC: red blood cell ; FFP: fresh frozen plasma; SIMV: synchronized intermittent mandatory ventilation.*

**OP-018**

**PERFORMING NASAL FOI WITH OR WITHOUT A NASAL AIRWAY: A MANIKIN STUDY**

Sevtaç Cemaloglu, Burak Nalbant, Aslı Donmez, Derya Ozkan, Emine Arik  
 University of Health Sciences, Diskapi Yildirim Beyazıt Training and  
 Research Hospital, Ankara, Turkey

**Introduction**

Fiberoptic intubation (FOI) is an essential skill in anesthesiology that is challenging to learn in the clinical setting, and every anesthesia practitioner is necessitated to master this complex psychomotor skill. In this study, we compared the effectiveness of using a nasal airway for nasal FOI, as judged by the time to intubation and the ease of intubation, and compared these findings in residents and specialists.

**Material and methods**

A brief didactic instruction was given to all subjects, and each subject conducted a FOI on a manikin 2 weeks before the study. 2 weeks later 21 residents, and 14 specialists were included to the study. After loading an airway exchange catheter to the bronchoscope each participant performed 4 nasal FOIs with (twice) and without (twice) a nasal airway. Time to intubation, and number of attempts were recorded. Times to nasal FOI on the 1<sup>st</sup> and 2<sup>nd</sup> attempts were compared within and between the groups.

**RESULTS**

Times to nasal FOI on the 2<sup>nd</sup> attempts were significantly shorter both in residents and specialists [1<sup>st</sup> 45.91 sec (± 30.98) 2<sup>nd</sup> 45.26 sec (± 73.18) and 1<sup>st</sup> 59.06 sec (± 66.99) 2<sup>nd</sup> 25.65 sec (± 13.86) respectively]. Times to nasal FOI [51,17 sec (± 48,20) and 28,24 sec (± 25,95) 1<sup>st</sup> and 2<sup>nd</sup> attempts respectively] were also significantly shorter with the use of nasal airway [37,42 sec (±57,61) and 17,98 sec (±11,97) 1<sup>st</sup> and 2<sup>nd</sup> attempts respectively]. The rate of successful intubation, and duration of intubation attempts were similar between the residents and specialists in each intubation technique.

**Conclusion**

Our results showed that, nasal FOI via a nasal airway was easier and faster for all participants. On the contrary of our expectation, FOI times of specialists were not shorter. This may be related to the younger anesthesia providers’ psychomotor skills or experienced providers’ insecurity to FOI technique. We suggest, nasal FOI via a nasal airway as a useful teaching method.

		Specialists (n=14)	Residents (n=21)	All Participants (n=35)
<b>Without Nasal Airway</b>	Time of 1st attempt (sec)	59.06 (±66.99)	45.91 (±30.98)	51.17 (± 48.20)
	Time of 2nd attempt	25.65 (±13.86)	45.26 (±73.18)	28.24 (± 25.95)
<b>Nasal Airway</b>	Time of 1st attempt	28.26 (±32.16)	28.22 (±21.74)	37.42 (±57.61)
	Time of 2nd attempt	16.43 (±9.51)	19.00 (±13.50)	17.98 (±11.97)
<b>Without Nasal Airway</b>	Number of 1st attempt	1.21 (±0.57)	1.19 (±0.40)	1.20 (±0.47)
	Number of 2nd attempt	1.07 (±0.26)	1.24 (±0.62)	1.03 (±0.16)
<b>Nasal Airway</b>	Number of 1st attempt	1.07 (±0.26)	1.00 (±0.0)	1.17 (±0.51)
	Number of 2nd attempt	1.00 (±0.0)	1.00 (±0.0)	1.00 (±0.0)

**OP-019****OUR ANESTHESIA MANAGEMENT ON A CHILDREN WITH SAETHRE-CHOTZEN SYNDROME**

Meriç Bayram\*, Nihal Deniz Bulut Yüksel\*, Özgür Canbay\*

\*Hacettepe University, Faculty of Medicine, The Department of Anesthesiology and Reanimation, Ankara Turkey.

Saethre-Chotzen Syndrome (SCS) is a kind of acrocephalosyndactylia syndrome with autosomal dominant heredity characterized by premature fusion of coronal sutures (1). Estimated frequency is between 1/25.000 and 1/50.000. Face dismorphism, skeletal deformities, syndactylia and congenital heart malformations can accompany this syndrome. Difficult airway can occur because of midline and face malformations/hypoplasia (1). Hook nose, deviation of nasal septum, narrow palate, cleft palate and ears with abnormal shape can be present in these patients. Face appearance tends to recover with age (3).

The operation of 1,5 years old patient was planned because of craniosynostosis. The patient was diagnosed with SCS when she was 8 months old. Cleft palate, brachycephaly, depressed nose base, hypertelorism, micro/retrognathia, short neck, bilateral camptodactyly on second finger of hand, bilateral contracture of proximal interphalangeal joint on second finger of hand and developmental delay was present in the patient. The patient was on Euthyrox, because she had been diagnoses with thyroid dishormonogenesis when she was born. ECHO of the patient revealed small secundum ASD, minimal insufficiency of the aortic valve and PDA. The department of pediatric cardiology indicated that she could be operated under SBE prophylaxis. The department of genetics indicated that there was no risk of malignant hyperthermia. The patient was taken to operating room. Difficult airway and masking preparations were completed. Optimal length mask, airway and tubes for patient; video laryngoscopy and fiberoptic intubation devices were prepared. 24G intravenous catheter was placed in patient after induction with Sevoflurane. The patient was intubated easily with a 4,5 mm internal diameter cuffless endotracheal tube via video laryngoscopy because of difficult airway risk after proper induction. Operation continued for 5 hours after which the patient was extubated easily and was transferred to pediatric intensive care unit.

SCS generally occurs because of a mutation in the TWIST1 gene. Our patient had a 34 amine gene deletion of 13436 kb including the TWIST1 gene at 7p22.1-p21.1 zone. Increased intracranial pressure can occur due to early closure of cranial sutures. Excessive premedication and hypoventilation must be avoided in order to avoid increased intracranial pressure (2). It mustn't be overlooked that mid-face hypoplasia or hypoplastic maxilla can cause difficult masking and outer face anomalies such as high palate, cleft palate and/or tooth anomalies such as sharp teeth, extra teeth and malocclusion can cause difficulty in intubation and LMA placing (3). Intravenous catheter placement can be difficult due to deformities like syndactylia, brachydactyly and clinodactyly. Fusion of cervical vertebrae can accompany this syndrome and it can cause restricted neck extension therefore difficult intubation (1). Awareness of SCS is important, because this syndrome can be related to difficult airway and another important anesthetic problems. Being informed about SCS is necessary with the aim of right anesthetic management and prevent unexpected problems during anesthesia.



**References:**

1. Sharma A., Patel N., Arora S., Ramachandran R. Child with Saethre-Chotzen Syndrome: Anesthetic management and literature review. *Acta Anaesth. Belg.*, 2014, 65, 179-182.
2. Niemann-Seyde SC., Eber SW., Zoll B., Saethre-Chotzen syndrome (ACS III) in four generations, *Clin. genet.*, 1991; 40: 271-276.
3. Easely D., Mayhew J.F., Anesthesia in a child with Saethre-Chotzen syndrome, *paediatr. anaesth.*, 2008; 18: 81.

## OP-020

### UNANTICIPATED DIFFICULT AIRWAY IN TWO CASES DUE TO POST-INTUBATION TRACHEAL STENOSIS

Ankay Yilbas A., Uzumcugil F., Akca B., Canbay O.

Hacettepe University, Faculty of Medicine, Department of Anaesthesiology, Ankara, Turkey

#### Introduction

Prolonged intubation still remains one of the main causes of tracheal stenosis (1). The aim of this case report was to present two patients with post-intubation tracheal stenosis incidentally diagnosed during induction of anesthesia.

#### Case Report

The first patient was a 21 year-old, ASA I male scheduled for Le-fort II fracture operation. He had a history of tracheal intubation for 6 days following a motorcycle accident 5 months ago. During our first attempt of intubation via nasal fiberoptic bronchoscopy, a prominent subglottic tracheal stenosis was revealed. The surgery was postponed. Following tracheal dilatation by ENT surgeons, the patient was intubated with 7.0 mm cuffed endotracheal tube in the second session 2 weeks after and the operation was completed uneventfully. The second case was a 47 year-old, ASA II male scheduled for incisional hernia operation. He also had a history of tracheal intubation for 10 days following a traffic accident few years ago. After two attempts of intubation with macintosh blade (Cormack Lehane Grade II), we were unable to forward the endotracheal tube beyond the vocal cords because of resistance. Examination with fiberoptic bronchoscopy again revealed an undiagnosed subglottic tracheal stenosis. The choice of airway management was changed to LMA insertion and the surgery was completed uneventfully. We attributed the formation of tracheal stenosis to previous intubation history in both cases.

#### Discussion and Conclusion

Dyspnea and wheezing are the most common features of tracheal stenosis, however it can be asymptomatic as in our two cases especially until 30% of the trachea lumen has been obstructed (2). Perioperative airway management can be challenging in such cases because of the risk of airway trauma due to repeated attempts or inadequate ventilation due to the usage of an inappropriately smaller endotracheal tube. The possibility of asymptomatic tracheal stenosis should be considered when there is an intubation difficulty due to subglottic resistance in patients with a history of endotracheal intubation in intensive care unit, even if the period is not prolonged.

#### References:

1. Spittle N, McCluskey A. Lesson of the week: tracheal stenosis after intubation. *BMJ*. 2000 Oct 21;321(7267):1000-2
2. Youn AM, Yoon SH, Park SY. Failed intubation of an unanticipated postintubation tracheal stenosis-a case report. *Korean J Anesthesiol*. 2016 Apr;69(2):167-70.

## OP-021

### NEUROPATHIC PAIN ASSOCIATED WITH INCISION FOR ABDOMINAL TUBE DRAINAGE: TAP BLOCK FOR DIAGNOSIS AND TREATMENT

Pakize Kirdemir, Birzat Emre Gölboyu

Süleyman Demirel University Faculty of Medicine Department of Anaesthesiology and Reanimation 32260 Isparta, Turkey

#### Introduction

Transversus abdominis plane (TAP) block is a relatively new regional anesthesia technique in which T7-12 intercostal nerves, ilioinguinal and iliohypogastric nerves, and cutaneous branches of L1-3 nerves are blocked between the internal oblique and transversus abdominis muscles. We evaluate the usage of TAP block in prolonged pain following upper abdominal surgery.

#### Case report

Partial cystectomy and tube drainage were performed via laparotomy by general surgery department on a 49-year-old female patient 3 months ago due to hydatid cysts of the liver. When the patient was referred to our clinic for prolonged abdominal pain, she described the pain as severe stabbing and lancinating with a numeric rating scale (NRS) of 8/10 on the right upper abdominal wall. The pain interfered with mobilization and sleep. The pain was most intense on T8-9 dermatomes. In the physical examination, there was 1 cm a scar tissue in keeping with the post-operative tube drainage system. The patient also reported sleep disturbances due to the pain. At our pain clinic, we prescribed tramadol and pregabalin 300 mg/day, all of which are ineffective to provide pain relief (NRS 7/10). Hence, we agreed upon the patient was a good candidate for US-guided TAP block for diagnosis and treatment.

#### Block Procedure

Ultrasound guided (Esaote®, MyLab5, Italy) TAP block was performed. The plane between the transversus abdominis and the internal oblique fascia was infiltrated using a 20 G 100 mm US-visible peripheral nerve block needle and 1% 20 ml lidocaine was injected.

20 minutes after the intervention, the patient reported that the pain was gone and her NRS score was 1/10. 24 hours after the procedure she was still pain-free and did not need opioid, her sleep returned back to normal. The patient was prescribed low dose pregabalin for the neuropathic component of the pain. On the follow up one week, one month and three months after the procedure, the patient was still pain-free.

#### Conclusion

In case of anterior abdominal wall chronic pain syndrome when medical treatment not well-tolerated; TAP block is a promising alternative analgesia technique for diagnostics and therapeutic option besides preventing neuropathic pain.

## OP-022

### THE SCARY DOUBT IN JUGULAR VENOUS CATHETERIZATION: CAROTID ARTERY CANNULATION?

Derya Ademođlu\*, Búşra Tezcan\*, Sema Turan\*, Hija Yazıcıođlu\*\*,  
Dilek Kazancı\*, Ayşegül Özgök\*\*

\*Turkey Yüksek İhtisas Education and Research Hospital, Intensive Care Clinic

\*\*Turkey Yüksek İhtisas Education and Research Hospital,  
Anesthesiology and Reanimation Clinic

#### Introduction

Central venous catheterization(CVC) is performed frequently in especially intensive care, major surgery and cancer patients and arterial injury is one of the most serious complications of this procedure.Assessment of the colour,pulsatility and pressure of blood coming from the needle or injector, ultrasound(USG) guidance, assessment of blood gases, fluoroscopy and echocardiography can be used for avoiding and recognizing this complication during the procedure.In this report; we interpreted the doubt of carotid artery cannulation based on relatively high oxygenation levels in blood gas analysis of the blood obtained from catheter after jugular venous catheterization(JVC) in an intensive care patient with sepsis.

#### Case

75 years old male patient with a diagnosis of cholangitis and sepsis was admitted to intensive care unit for hemodialysis and routine sepsis treatment.During the JVC procedure; the colour, pulsatility and pressure of blood coming from the catheter caused a suspicion of arterial cannulation.Oxygenation parameters in blood gas analysis kept up the uncertainty(PH:7.18, PCO2:51.7 mmHg, PO2:64.9 mmHg, SO2:%87.3).After obtaining the routine central venous pressure trace by monitoring; the catheter was concluded to be in jugular vein.

#### Discussion

Mechanical complications of CVC, especially arterial injury can be a significant cause of mortality and morbidity.Observing the colour, pulsatility and pressure of the blood coming from the needle, measurement of blood gases, USG guidance and pressure monitoring are some methods for avoidance of arterial injury.In this case; blood coming from the catheter, but not needle, caused a suspicion of arterial cannulation and the PO2 level of 64.9 mmHg and SO2 level of %87.3 in the blood gases analysis strengthened this suspicion.In sepsis, microcirculatory dysfunction can reduce oxygen utilization and venous hyperoxia is a clinical manifestation of this derangement.As a result;in patients with sepsis; observing the colour of the blood and blood gases analysis can be more confusing for artery-vein separation during CVC.Raised intraabdominal and central venous pressure(CVP) in this patient also increased the pressure of the blood coming from the catheter.We conclude that other methods like pressure monitoring from the needle, USG guidance,fluroscopy and echocardiography must be used for avoidance of arterial puncture or cannulation especially in patients with sepsis and raised CVP.

**OP-023****EVALUATION OF DEEP SEDATION WITH BISPECTRAL INDEX MONITORING FOR PEDIATRIC GASTROINTESTINAL ENDOSCOPY CASES**

Mine Akın\*, Gülsen Keskin\*, Yeşim Şenaylı\*, Gülin Hızal\*\*

\*Department of Anaesthesiology, Ankara Child Health and Diseases Hematology and Oncology Education and Research Hospital, Ankara, Turkey.

\*\*Department of Pediatric Gastroenterology, Ankara Child Health and Diseases Hematology and Oncology Education and Research Hospital, Ankara, Turkey.

**Introduction-Aim**

In childhood, sedation is needed during gastrointestinal endoscopy in order to relieve anxiety and discomfort, to make patients easier to swallow, to minimize the physical damage that may occur, and to allow the endoscopist to investigate under optimum conditions. Hemodynamic parameters, mobility, sedation scales are used to determine the sedation level and the time of drug dosing. Bispectral index (BIS) monitoring can also be applied for this purpose. In this study, it was aimed to evaluate the effectiveness of sedation performed in pediatric gastrointestinal endoscopies under deep sedation with BIS monitoring, so as to investigate whether there is a positive contribution to drug consumption.

**Material and Methods**

Sixty-six patients with ASA I-II group who underwent gastrointestinal endoscopy between the ages of 2 and 18 years were included in the study. Patients were divided into two groups. Propofol and fentanyl were administered to the patient for deep sedation and nasal O<sub>2</sub> was administered throughout the procedure. The depth of sedation was assessed by hemodynamic parameters and activation of the patient in the first group, by BIS monitorization in the second group. The procedure began when the Ramsay sedation score was 5 and above. Hemodynamic and respiratory parameters, GIS endoscopy time, colonoscopy time, ileocecal valve access time, first eye opening time, collection time, discharge time, total additional drug dose, patient and endoscopist satisfaction were recorded.

**Results**

In the study, the demographic data of the patients in both groups were similar ( $p>0.05$ ). The median of total additional medication, percentage of hypoxaemia and the median of time of hospital discharge in the BIS monitoring group were significantly higher than those in the control group ( $p<0.01$ ). There was no difference between the rates of nausea, vomiting, dizziness and allergy in both groups ( $p>0.05$ ).

**Discussion and Conclusion**

In pediatric gastrointestinal endoscopy performed under deep sedation, BIS monitoring did not contribute to reducing the consumption of medication, the rate of respiratory depression was higher and the discharge time was longer.

It was concluded that the use of BIS to monitor sedation depth in pediatric gastrointestinal endoscopy cases planned under deep sedation alone was not sufficient to reduce drug consumption.

## OP-024

### AN EXAMINATION OF FACTORS AFFECTING THE LENGTH OF STAY IN A PALLIATIVE CARE CENTRE

Metin Dinçer<sup>\*,\*\*</sup>, Kadriye Kahveci<sup>\*\*\*</sup>, Cihan Doger<sup>\*\*\*\*</sup>

\* Health Institutions Management, Yıldırım Beyazıt University,  
Faculty of Health Sciences, Ankara, Turkey

\*\* Ankara Ulus State Hospital, Ankara, Turkey

\*\*\* Department of Palliative Care and, Anesthesiology and Reanimation,  
Ankara Ulus State Hospital, Ankara, Turkey

\*\*\*\* Department of Anesthesiology and Reanimation,  
Ankara Atatürk Training and Research Hospital, Ankara, Turkey

#### Background

The elderly population of Turkey has increased at a dramatic rate over the last years. Ageing also causes to life-threatening chronic diseases that are need for Palliative Care Centres.

#### Objectives

To evaluate the factors affecting the length of stay and discharge of patients from a PCC.

#### Methods

A retrospective scan was made of the records of patients followed up in the PCC between January 2013 and March 2016. A record was made of patient age, gender, diagnosis, conditions/comorbidities, Glasgow Coma Scale (GCS), Karnofsky Performance Scale (KPS), length of stay (LOS), prognosis (exitus or surviving), Percutaneous Endoscopic Gastrostomy (PEG), tracheostomy, mechanical ventilator (MV), nutrition (total parenteral nutrition [TPN] or enteral nutrition [EN]), and the results of cultures taken during stay in PCC (blood, tracheal aspirate, urine, rectal swab, wound). Evaluation with regression analysis was made of the data related to factors thought to have a possible effect on the LOS in PCC.

#### Results

435 patients were included in the study, comprising 58.6% males and 41.4% females with a mean age of  $70.6 \pm 17.2$  years. The length of stay was  $27.2 \pm 30.9$  days. A total of 234 patients were discharged and 201 (46.2%) were lost to mortality in PCC. The bacteria most isolated in cultures were Escherichia coli (28.5%) and MRSA (17%). According to the results of the regression analysis, cancer, hypoxic brain and advanced age had a negative effect on LOS and PEG, TPN, HT, and E.coli, Proteus, Pseudomonas and Acinetobacter infections increased LOS.

#### Conclusion

The results of this study revealed some basic factors, which affect LOS in PCC. However, there may be much variation in the data obtained with the various reasons for which this patient group is admitted to PCC.

**OP-025****EVALUATION FOR POSTOPERATIVE ANALGESIA EFFECTIVENESS OF LOW DOSE  
INTRATHECAL MORPHINE IN PEDIATRIC PATIENTS**

Gülsen Keskin, Mine Akın, Yeşim Şenaylı

Department of Anaesthesiology, Ankara Child Health and Diseases Hematology and  
Oncology Education and Research Hospital, Ankara, Turkey.

**Objective**

Postoperative pain is the type of acute pain that begins with surgical trauma and gradually decreases with tissue healing. Abdominal and thoracic operations are major stress sources. Therefore, inadequate analgesia in the postoperative period can cause hemodynamic, respiratory, metabolic, immunologic and hemostatic changes. Morbidity and mortality can be reduced by adequate pain control during early postoperative period. Intrathecal analgesia is preferred for postoperative analgesia for reasons such as simplicity and safecity of technique, less hematoma risk than epidural interventions and no need for catheter placement for continuation of the analgesia. Morphine is the most preferred opioid because it is both effective , cheap and it is free of sympathetic and motor block.

The purpose of this study is to determine the efficacy of  $7 \mu\text{kg}^{-1}$  intrathecal morphine for postoperative analgesia in children after major surgery.

**Material and Methods**

ASA I-II-III, 40 patients aged between 1 and 18 years who underwent laparotomy or thoracotomy and intrathecal morphine ( $7 \mu\text{kg}^{-1}$ ) for postoperative analgesia in Ankara Children's Health and Diseases Hematology-Oncology Training and Research Hospital were included in the study. Preoperative anesthesia evaluation forms, anesthesia follow-up forms, postoperative follow-up forms, surgical reports were reviewed retrospectively by file scanning method. Patients' demographic data, ASA classifications, primary diagnoses, surgeries, postoperative pruritus, nausea, vomiting, headache, respiratory depression, urinary retantion, postoperative additional analgesic and analgesic time were recorded. Postoperative pain were evaluated to CHEOPS under 5 years and VAS 5 years and over.

**Results**

Total of 40 patients (17 males, 23 females) aged 1-18 years were included in the study. The mean age of the patients was  $9,93 \pm 5,37$  and the mean weight was  $34,45 \pm 18,40$ . The most common complication was pruritus with 22.5% (9/40 patients). Respiratory depression was seen in 2.5% of the cases (1/40 patient). Analgesics were needed in 4 patients (10%) in the first 24 hours. Single iv infusion of paracetamol at  $10 \text{ mg kg}^{-1}$  was sufficient.

**Conclusion**

In this study; we have been came to conclusion that intrathecal analgesia of  $7 \mu\text{g kg}^{-1}$  morphine is easy and reliable technique with high analgesic efficacy in pediatric surgical cases who underwent thoracotomy or laparotomy postoperatively.

## OP-026

### ANESTHESIA FOR ENDOSCOPIC PROCEDURES IN PEDIATRIC AGE. AN ANALYSIS OF 1682 CASES

Nilgun Sahin\*, Cihan Doger\*\*, Ferda Ozbay Hosnut\*\*\*, Eyup Sari\*\*\*\*

\* MD, Dr. Sami Ulus Education and Research Hospital,  
Anesthesiology and Reanimation, Ankara, Turkey

\*\* MD, Yildirim Beyazit University Ataturk Education and Research Hospital,  
Anesthesiology and Reanimation, Ankara, Turkey

\*\*\* MD, Dr. Sami Ulus Education and Research Hospital,  
Pediatric Gastroenterology, Ankara, Turkey

\*\*\*\* MD, Dr. Sami Ulus Education and Research Hospital, Pediatrics, Ankara, Turkey

#### Aim

The airways of the patient in the pediatric age group are more vulnerable and airway control is difficult in endoscopic procedures. For this reason, it is important to understand the application of anesthesia in endoscopic procedures. The aim of the study is to evaluate the applications of anesthesia in pediatric patients who underwent endoscopy.

#### Material Methods

Between 2012- 2017, Endoscopy cases under sedoanalgesia by an anesthesiologist in Dr. Sami Ulus Children Education and Research hospital were retrospectively screened. Patients' age, sex, current diagnoses, complaints, accompanying diseases, anesthesia technique, anesthetic drugs, complications and treatments were recorded. Patients were divided according to age groups and the data were evaluated within themselves. (Group 1:0-2, Group 2:2-6, Group 3:6-11, Group 4:11-17 years)

#### Results

1682 patient files between 0-17 years of age( ASA I-IV) were included in the study. 80 patients in group 1, 224 patients in group 2, 443 patients in group 3, 4 patients in 935 patients underwent endoscopy.

#### Sonuçlar

Genetic/metabolic diseases in 6(7.5%) patients and immunological diseases in 13(16.2%) were present in Group 1. It was also found that neurological, cardiac, gastroenterological pathologies accompanied by the disease were present. Sedoanalgesia was administered with propofol in 89% , midazolam in 61% and ketamine in 15% of patients. Bradycardia was found in 1(1.2%) cases. Endoscopy was performed in all age groups for reasons such as autoimmune diseases(celiac, fmf), caustic substance ingestion, foreign body removal. Sedoanalgesia was administered with propofol in 92% , midazolam in 57% and ketamine in 9% of patients in group 2. Complications were seen in 10(4.5%) patients, including bradycardia in 5 patients, allergy + bronchospasm in 2 patients and bronchospasm in 3 patients. Propofol was used in all patients , midazolam was used in 60% and ketamine was used in 4% of patients in group 3. In this patient group, 1 patient had bronchospasm and 1 patient had allergies. Propofol was used in all patients , midazolam was used in 52% and ketamine was used in 4% of patients in group 4. Complications were seen in 10 patients(1%),



including bradycardia in 5 patients, allergy in 1 patient, and bronchospasm in 4 patients. When all age groups were evaluated, it was seen that all of the complicated cases had allergic / immunologic / cardiac problems affecting the lower respiratory system. When all patient groups were examined, it was seen that 90 patients had severe neurological diseases. No mortal complications were encountered in any of the patients.

**Discussion and conclusion**

It should be considered that the anesthetic response to muscle mass calculations can not be done correctly because of the small age of the patients and the protein energy malnutrition in the majority of the patients. It should be kept in mind that pediatric age group may be accompanied by genetic, neurological, autoimmune, cardiac, and endocrine diseases when endoscopies are performed.

## OP-027

### EFFECT OF OBSTRUCTIVE SLEEP APNEA ON DELAYED RECOVERY FOLLOWING BARIATRIC SURGERY

Verda Toprak\*, Hakan Nuraç\*, Emin Pashazade\*, Leyla Çağlayan\*, Elif Özçimen\*\*,  
Başkent University, Istanbul Hospital, Anesthesiology and Reanimation Department\*,  
General Surgery Department\*\*

#### Intoduction- Aim

Phase I postanesthesia recovery time can prolonge after laparoscopic bariatric surgery. Obese patients have higher insidense of Obstructive Sleep Apnea(OSA) and patients with severe OSA have higher risk for postoperative respiratory complications, and ICU admission. The aim of this study was to compare the recovery characteristics of OSA and nonOSA patients anf if the presence of OSA is a causative factor for the delay at PACU delivery time.

#### Material and Methods

Patients undergoing bariatric surgery from January 2015 to April 2017 by the same surgeon were included to the study. Recovery time was defined as discharge from the recovery room in  $\leq 60$  min and in  $>60$  min (*delayed recovery*). We compared characteristics of patients without delayed recovery to those with delayed recovery. The database was reviewed regarding patient characteristics, ICU admission, re-intubations, and complications.

#### Results

One hundred and eighy six patients were operated during the study period. Of 186 bariatric patients, 37 had OSA (20 %) and 149 (80 %) not. 4.9 % of all patients admitted to ICU and all had OSA. ( $z=0.001$ , multivariate analysis) and delayed recovery. Age over 45, smoking had significance in delayed recovery ( $p<0,001$  and t-test ANOVA)

#### Conclusions

In bariatric surgery, presence of OSA can cause adverse respiratory events in the recovery room and are harbingers of increased risk for respiratory depression after discharge from general anesthesia

**OP-028****ANIDULAFUNGIN INDUCED REVERSIBLE THROMBOCYTOPENIA: A CASE REPORT**

Zübeyir CEBECİ, MD\*, Ayşe İlksen EĞİLMEZ, MD\*\*,  
Yasin TİRE, MD\*\*\*, Mehmet SARGIN, MD\*\*\*\*.

\*Ordu University Medical School,  
Anesthesiology and Reanimation Department, Ordu, TURKEY

\*\*Konya Training and Research Hospital,  
Anesthesiology and Reanimation Department, Konya, TURKEY

\*\*\*Konya Training and Research Hospital,  
Anesthesiology and Reanimation Department, Konya, TURKEY

\*\*\*\*Isparta City Hospital, Anesthesiology and Reanimation Department, Isparta, TURKEY

**Introduction**

Anidulafungin is a semisynthetic antifungal agent which is a echinocandin class and uses to treatment invasive candidiasis and refractory aspergillosis. Here we presented elderly patient developed reversible severe thrombocytopenia due to anidulafungin.

**Case Report**

A 75-year-old man was admitted to the ICU with signs of hypovolemic shock and acute anemia. Stomach hemorrhage was detected and total gastrectomy was performed. A sputum culture is being taken because of the fire has been monitored. Amikacin therapy 15 mg/kg/day was started begins with the diagnosis of pneumonia due to the growth *Acinetobacter baumannii*. Amikacin therapy was discontinued in the treatment day 3 and began to colistin 2 mg/kg every 8 hours and imipenem 7 mg/kg every 6 hours. The patient developed respiratory failure requiring intubation while receiving empiric antibacterial therapy. On hospital day 17, fluconazole 30 mg/kg/day was added to treatment due to candida albicans produced in blood culture and colistin-imipenem treatment was discontinued in the treatment. Candida albicans produced in control blood culture on fluconazole therapy day 5 and the treatment was continued. Because of the increasing procalcitonin and CRP levels, liver enzyme elevation and fire 38.5 C° on fluconazole therapy day 6, anidulafungin therapy 15 mg/kg/day was switched on fluconazole promptly. The dosage of anidulafungin was increased to 30 mg/kg/day. Platelet counts was found to be 6 thousands anidulafungin therapy day 4. So treatment was terminated and liposomal amphotericin B treatment 35mg/kg/day was started. Five days after the cessation of treatment with anidulafungin, platelets value was found to be over 100 thousand. Antifungal therapy was discontinued on liposomal amphotericin B therapy day 14, due not to the growth microorganism in control blood culture. The patient who continue to be treated in intensive care, died due to multiorgan failure at 66 days.

**Discussion**

Drug-induced adverse effects can occur in intensive care unit patients during to the treatments. Thrombocytopenia is one of these effects. Some drugs that we use in our patient might have been associated with thrombocytopenia.

Information on anidulafungin induced thrombocytopenia is limited. Anidulafungin has relatively safety profile in echinocandins. According to manufacturer, anidulafungin might

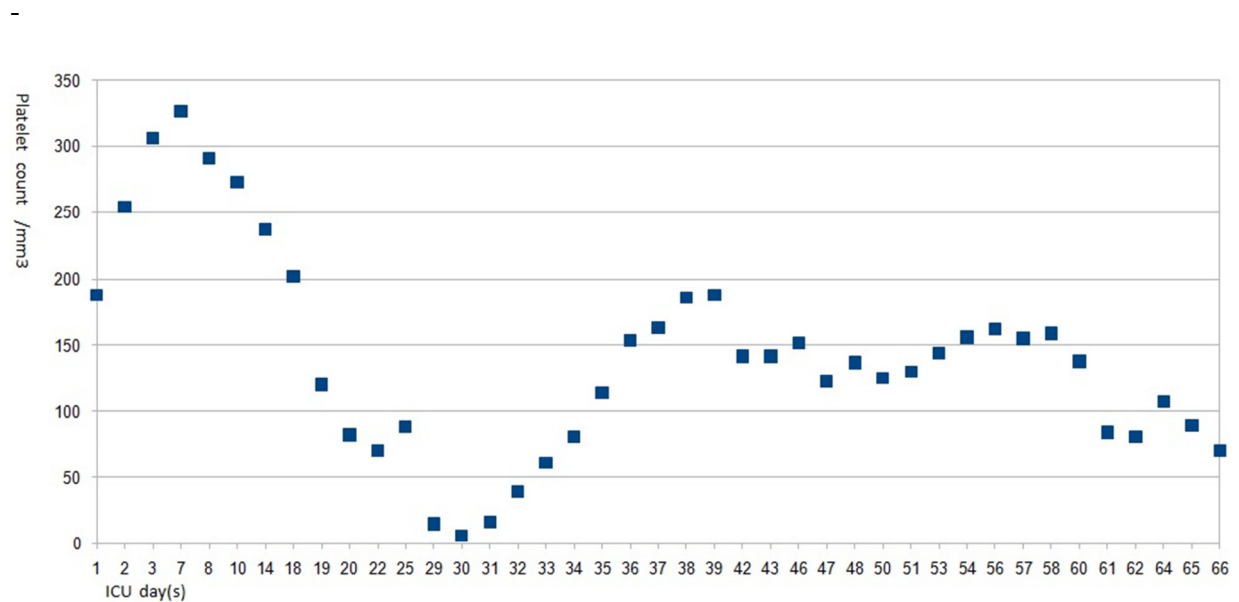
have been associated with thrombocytopenia in less than 2% of patients (1). Although there are rare cases that was reported other echinocandins induced thrombocytopenia, anidulafungin is not the case. In the present case report findings support the possible contribution of anidulafungin to thrombocytopenia.

In conclusion clinicians may consider monitoring platelets periodically, particularly in patients with hematologic disorders especially in patients who use antibiotics and / or antifungal agents.

**References**

- 1) EraxisPI2006 [Internet]. [cited 2016 May 30]. Available from: <http://labeling.pfizer.com/ShowLabeling.aspx?id=566>

Figure 1. Daily platelet counts



**Key Words:** Anidulafungin, echinocandins, antifungal, thrombocytopenia.

**OP-029****STORZ VIDEOLARINGOSCOPE VS MACINTOSH LARINGOSCOPE IN INTRAOCULAR PRESSURE CHANGES, THROAT PAIN, INTUBATION TIME AND HEMODYNAMIC VARIABLES**Ceyda Özhan Çaparlar\*, Gözde Bumin Aydın\*, Evginar Sezer\*,

Jülide Ergil\*, Aysun Şanal Doğan\*\*

Sağlık Bilimleri Üniversitesi, Dışkapı Yıldırım Beyazıt Training and Education Hospital  
Anesthesiology and Reanimation Clinic\* , Ophthalmology Clinic\*\***Introduction**

The aim of the study is to compare intraocular pressure, intubation time, throat pain and hemodynamic variables using Machintosh or Videolaryngoscopy under general anesthesia requiring endotracheal intubation.

**Material and Methods**

After obtaining written informed consent, 78 patients 18 to 65 years of age ASA I-II, with BMI 19-25, without high intraocular(IOP) scheduled for elective surgery under general anesthesia requiring endotracheal intubation were enrolled into this study. Patients with a history of preexisting glaucoma, previous intraocular surgery, difficult intubation is excluded. Before induction of anesthesia, patients were randomly assigned to 2 groups, where Macintosh laryngoscope(ML) or videolaryngoscope(VL) would be used. A standard anaesthetic technique was used for both groups with BIS monitoring to assess the depth of anesthesia. Intraocular pressure was measured after intubation, 3th and 10th minutes. Hemodynamic variables and oxygen saturation were recorded. The throat pain was asked 10 minutes after awakening and at the 24th hour. Intubation time was recorded as the entrance of laryngoscope into the mouth till the appearance of end tidal carbon dioxide measurement.

**Results**

The IOP measurements at the 3rd minute and 10th minutes in the ML group were found to be significantly higher than those in VL( $p<0,001$ ) The IOP measurements at the 3rd minute was significantly higher than 0th minute but significantly lower than 10th minute in both groups ( $p=0,016$ ,  $p<0,001$ ). The hemodynamic variables at the 3rd minute and 10th minute in VL group were found to be significantly lower than ML group( $p=0,003$ ,  $p=0,016$ ). VL group has significantly lower sore throat rates at 24th hour than ML group ( $p<0,001$ ). Intubation times did not differ between the groups( $p>0.05$ ). There were no significant differences between groups regarding intubation times( $p>0.05$ ).

**Conclusion**

These results conclude that VL should be the first choice in patients with high IOP, with lower sore throat rates and hemodynamic changes under general anesthesia requiring endotracheal intubation.

**OP-030****ABDOMINAL ADIPOSITY AND ACUTE KIDNEY INJURY IN MAJOR ABDOMINAL SURGERY**

Seyhan Yağar, Perihan Kemerci, Mine Çavuş, Gülseren Süer Kaya,  
Mustafa Özdemir, Sarper Ökten  
Türkiye Yüksek İhtisas Training and Research Hospital, Ankara, Türkiye

**Introduction**

Obesity is epidemic around the world and obesity and metabolic syndrome are independent predictors of chronic kidney disease. A study recently showed that abdominal adiposity is associated with increased risk of acute kidney injury after major trauma patients. In this retrospective study we aimed to search relation between body mass index, abdominal adiposity and acute kidney injury in major abdominal surgeries. There is no study searching relation between abdominal adiposity and acute kidney injury (AKI) after major abdominal surgeries.

**Material and Methods**

The patients who had major abdominal surgery in our hospital between 01.01.2015 to 31.12.2016 enrolled to study retrospectively. We targeted 500 patients totally for the study. 50 patient's records completed so far and study is continuing. Preoperative anthropometric variables (BMI, Abdominal Adiposity Scores) and comorbidities (DM, hyperlipidemia, existing renal dysfunction, cardiac disorder), perioperative and postoperative data searched from the records. Kidney injury was interpreted according to KDIGO criteria. CT images of the abdomen at level of the L4-5 used for computerized measurement of total fat area, and also subcutaneous fat from intraabdominal fat differentiated.

**Results**

Patients mean age was  $53\pm 14.8$  years, BMI was  $26.8\pm 5.2$ , visceral adipose tissue (VAT) was  $18299\pm 8428$  mm<sup>3</sup>, subcutaneous adipose tissue (SAT) was  $22857\pm 11912$  mm<sup>3</sup>, preoperative creatinine was  $0.94\pm 0.18$  mg/dL, creatinine postoperative first day was  $0.96\pm 0.35$  mg/dL, creatinine postoperative second day was  $0.82\pm 0.23$  mg/dL. Co-morbidities frequency was 4% diabetes mellitus, 20.7% hypertension, 10.3% ischemic heart disease, 17.2% cigarette smoking. 7 patients had AKI according to KDIGO criteria and their BMI was higher (35.2) than study mean level, also VAT was higher (20142 mm<sup>3</sup>) than mean.

**Discussion**

Higher body mass index is associated with kidney dysfunction, since BMI is non-specific reflecting lean, fluid and adipose mass, we evaluated abdominal CT scan to measure abdominal adiposity. According to present uncompleted study higher VAT levels (abdominal adiposity) seems to be associated with AKI in major abdominal surgery patients.

## OP-031

### HIGH FLOW NASAL CANNULA OXYGEN TREATMENT (HFNCOT): CASE REPORT

Demiroluk O, Abitağaoğlu S, Ar Yildirim, Akin E, Turan G  
Fatih Sultan Mehmet Teaching And Research Hospital Department of ICU, Istanbul

#### Introduction-Aim

HFNCOT is a relatively new method in patients with acute hypoxemic respiratory insufficiency. This procedure delivers warm and humidified oxygen at high flowrates(15-60L/min) via a small nasal cannula. There are certain physiological effects of HFNCOT; high flow removes CO<sub>2</sub>, increases the end-expiratory pulmonary volume, decreases physiological dead space, improves compliance and decreases work of breathing. Also provides advantage in protecting the mucociliary functions. We aimed to share our HFNCOT experience in 4 cases receiving treatment in our intensive care unit for acute respiratory insufficiency.

#### Materials and Methods

HFNCOT is applied based on patient blood gas parameters with oxygen humidified at 37°C with FiO<sub>2</sub> adjusted as 0,4-0,6 and flow rate as 25-35L/min.

#### Results:

	Age	Diagnosis	Apachell Scores	Intubation before HFNCOT	Intubation after HFNCOT	Basal PO <sub>2</sub> /FiO <sub>2</sub>	Total HFNCOT Days	Result
Case -1	74	Pneumonia	19	yes	No	<200	8	Discharge
Case- 2	84	Pneumonia	20	yes	No	<200	19	Discharge
Case -3	59	Plm Embolism	9	No	No	<200	6	Discharge
Case -4	67	Multiple Rib Fracture	8	No	No	<200	7	Operated, Treatment continues.

	Basal ABG mask			O2 with face			24 <sup>th</sup> Hour ABG			Discharge ABG fiO2:0,21		
	PO2	PCO2	PH	PO2	PCO2	PH	PO2	PCO2	PH	PO2	PCO2	PH
Case 1	58,3	35,6	7,50	85,4	38,6	7,47	76	33,4	7,52			
Case 2	74,5	49,4	7,54	179	53,4	7,51	63,8	46,7	7,50			
Case 3	55,3	30,9	7,53	78,8	39,6	7,49	60,6	53,2	7,42			
Case 4	57,3	40,3	7,41	88,3	40,6	7,40						

#### Discussion and Conclusion

Acute respiratory insufficiency cases frequently require endotracheal intubation and mechanical ventilation in intensive care units. Oxygen treatment is used for correcting hypoxemia, decreasing dispnea and preventing reintubation. Traditional oxygen treatment involves HFNCOT and non-invasive mechanical ventilation(NIMV) applications. However, it is unclear which oxygen treatment will be preferred.

JP Frat et.al. identified no obvious difference between the intubation rates in all three methods in their study but they marked a significant decrease in 90-day mortality in HFNCOT applied group.

HFNCOT may be used as an alternative treatment method in patients who are unable to adapt to NIMV. However, identifying eligible patients and optimal time of treatment require further studies.



**OP-032****COMPARE THE EFFECTS OF INHALATIONAL ANESTHESIA AND TIVA METHODS ON PULMONARY FUNCTION IN MORBID OBESE PATIENTS GOING TO LAPAROSCOPIC SLEEVE GASTRECTOMY**

Oztürk M.C, Demiroglu O, Abitağaoğlu S, Turan G, Arı Erdoğan D.  
Fatih Sultan Mehmet Teaching And Research Hospital  
Department of Anaesthesiology and Reanimation, Istanbul

**Introduction-Aim**

We aimed to compare the effects of sevoflurane and desflurane inhalational anesthesia and TIVA methods on perioperative and postoperative pulmonary function in morbid obese patients going to laparoscopic sleeve gastrectomy.

**Material and Methods**

ASA II-III scored 60 morbid obese patients (BMI>40kg/m<sup>2</sup>), between the ages 25 and 55, going to have laparoscopic sleeve gastrectomy were included to the study. Electrocardiogram (ECG), noninvasive blood pressure (NIBP), oxygen saturation (SpO<sub>2</sub>), Bispectral Index (BIS) and Integrated Pulmonary Index (IPI) were monitored in all patients.

Patients were separated into 3 groups and standard anesthesia induction **was** applied with propofol, fentanyl and rocuronium; then anesthesia maintenance **was** provided by sevoflurane + remifentanyl infusion in group Sevo, desflurane + remifentanyl infusion in group Des, propofol and remifentanyl infusion in group TIVA with 50 % O<sub>2</sub>-air combination. Ventilation management was applied with 8ml/kg tidal volume, 5 cmH<sub>2</sub>O positive end expiratory pressure (PEEP), 12-14ml/min respiratory rate. The end tidal carbon dioxide pressure (EtCO<sub>2</sub>) was maintained between 35-40 mmHg. The maximum inspiration pressure (P<sub>max</sub>) limited to be under 35 cmH<sub>2</sub>O.

Respiratory mechanics data, like dynamic compliance (C<sub>dyn</sub>), airway pressure (R<sub>aw</sub>), peak inspiratory pressure (PIP), plateau pressure (P<sub>plato</sub>) and minute ventilation (MV) were recorded before insufflation, 5<sup>th</sup> min, 15<sup>th</sup> min, 30<sup>th</sup> min, 60<sup>th</sup> min of insufflation and after desufflation period. Arterial blood gas samples were evaluated before insufflation, after insufflation and 30<sup>th</sup> minute of the recovery room.

**Results**

In our study post-insufflation C<sub>dyn</sub>, R<sub>aw</sub>, PIP and P<sub>plato</sub> values were found similar in all groups. Following the insufflation period, R<sub>aw</sub> values determined low in all three groups compared to pre-insufflation period. We found that arterial oxygenation is preserved in all three anesthetic agents, especially with sevoflurane. There were no difference between groups for partial oxygen pressure (PaO<sub>2</sub>) and SpO<sub>2</sub> values in arterial blood gas analysis. We didn't find any significant difference between preoperative, perioperative and postoperative IPI values

**Discussion and Conclusion**

Sevoflurane and desflurane inhalational anesthesia and TIVA methods have similar effects on respiratory mechanics, arterial oxygenation, postoperative respiratory parameters and hemodynamic parameters in morbid obese patients undergoing to laparoscopic sleeve gastrectomy and all three anesthetic agents can be used confidently.

## OP-033

### RESEARCH INTO THE PROTECTIVE EFFECT OF SYRINGIC ACID IN RATS WITH INDUCED EXPERIMENTAL PANCREATITIS

Mehmet Sertkaya , Mehmet Fatih Yazar, Ömer Faruk Boran,  
Aykut Urfalıoğlu, Yasir Bahar, Hasan Dağlı, Seda İkikardeş, Metin Kılıç  
Kahramanmaraş Şütçü İmam University

#### Aim

Etiopathogenesis of acute pancreatitis (AP) is linked to many immunological, microbiologic and genetic factors. Progressive tissue damage at cellular level in the pancreas occurs due to cytokines and reactive oxygen metabolites (ROS) from inflammatory cells. After disease is triggered, it is generally not possible to predict the severity of inflammation and results.

The aim of this study is to determine whether nutritional intake of syringic acid (SA), a phytochemical compound with treatment efficacy in a previous experimental AP model, has a protective effect on the development of AP or on the severity of pancreatitis according to objective criteria.

#### Material and Method

The study was completed at KSU experimental animals laboratory after ethics committee approval. The experiment used 24 adult male Wistar albino rats divided into 3 groups of 8.

**Group 1:** control group (intraperitoneal physiologic serum)

**Group 2:** pancreatitis group (acute pancreatitis induced with 4 x 75 µg/kg cerulein, no treatment)

**Group 3:** treatment group (acute pancreatitis, intragastric nutrition with 50 mg/kg SA in standard feed for 7 days)

After one week, blood and tissue samples were obtained to investigate oxidative stress, antioxidant markers, pancreatic enzymes and histopathology.

#### Results

The pancreatitis group had significantly increased amylase and lipase values compared to the control group. Enzyme levels increased in the treatment group, but were not significant compared to the control group.

Oxidative stress markers in the pancreatitis group were clearly increased; though there was an increase in the treatment group it was not significant compared to the control group. The antioxidant enzyme GSH-Px was significantly reduced in the pancreatitis group compared to the control group; it was low in the treatment group but higher than the pancreatitis group with no significant difference.

After cerulein administration, pancreatitis developed at histopathological level in pancreatitis and treatment groups. Though the damage and apoptosis at cellular level clearly increased in the pancreatitis group compared to the control group, in rats administered SA the cellular damage was significantly low compared to the pancreatitis group.

### **Conclusion**

Though nutrition with the antioxidant agent syringic acid did not prevent AP, it was shown to significantly reduce severity at enzymatic and histopathologic levels.

**Key words:** acute pancreatitis, syringic acid, antioxidant treatment, phenolic compounds, cerulein

**OP-034****EFFECT OF GENERAL AND REGIONAL ANESTHESIA ON  
BONE TURNOVER MARKERS IN ADULT PATIENTS**

Ebru Biricik\*, Feride Karacaer\*, Ersel Güleç\*, Murat Ilgınel\*,  
Ömer Sunkar Biçer\*\*, Dilek Özcengiz\*

\* Çukurova University, Department of Anesthesiology and Reanimation

\*\* Çukurova University, Department of Orthopedics

**Introduction and Aim**

Bone metabolism can be monitored quantitatively by measuring bone turnover markers in serum or urine. This study was aimed to examine, effect of general and regional anesthesia on bone turnover markers. So, we detected serum bone-specific alkaline phosphatase (BAP) and osteocalcin (OC) levels as markers of bone formation and serum and urine levels of  $\beta$ -C terminal telopeptide ( $\beta$ -CTX) as bone resorption marker.

**Material and Methods**

30 patients with ASA I to II between to ages of 40-70 years, scheduled for hip fracture were recruited. Patients were divided into the two groups. General anesthesia was performed in Group G. Anesthesia induction was provided with propofol  $2\text{g kg}^{-1}$  and rocuronium  $0.6\text{ mg kg}^{-1}$ . Desflurane 4-6% and 40-60%  $\text{O}_2$ -  $\text{N}_2\text{O}$  mixture were used for anesthesia maintenance. Postoperative analgesia was provided with intravenous morphine  $0.1\text{ mg kg}^{-1}$  at last 30.th minutes of operation and morphine PCA at postoperative period (morphine 1 mg bolus, 20 minutes lock out time). Regional anesthesia was performed in Group R. Combined epidural-spinal anesthesia was provided with intrathecal bupivacaine 15 mg and fentanyl  $20\mu\text{g}$ . If anesthesia was inadequate, bupivacaine 0.5% 10 ml was applied in epidural space. Postoperative analgesia was provided with epidural morphine PCA. Usage of nonsteroidal anti-inflammatory drugs was forbidden for all patients during study period of 12 weeks. Postoperative analgesia was provided with only morphine and tramadol. Serum BAP, OC,  $\beta$ -CTX and urine  $\beta$ -CTX levels were measured at preoperative, 4.th week and 12.th week of fracture.

**Results**

A total of 25 patients were eligible for the study. There were no statistically significant between groups for values of bone turnover markers at the time point of preoperative, 4.th and 12.th weeks ( $p>0.05$ ). With using linear regression analysis, serum  $\beta$ -CTX levels at 12.th week can be predict by 4.th weeks  $\beta$ -CTX levels ( $R^2: 0.944$ ) and urine  $\beta$ -CTX levels at 12.th week can be predict by first week level.

**Conclusion**

This pilot study could not show relation between type of anesthesia and bone turnover markers. But indicated that serum and urine  $\beta$ -CTX levels at 12.th week can be estimated by previous evaluations of  $\beta$ -CTX.

**OP-035****ANESTHETIC IMPLICATIONS FOR VAGAL NERVE STIMULATION: A REPORT OF TEN CASES**Ozge Ozden Ilginel

Çukurova University Faculty of Medicine Department of Anesthesiology and Reanimation,  
Adana, Turkey

**Aim**

Vagal nerve stimulation is an alternative treatment method for epileptic patients who are resistant to medical treatment and unsuitable for surgical treatment. In this retrospective case series, we investigated our anesthetic approach and possible complications in epileptic patients established vagal nerve stimulator (VNS).

**Material and Methods**

In this study, the results of 10 patients who were placed VNS by Çukurova University Faculty of Medicine Department of Neurosurgery, between January and December 2016, were examined. Cases were ASA I-II adult patients between 19-35 years of age having at least three antiepileptic agents and least two seizures per month. Standard general anesthesia method was performed to all patients. The follow-up in terms of eventual bradyarrhythmia and asystole, and administration of atropine sulphate when bradycardia occurs were planned. Possible postoperative complications such as aspiration, hypoxia, vocal cord paralysis were noted.

**Results**

Anesthesia induction was achieved with sodium thiopental (3-7 mg/kg, iv). 0.8 mg/kg iv rocuronium bromide was administered for neuromuscular blockade. A second large vessel access was opened due to the proximity of vagal nerve to large vessels. 3-5% desflurane, 0.125-0.25 µg/kg/min remifentanyl, 50% N<sub>2</sub>O, 50% O<sub>2</sub> were used for maintenance of anesthesia. Left VNS was established by neurosurgeon to all patients. Heart rate and blood pressure were closely observed during VNS insertion. 2 mg/kg tramadol was administered for postoperative analgesia. Residual neuromuscular blockade was reversed with 15 µg/kg atropine sulphate and 50 µg/kg neostigmine. Intraoperative bradycardia, improved by interruption of surgical stimulation was observed in only one patient, no bradycardia or asystole was observed in others. At the end of 3 months follow-up a 30-75% decrease in epileptic seizures was identified. Postoperative horner syndrome, peritracheal hematoma, vocal cord paralysis, aspiration and were not observed at all cases, but in two cases pharynx pain was detected with swallowing in early postoperative period.

**Discussion and Conclusion**

Placement of VNS requires general anesthesia and endotracheal intubation. Large diameter IV catheter is safe because of the proximity of vagal nerve to internal carotid artery and jugular vein. Close hemodynamic monitoring and follow-up is essential because of possibility of arrhythmia, bradyarrhythmia, and asystole during VNS placement.

**OP-036****COMPARISON OF EFFECTS OF PREEMPTIVE ORAL PREGABALIN-TRAMADOL COMBINATION AND PARASETAMOL-TRAMADOL COMBINATION ADMINISTRATION ON POSTOPERATIVE TRAMADOL CONSUMPTION IN BREAST REDUCTION SURGERY**

Murat Turkeun Ilginel

Cukurova University Faculty of Medicine

Department of Anesthesiology and Reanimation, Adana, Turkey

**Aim**

We aimed to evaluate the efficacy of preemptive oral tramadol-pregabalin and tramadol-parasetamol combination on postoperative tramadol consumption in patients undergoing breast reduction operation.

**Material and Methods**

Sixty ASA I-II adult patients between 18-65 years of age, undergoing breast reduction surgery were included in this study, randomly divided into three groups. Each of groups were received 35 mg drop tramadol one hour before surgery. Additionally Group I (n=20) patients received 75 mg pregabalin tablet and Group II (n=20) patients received 500 mg paracetamol tablet preoperatively, and Group III (n=20) patients accepted as control group. 30 minutes before the end of operation 1mg/kg i.v. tramadol was administered, and a patient controlled analgesia (PCA) device including tramadol was prepared for postoperative analgesia for all patients. Perioperative haemodynamic parameters, extubation and recovery time, postoperative 24 hour pain scores, total tramadol consumption, additional analgesic requirement and side effects were recorded.

**Results**

24 hours postoperative pain scores, total tramadol consumption, and additional analgesic requirement were similar between groups. Postoperative 24th hour Verbal Rating Scale score was lower in group I compared to others (p=0.023). Although there was no statistically significant difference between the groups in consumption of tramadol, the consumption of tramadol in Group I was lower than the other groups when the total amount of tramadol consumption was grouped as  $120 \text{ mg} \geq$  and  $120 \text{ mg} <$ . Furthermore postoperative 12th hour additional analgesic requirement was higher in Group II. In terms of side effects, diplopia was higher in Group II (p=0.020) and drowsiness was lower (p=0.045) in Group I patients for the postoperative first 5 minutes.

**Discussion and Conclusion**

Administration of preemptive oral low dose tramadol (35 mg), tramadol-parasetamol and tramadol-pregabalin, in patients undergoing breast reduction operation, did not cause any differences about postoperative pain scores, 24 hours total tramadol consumption and additional analgesia requirement except postoperative 12th hour. It has concluded that tramadol-pregabalin or tramadol-paracetamol is not superior to oral tramadol alone.

**OP-037****EVALUATION OF PATIENTS WITH TRACHEOSTOMY WHICH PERFORMED BY GRIGGS TECHNIQUE**

Mehmet Erdem Cakmak, Sema Turan, Dilek Kazanci, Aysegul Ozgok, Busra Tezcan, Sultan Sevim Yakin, Cilem Bayindir Dicle, Ibrahim Mungan  
Turkiye Yuksek Ihtisas Training and Research Hospital, Ankara, Turkey

**Introduction**

Percutaneous tracheostomy has been frequently used in intensive care units in the last decade. Tracheostomy reduces laryngeal damage, facilitates aspiration of the respiratory tract and oral feeding of the patient and reduces airway resistance. Griggs technique is a widely used single-step dilation tracheostomy method. In this report, we evaluated 58 patients who had undergone percutaneous tracheostomy with Griggs method.

**Methods**

Between 2016 and 2017, 58 patients who performed percutaneous tracheostomy were retrospectively evaluated. Demographic data, diagnosis and results of the patients, timing of the tracheostomy are recorded.

**Results**

58 patients underwent percutaneous tracheostomy. 18 (31%) were female and 40 (69%) were male. The mean age was  $63,43 \pm 15,64$ . Mean timing of tracheostomy was  $8,13 \pm 3,29$ . The most common diagnosis for hospitalization in intensive care were coronary artery bypass grafting in 17 patients (29.3%), cardiac valve replacement in 6 patients (10.3%) and colorectal cancer in 6 patients (10.3%). We performed percutaneous tracheostomy in 35 (60.3%) patients with bronchoscopy, in 23 (39.7%) patients without bronchoscopy. Major bleeding developed in 3 (5.1%) patients, pneumothorax and subcutaneous emphysema developed in 1 (1.7%) patient and tracheostomies were closed in these patients. Minor bleeding developed in 4 (6.8%) patients. 11 (18.9%) patients could be weaned from mechanical ventilation with tracheostomy.

**Discussion**

Percutaneous dilatational tracheostomy with the Griggs technique has become popular in recent years. Griffiths and friends suggest early administration of tracheostomy in intensive care patients. In our study, mean timing of tracheostomy was  $8,13 \pm 3,29$ . Early complication rate of percutaneous tracheostomy performed by Griggs method ranges between 9.7% and 15%. The most common complications in percutaneous techniques are bleeding, subcutaneous emphysema, pneumothorax, injury to the trachea posterior wall, hypoxia, and stoma infection. In our study; major bleeding developed in 3 (5.1%) patients, pneumothorax and subcutaneous emphysema developed in 1 (1.7%) patient and minor bleeding developed in 4 (6.8%) patients. Our results are concordant with literature. We think that percutaneous tracheostomy with Griggs method can be easily performed at the bedside and has a low complication ratio.

## OP-038

### EFFECTS OF EPIDUROSCOPY ON QUALITY OF LIFE IN PATIENTS WITH LOW BACK PAIN

Ozge Aktoz, Nalan Celebi  
Hacettepe University, School of Medicine,  
Department of Anesthesiology and Reanimation, Ankara, Turkey

#### Introduction

Epiduroscopy is a minimal invasive technique that is used as diagnostic or therapeutic in chronic low back pain cases. In our study it's aimed to evaluate the change in the quality of life before and after the process in the patients that had posterior epiduroscopy due to the chronic low back pain in Hacettepe University Faculty of Medicine, Department of Anesthesiology and Reanimation, Pain Medicine Divison.

#### Method

In this study, 59 patients answering the SF-36 survey questions with face to face interview technique were involved in this study before and after 6 months of the posterior epiduroscopy process between November 1<sup>st</sup> 2014 and October 1<sup>st</sup>. Short Form 36 (SF-36) Quality of Life Questionnaire was used in this context.

SF-36 was considered reliable and valid for Turkish and it can be used in all physical illness groups because of not being specific for any disease group.

#### Results

The difference between the mean scores of pre and post process in all subscales was statistically found to be significant. Respective average score differences were analyzed and an increase of 3.8 points in general health perceptions, 15.4 points in physical functioning, 75.5 points in physical role functioning, 12.4 points in vitality, 2.4 points in mental health, 41.2 points in emotional role functioning, 31.9 points in bodily pain, 14.2 points in social role functioning was detected.

#### Discussion and Conclusion

Epiduroscopy is a relatively new minimal invasive technique. Although the number of current prospective studies regarding the results of epiduroscopy is limited, there are many retrospective studies. In our study, it can be seen that there was a statistically significant increase in all subscales after the epiduroscopy compared to the pre-process period. These results shows that epiduroscopy applied for chronic low back pain decreases the pain as well as provides improvements in functional and psychological conditions of the patients.

As a result, epiduroscopy is an effective and reliable method that can be used in the patients with chronic low back pain.



**OP-039****A SYSTEMATIC REVIEW OF NEURAXIAL ANESTHESIA IN PATIENTS WITH ANKYLOSING SPONDYLITIS**

Ibrahim Ozturk\*, Derya Ozkan\*\*, Julide Ergil\*\*

\*Medeniyet University, Goztepe Education And Research Hospital,  
Department Of Anesthesiology, Istanbul, Turkey\*\*Diskapi Yildirim Beyazit Training and Research Hospital,  
Anesthesiology and Reanimation Clinics, Ankara, Turkey**Introduction**

Ankylosing spondylitis is a rare disease that presents difficulties for general anesthesia and regional anesthesia techniques in patients undergoing surgery. Thoracic kyphosis, flattening of the lumbar spine, and, in advanced stage patients, formation of syndesmophytes can complicate neuraxial anesthesia. This review examines spinal, epidural and caudal anesthesia practices for patients with ankylosing spondylitis disease.

**Methods**

According to PRISMA statement (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), electronic literature search was conducted by three authors at 01.01.2016 without history limitation. Articles in English reviewing the neuraxial anesthesia applications for cases with ankylosing spondylitis were included.

**Results**

Total of 17 articles consist of 20 patients were included analysis (Table). The majority of cases were male (16/4, 80%). Spinal anesthesia was performed in 40% of patients (thoracic epidural anesthesia 25%, lumbar epidural anesthesia 15%, caudal anesthesia 10%, combined spinal-epidural anesthesia 10%). Median approach was selected in 8 patients (40%) whereas a paramedian approach was used in 7 patients (35%). Of the 20 approaches, three failed (15%). While the most application region was the thoracic region (45%, or 9 cases, ), generally (90%) no imaging technique was used.

**Discussion and conclusion**

In conclusion, we thought in patients with syndesmofit formation in thoracic or lumbar regions, the paramedian approach should be considered a useful alternative to the median approach or an imaging technique may be used.

**Keywords:** Ankylosing Spondylitis, Spinal, Epidural, Caudal, Neuraxial Anesthesia

**Table :1 Cases of Neuraxial Anesthesia for Ankylosing Spondylitis**

Reference, no	Age/ Sex	Operation	Anesthesia technique/ Interlaminar space	Approach	Imaging technique	Success
Varadajan et al. (8)	57/M	CABG	TEA-GA/T1-2	Median	No	Yes
Varadajan et al. (8)	51/F	CABG	TEA-GA/T1-2	Median	No	Yes
Chin et al. (22)	40/F	THR	SA/L4-5	Median	USG	Yes
Sivrikaya et al. (11)	30/F	C/S	SA/L3-4	Median	No	Yes
Hyderally et al. (10)	55/M	THR	CSEA/L3-4	?	No	Yes
Batra et al. (9)	58/M	THR	EA/L3-4	Paramedian	No	No/TSA
Sng et al. (12)	33/F	C/S	CSEA/?	Paramedian	No	Yes
Allen et al. (19)	74/M	AAA	TEA-GA/T10-11	?	No	No/EH
Canakci et al. (23)	45/M	Inguinal hernia	SA/L3-4	Median	No	Yes
Rodi et al. (13)	42/M	L2 vertebrae fracture	EA/T11-L2	Paramedian	No	Yes
Kumar et al. (24)	28/M	Knee surgery	SA/L3-4	Paramedian	No	Yes
Kumar et al. (24)	52/M	THR	SA/L3-4	Paramedian	No	Yes
Kumar et al. (24)	42/M	Knee surgery	SA/L3-4	Paramedian	No	Yes
Leung et al. (14)	65/M	Femur fracture	SA/L3-4	Median	Mini- laminotomy	Yes
Weber et al. (15)	29/M	Anal fistula	CA/sacral hiatus	-	No	No
Deboard et al. (17)	50/M	THR	CA/sacral hiatus	-	No	Yes
Gustafson et al. (20)	46/M	Acute pancreatitis	EA/T11-12	Median	No	Yes
Robins et al. (21)	63/M	Duodenal surgery	EA-GA/T7-8	Median	No	Yes
Oyoma et al. (18)	73/M	THR	EA/L3-4	Paramedian	No	Yes
Jindal et al. (25)	52/M	Percutan nephrolitotomy	SA/L5-S1	Taylor approach	No	Yes

CABG: Coronary Artery Bypass Grafting, TEA: Thoracic Epidural Anesthesia, GA: General Anesthesia, THR: Total Hip Replacement, SA Spinal Anesthesia, C/S: Cesarean/Section, TSA: Total Spinal Anesthesia, CSEA: Combined Spinal Epidural Anesthesia, EA: Epidural Anesthesia, EH: Epidural Hematoma, AAA: Abdominal Aort Anevrism

**OP-040****EFFECT OF THORACIC EPIDURAL OR INTRAVENOUS ANALGESIA ON NEUTROPHIL / LYMPHOCYTE RATIO IN THORACOTOMY CASES**

Metin Alkan\*, Fatmanur Duruk Erkent\*, Ali Çelik\*\*, Anıl Gökçe\*\*,

Mustafa Arslan\*, Yusuf Üna\*ı

\*Gazi University Faculty of Medicine,

Department of Anesthesiology and Reanimation, Ankara

\*\*Gazi University Faculty of Medicine, Department of Thoracic Surgery, Ankara

**Introduction-Aim**

Postoperative pain is an important problem in patients processing thoracotomy. This situation disrupts the comfort of the patient, also it prevents early rehabilitation, and also it affects the functional after surgery. Although there are many diseases in the literature where the ratio of neutrophil lymphocytes used as an indicator of inflammatory response, there is insufficient data on the effects of postoperative pain closely related to acute inflammation. In this study it is researched that the effects of thoracic epidural and intravenous analgesia on thoracotomy patients' neutrophil lymphocyte ratio for the first 48 hours.

**Material and Methods**

Thoracic epidural or intravenous analgesia methods were processed for analgesia in elective surgery planned thoracotomy patients. Patients were divided into two groups according to analgesia applications. Thoracic epidural analgesia as group 1 and intravenous analgesia as group 2 were registered. Whole blood counts were recorded in blood samples taken at 24th and 48th hours preoperatively and postoperatively, and neutrophil lymphocyte ratios (N/L) were recorded as retrospective file scanning. Postoperative 24th and 48th hour N/L and preoperatively N/L were registered.

**Results**

In the study the demographic data of the patients were similar. Preop N/L ratio was 3,50 in group 1 and 2,51 in group 2 and it was significantly higher in group 1( $p=0,004$ ). Postoperative N/L ratios were similar in the groups. When the preoperative N/L value ratios of the 24th and 48th hour N/L values were evaluated, it was found the 24th hour preoperative period increased 4.9 times in group 1 and 9.23 times in group 2. The increase rate in group 1 was significantly lower than group 2 ( $p=0,006$ ).

**Discussion and Conclusion**

In the postoperative period, it was determined that the method of analgesia applied in the change of N/L ratio according to preoperative turnover is important. We are evaluating that thoracic epidural analgesia is a more appropriate method for pain control. Neutrophil/lymphocyte ratios should be registered at preoperative and we think that multimodal analgesia should be preferred in patients that have high levels of neutrophil/lymphocyte.

**Key Words:** Thoracotomy, Neutrophil/lymphocyte ratio, thoracic epidural

## OP-041

### GOAL DIRECTED FLUID THERAPY VIA PLETH VARIABILITY INDEX 'S EFFECTS ON ACUTE KIDNEY INJURY WITH PATIENTS UNDERGOING LAPAROSCOPIK COLORECTAL SURGERY

Sevcan Buyuk, Suheyla Karadag Erkoc, Cigdem Yildirim Guclu, Ali Abbas Yilmaz  
Department of Anesthesiology and ICM, Ankara University Faculty of Medicine, Ankara,  
Turkey

#### Introduction

Laparoscopic colorectal surgery is frequently performed in current practice. Besides the advantages of laparoscopic procedure, it has deleterious effects on all abdominal viscera intraabdominal pressure increases.

In this study we aimed to find out whether goal directed fluid treatment via PVI monitoring effects kidneys during laparoscopic colorectal surgery by using the early marker of AKI, NGAL.

#### Materials and Methods

Patients undergoing elective laparoscopic colorectal surgery longer than 2 hours, were included in this study. Patients were randomized into 2 groups to compare intraoperative PVI-directed fluid management (PVI group) versus standard care (SC) group. After the induction of general anesthesia, the PVI group received a 500 ml crystalloid bolus and a crystalloid infusion of 2 ml/kg/h. 250 mL crystalloids were administered as PVI was >14%. In the SC group, fluid management was administered on the basis of 4-2-1 rule. Intraabdominal pressure, duration of anesthesia, surgery, and pneumoperitonium, total crystalloid volume, urine output, and hemodynamic data were recorded. Blood samples were taken from both groups for NGAL measurement before CO<sub>2</sub> insufflation(T0), and at 6th(T1) and 12th(T2) hours after CO<sub>2</sub> insufflation.

#### Results

Fifteen patients in the PVI group and 14 patients in the SC group were included. Intraoperative crystalloids and total volume infused were significantly lower in PVI group. The increase in the NGAL values were similar in both groups. The difference of the rise between basal values and 6th hour and basal values and 12th hour was statistically significant. No complications were recorded in PVI group for 30 days. Respiratory complications in 2 patient and incisional infection in 1 patient were recorded in control group.

#### Conclusion

Goal-directed fluid therapy has no effect on kidney injury compared with conventional fluid therapy measured by NGAL, but the incidence of complications. We think that PVI monitoring should be used to avoid side effects of excessive fluid.

**Key words:** Laparoscopic colorectal surgery, PVI, NGAL, Acute kidney injury

**OP-042****ZUKLOPENTHIXOL-INDUCED NEUROLEPTIC MALIGNANT SYNDROME**

Ismail Kerem Gelir, Abdullah Yalçın, A. Gülsün Pamuk, Banu Kılıçarslan, Seda Banu Akıncı  
Hacettepe University Faculty of Medicine, Department of Anesthesiology and Reanimation,  
Ankara, Turkey

**Introduction**

Neuroleptic malignant syndrome (NMS) is a rare and life-threatening adverse reaction. Zuclopenthixol decanoate is a neuroleptic and binds to both D1 and D2 receptors. Prevalence of extrapyramidal adverse effects is lower [1].

**Case**

A 24-year-old man was admitted with 6 year history of bipolar disorder and he has been taking lithium therapy. He was taking zuclopenthixol acuphase, lorazepam and quetiapine since february 2016. Zuclopenthixol acuphase (50 mg i.m.) was applied 3 times and zuclopenthixol deconate (depot) 200 mg i.m. was injected in April 2016.

Patient was admitted to ICU with complaints of diffuse muscular rigidity, catatonia, dysphagia and changes in consciousness two weeks later. He was tachycardic (112/min), GKS was 11. Creatine kinase (CPK) level was 485. Lithium level was 1,17 mMol/L. Cranial CT and MRI were normal. Excessive sweating, tachycardia, HT attacks and severe contractions were evaluated as autonomic instability. Bromocriptine and lorazepam therapy was started.

On the 6th day the fever increased, CPK level increased by three times and autonomic dysfunction continued therefore dantrolen treatment was added. CPK levels peaked 3 times during ICU stay (Fig. 1). Leukocytosis also tended to increase with the CPK values (Fig. 2).

A total of 12 electroconvulsive therapies (ECT) were applied in the ICU stay. The patient was treated with dantrolen for 15 days. He was transferred to the psychiatric service on the 30th day.

**Discussion**

NMS is strongly associated with first-generation antipsychotics, but it also occurs with second generation antipsychotics [2]. Standardized criteria for the diagnosis of NMS emphasize the classic findings of hyperthermia, muscle rigidity, mental status changes, and autonomic dysfunction [3]. Our patient shows all these symptoms .

Risk factors include previous episodes, dehydration, agitation, concomitant use of lithium, and the rate and route of neuroleptic administration [3]. In NMS, CPK is typically more than 1000 IU/L [2].

Commonly used agents are dantrolene, bromocriptine, and amantadine [2]. Electroconvulsive therapy is a reasonable treatment option in NMS [4]. Zuclopenthixol deconate is a long-acting form. Maximum serum concentrations are reached 3-7 days following i.m. injection [5]. In the literature, there is limited cases of NMS associated with zuclopenthixol.

**References**

1. Eur Neuropsychopharmacol 1991; 1(4): 541-548
2. Crit Care 2007; 11:R4

- 3. Med Clin North Am 1993; 77:185-202
- 4. Convuls Ther. 1991;7(2):111-120
- 5. Psychopharmacology (Berl). 1986; 89(4):428-31

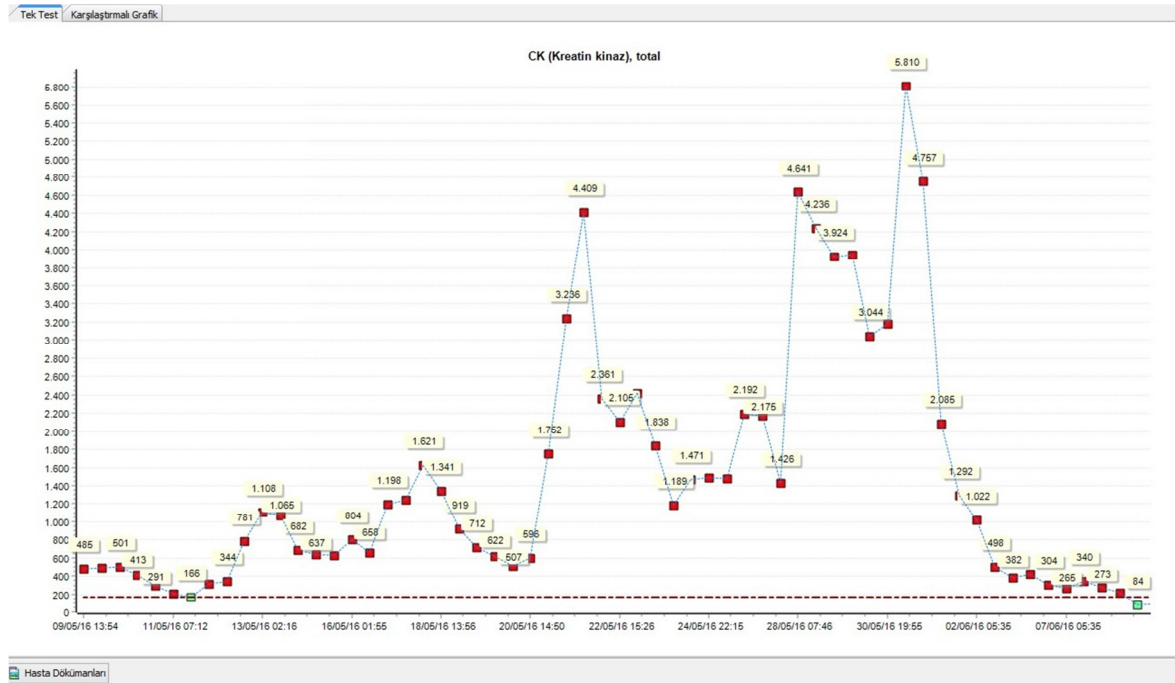


Figure 1. CPK Levels in the ICU

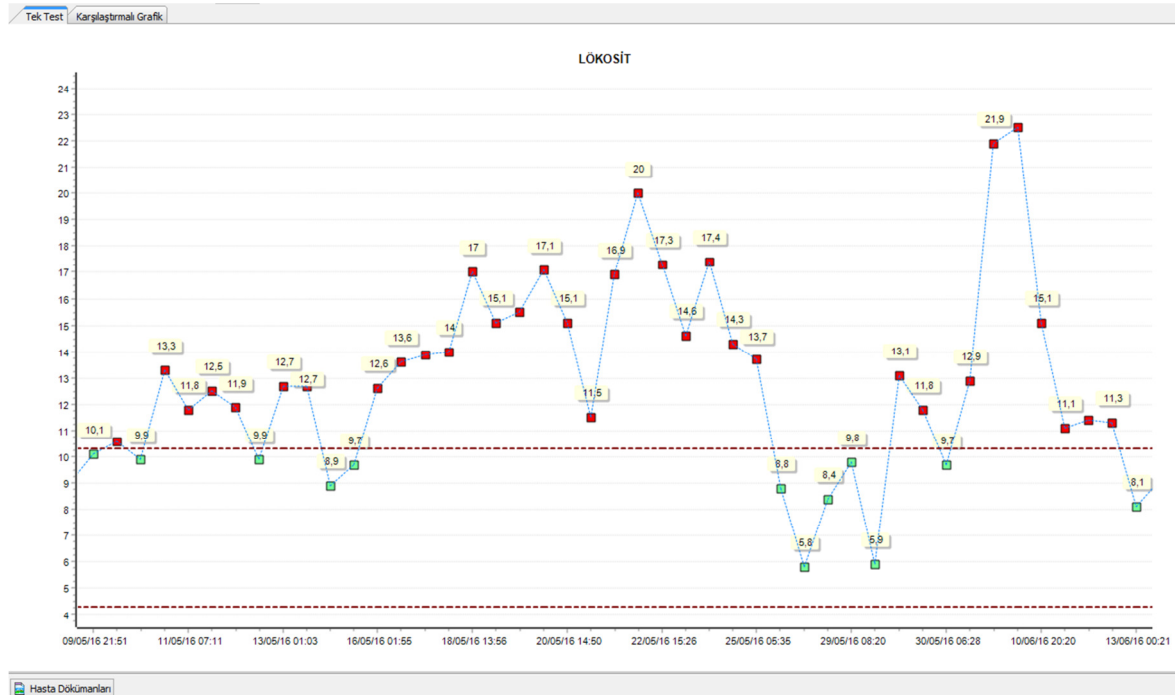


Figure 2. Leucocyte Levels in the ICU

**OP-043****OUR EXTRA-CORPOREAL CARDIOPULMONARY RESUSCITATION EXPERIENCE: A CASE REPORT**

Ibrahim Mungan, Dilek Kazanci, Hayriye Cankar Dal, Mine Cavuc, Serdar Yamanyar, Busra Tezcan, Sema Turan, Aysegul Ozgok  
Turkiye Yuksek Ihtisas Training and Research Hospital, Ankara, Turkey

**Introduction**

Extracorporeal cardiopulmonary resuscitation (ECPR) is to provide support after conventional cardiopulmonary resuscitation (CCPR) has failed to restore circulation, and has been shown to improve survival rates among refractory cardiovascular arrest patients..In cardiogenic shock and cardiac arrest, where cardiac circulation should be supported, venoarterial(VA) ECMO. We aimed to present use of VA ECMO in our patient who had refractory cardiac arrest in catheter laboratory during percutaneous coronary intervention(PCI).

**Case report**

A 52-year-old man was admitted to emergency department with chest pain . The diagnosis was acute anterolateral myocardial infarction and coronary angiography was performed immediately. During the procedure sustained ventricular tachycardia was developed and then asystolic cardiac arrest was occurred. Although conventional cardiopulmonary resuscitation was performed return of spontaneous circulation (ROSC) could not be achieved. VA ECMO was applied after a 20 minutes CCPR . Cardiovascular surgery physician placed left femoral arterial and right femoral venous catheters for ECMO and the patient was transferred to operating theatre. He became stable with ECMO and coronary arterial bypass surgery was performed. Due to weaning from cardiopulmonary bypass was unsuccessful we decided to continue VA ECMO procedure. The patient was kept on ECMO for the next 48 hours and weaning trial was performed by reducing extracorporeal membrane oxygenation flow to less than1.5 L/min. After decannulation of the patient, intraaortic balloon pump (IABP) was replaced to augment coronary circulation.

**Conclusion**

The American Heart Association recommends the consideration of ECPR when the time without blood flow is brief and the condition leading up to the cardiac arrest is reversible or amenable to heart transplantation or revascularization. The case study highlights the need to develop systematic strategies to reduce the delay between cardiac arrest and initiation of ECPR among appropriate patients to optimize the potential for survival.

**OP-044****EFFECTS OF REMIFENTANIL PRETREATMENT ON BUPIVACAINE CARDIOTOXICITY IN RATS**Özcan Pişkin, Hilal Ayoğlu

Department of Anesthesiology and Reanimation, School of Medicine, Bulent Ecevit University, Zonguldak, Turkey,

**Introduction/Aim**

Unintentional intravascular administration of bupivacaine may cause local anesthetic systemic toxicity (LAST). Although many systems are affected in LAST, the cardiovascular effects can be life-threatening. Remifentanil is a selective, ultra-short-acting,  $\mu$ -opioid receptor agonist opioid. This study assessed the effects of combined pretreatment with intra lipid emulsion (ILE) and remifentanil on the cardiotoxicity caused by bupivacaine in an experimental model of anesthetized rats.

**Material and Methods**

The rats were divided into 3 groups. In Group B received a saline pretreatment plus a Bupivacaine, in group L received ILE pretreatment plus a bupivacaine and in group R, remifentanil was infused intravenously, plus ILE pretreatment plus a bupivacaine. The electrocardiogram (ECG) tracing, invasive arterial pressure, and heart rate (HR) rats were monitored continuously. Arterial blood gas analysis was performed in all groups.

**Results**

Arterial blood gas analysis revealed that the baseline pH ( $7.38\pm 0.31$ ,  $7.39\pm 0.41$ , and  $7.37\pm 0.02$  for groups B, L, and R, respectively), PaO<sub>2</sub> ( $198.5\pm 9.45$ ,  $196.1\pm 32.3$ , and  $197.7\pm 9.25$  mmHg, respectively), and PaCO<sub>2</sub> ( $37.8\pm 4.91$ ,  $37.4\pm 4.85$ , and  $36.9\pm 4.42$  mmHg, respectively) were similar in the groups ( $p > 0.05$ ). Time to first alteration in QRS complex, time to first arrhythmia, time to 25%, 50%, and 75% reductions in HR, time to 25%, 50%, and 75% reductions in MAP and time to asystole were recorded. Widening of the QRS complex was found  $41.8\pm 16.6$ ,  $88.5\pm 7.91$ , and  $103.0\pm 15.7$  s after initiating the bupivacaine infusion in groups B, L, and R, respectively. Time elapsed until 25% reduction of HR were found  $136.5\pm 50.7$ ,  $284.7\pm 31.7$ . and  $292.0\pm 46.0$  sec for groups B, L, and R, respectively and 25% reduction of MAP were found  $101.7\pm 14.3$ ,  $245.0\pm 36.6$ . and  $237.6\pm 52.6$  sec, respectively. Arrhythmia was observed after  $135.2\pm 27.4$ ,  $172.4\pm 18.1$ , and  $176.2\pm 23.0$  s in groups B, L, and R, respectively. Finally, asystole occurred after  $553.6\pm 74.4$ ,  $766.7\pm 64.8$ , and  $800.1\pm 94.7$  s in groups B, L, and R, respectively.

**Discussion/Conclusion**

This finding indicate that the survival time of rats administered pretreatment with ILE plus remifentanil and those given ILE was observed to be longer.



**OP-045****PERCUTANEOUS DILATATIONAL TRACHEOSTOMY VIA GRIGGS TECHNIQUE AT BEDSIDE IN INTENSIVE CARE UNIT; A SINGLE CENTER EXPERIENCE**

Yeliz Şahiner\*, İbrahim Tayfun Şahiner\*\*

\*Hitit University, School of Medicine, Department of Anesthesiology and Reanimation, Çorum, Turkey

\*\* Hitit University, School of Medicine, Department of General Surgery, Çorum, Turkey

**Introduction-Aim**

Percutaneous dilatational tracheostomy (PDT) is frequently performed in the intensive care (ICU) unit to prevent the long term complications associated with prolonged endotracheal intubation. The aim of this study is to determine complications, feasibility in the ICU following PDT

**Material and Methods**

We conducted a retrospective chart review of 78 patients in the ICU who underwent PDT by an intensive care physician between 2014-2016. Demographic variables, as well as complications were recorded.

**Results**

The mean age of patients was 68,7 years. Totally, 56.4%(n:44) patients were female and the rest 43.6%(n:34) were male. Mean Apachell and Glasgow Scores were 26,9, 7,6 respectively. Mean total hospitalization of patients in ICU were 76,3 days. Patients' diagnoses on admission to ICU included pneumonia 44.9% (n:35), trauma 24.8%(n:13), cardiac diseases 10.3%(n:8), myasthenia gravis 9%(n:7), cerebrovascular diseases 9%(n:7), gastrointestinal disorders 6.4%(n:5) and malignancy 3.8%(n:3). Mean duration of the PDT was 21 minutes. The mean number of days in which the patients were intubated before PDT was 21±6 days. Before and after performing PDT mean FiO2 rates was 58.7% and 49.1% respectively. We found PEEP rates 5 versus 3 before and after performing PDT. There was not any sedation requirement 91%(n:71) after performing PDT. Ventilator associated pneumonia was observed in 32.1%(n:25) patients. The overall complication rate was 41% and the majority of complications were minor. The most common and early complication of PDT was bleeding 28.2%(n:22). Other minor complications were observed as hypotension 3.8%(n:3), desaturation 3.8%(n:3), subcutaneous emphysema 1.3%(n:1). We observed pneumothorax in one patient and chest tube was performed by surgeon. The mortality was observed in one patient due cardiac arrest during performing PDT.

**DISCUSSION and CONCLUSION**

In critically ill patients, PDT is rapidly becoming the preferred method of long-term airway control. The placement of tracheostomy has gained popularity as a means of facilitating the weaning of patients from the respirator, as it reduces pulmonary dead space, provides access for clearing pulmonary secretions under various pathologic conditions, and improves the patient's comfort. PDT is a safe, rapid, alternative to standard open tracheostomy. It can be performed at the bedside in ICU.

**OP-046****THE EFFECT OF NEUROMUSCULAR BLOCKADE DEPTH,  
REMNANT CO<sub>2</sub> EXCRETION AND PROLONGED ASSISTED VENTILATION ON  
POSTOPERATIVE PAIN IN PATIENTS UNDERGOING LAPAROSCOPIC CHOLECYSTECTOMY;  
A PROSPECTIVE, RANDOMIZED, BLIND CLINICAL STUDY**

İbrahim Tayfun Şahiner\*, Yeliz Şahiner\*\*

\* Hitit University, School of Medicine, Department of General Surgery, Çorum, Turkey

\*\*Hitit University, School of Medicine, Department of Anesthesiology and Reanimation,  
Çorum, Turkey

**Introduction-Aim**

Laparoscopic cholecystectomy(LC) is performed very frequently in all centers. After LC, pain control is a problem. Neuromuscular blocking drugs are used during LC to improve surgical exposure. Pneumoperitoneum by CO<sub>2</sub> is essential for surgical exposure too. After surgery there can be remnant CO<sub>2</sub> in peritoneal cavity which is responsible for postsurgical shoulder pain. The aim of this study is to investigate to effects of neuromuscular blockade depth, remnant CO<sub>2</sub>, and performing assisted prolonged ventilation on postoperative pain in patients undergoing LC.

**Material and Methods**

This study conducted at Hitit University between May - December 2016. Ethics Committee approval and written informed consent were obtained. 76 ASA class I-III patients, 18-90 years of age, undergoing elective LC surgery were randomly allocated to four groups of 19 patients each. Patients randomized into the following four groups: Control(C), assisted prolonged ventilation(APV), deep neuromuscular blockade(DNB), assisted prolonged ventilated and deep neuromuscular blockade(APV+DNB) group. LC was performed to all groups. Additionally after surgery 5 minutes extended assisted ventilation in trendelenburg position is performed in APV group, deep neuromuscular blockade is performed and monitorized by TOF watch in DNB group and finally in APV and DNB group two procedures performed at the same time. After recovery all groups were analyzed for, surgery time, surgeon satisfaction postsurgical shoulder pain, VAS, emesis. Statistical analyzes is performed via SPSS program. Statistical significance level was accepted as  $p < 0.05$ .

**Results**

The mean age and body mass index of groups were 51,8 and 30,3 respectively. Female gender was found %78,9(n:60) and male was %21,1(n:16). Mean surgical time was 45 minute(min:15,max: 95). There were no statistical significance between all groups about shoulder pain, emesis and VAS. But shoulder pain and VAS was found less in APV and APV+NDB groups. Surgery time was found less in APV and APV+NDB groups. Surgeon satisfaction was statistically significant in APV+NDB group.

**Discussion and Conclusion**

APV method is effective for excretion of remnant CO<sub>2</sub> gas in laparoscopic surgery. Deep neuromuscular blockade helps surgeon to gain sufficient surgical space conditions. APV+NDB were found to be effective to reduce postoperative pain levels and improve surgeon's comfort during LC.

**OP-047****ABSTRACT****THE COMPARISON OF THORACIC EPIDURAL BLOCK OR TRANSVERSUS ABDOMINIS PLANE BLOCK DURING ANESTHESIA AND POSTOPERATIVE PAIN MANAGEMENT FOR ABDOMINAL MALIGNANCY SURGERY**

Sultan Özgün Gündüz\*, Zübeyir Cebeci\*\* , Mehmet Yalvaç\*\*\*, Onur Özlü.\*\*\*\*

\*Health Ministry Çivril State Hospital

\*\* Health Ministry Ordu Medical School Hospital, Anesthesia and Reanimation Clinic

\*\*\*Bozok University Medical School Hospital, Anesthesia and Reanimation Department

\*\*\*\* TOBB -ETU Medical School, Anesthesia and Reanimation Department

**Aim**

Our aim was to compare the effects of thoracic epidural block and transversus abdominis plane (TAP) block on the perioperative anesthetic requirement and the postoperative pain management in patients undergoing abdominal malignancy surgeries.

**Methods**

After obtaining ethics committee approval and written informed consent, ASA I-III, 50 patients, aged between 18-80 years, were randomized into two groups. The patients in the thoracic epidural analgesia group received 10 ml of 0,25% bupivacaine, and the patients in transversus abdominis plane blockade group received 20 ml of 0,25% bupivacaine bilaterally. Anesthesia was induced with 1 mcg/kg fentanyl, 2 mg/kg propofol and 0,5 mg/kg rocuronium and maintained using sevoflurane and 50% N<sub>2</sub>O in O<sub>2</sub>. Anesthesia depth level was kept at 50-60 using Bispectral Index Monitoring. Patient-controlled analgesia technique with intravenous tramadol was used for postoperative analgesia. Postoperative pain was assessed by visual analogue scale (VAS). Postoperative VAS scores were recorded 15 and 30 minutes, 1, 2, 6, 12 and 24 hours after the anesthesia. Postoperative total tramadol consumption and patient satisfaction were recorded 24 hours after the anesthesia.

**Results**

The patients were similar with respect to demographics and durations of anesthesia and surgery ( $p > 0.05$ ). Also the groups were similar in terms of heart rates, mean arterial pressure, peripheral oxygen saturations, BIS, end-tidal CO<sub>2</sub> and sevoflurane pressures, MAC levels and intraoperative fentanyl requirements ( $p > 0.05$ ). Postoperative tramadol consumptions of anesthetics were also similar ( $p > 0.05$ ). However in Group TAP block, VAS scores reached the lowest score at the 12<sup>th</sup> hour ( $p < 0.05$ ). Additionally VAS scores were significantly lower in TAP block group than the other group at the 12<sup>th</sup> postoperative hour ( $p < 0.05$ ).

**Conclusion**

Comparing the intraoperative hemodynamic parameters, anesthetic requirements and postoperative analgesic consumption, efficiency of thoracic epidural block and TAP block were similar and these two techniques could be alternative for postoperative pain management of abdominal malignancy surgeries using midline laparotomies. Nevertheless TAP blockade might be preferable to thoracic epidural block with respect to lower VAS scores.

## OP-048

### DOES ADDITION OF PREOPERATIVE I.V. IBUPROFEN TO PREGABALIN REDUCE POSTOPERATIVE PAIN IN POSTERIOR LUMBAR INTERBODY FUSION SURGERY?

Hüseyin Ulaş Pınar , Ömer Karaca, Fatma Karakoç, Rafi Doğan  
Baskent University Konya Research Center Anesthesiology Department, Hocacihan Mah.  
Saray Cad. No: 1 Selçuklu Konya/Turkey,

#### Objective

The aim of the study is researching effect of 800 mg iv ibuprofen in addition to preoperative single dose pregabalin on postoperative analgesia and morphine consumption in posterior lumbar interbody fusion surgery.

#### Materials and Methods

42 adult ASA I-II physical status patients received 150 mg oral pregabalin 1 hour before surgery. Patients received either 250 ml saline with 800 mg iv ibuprofen or saline without ibuprofen 30 minutes prior to the surgery. Postoperative analgesia obtained by morphine patient controlled analgesia (PCA) and 1 gr iv paracetamol every six hours. PCA morphine consumption was recorded and postoperative pain was evaluated by Visual Analog Scale (VAS) in postoperative recovery room, 1, 2, 4, 8, 12, 24, 36 and 48<sup>th</sup> hours.

#### Results

Postoperative pain was significantly lower in ibuprofen group in recovery room, 1<sup>st</sup>, 2<sup>nd</sup>, 36<sup>th</sup> and 48<sup>th</sup> hours. Total morphine consumption was lower in ibuprofen group in 2<sup>nd</sup>, 4<sup>th</sup>, 8<sup>th</sup>, 12<sup>th</sup> and 48<sup>th</sup> hours.

#### Conclusions

Preoperative 800 mg iv ibuprofen added to preoperative 150 mg pregabalin decreases postoperative pain and total morphine consumption in patients having posterior lumbar interbody fusion surgery.

**OP-049****ANESTHESIA APPLICATION IN TROMBOCYTOPENIC PREGNANT (CASE REPORT)**

Elif Büyükerkmen, Tuba Berra Sarıtaş, Remziye Sivacı  
Afyon Kocatepe University, Department of Anesthesiology and Reanimation/ Turkey

**Purpose**

Trombocytopenia is the second major hematological problem after anemia in pregnancy. Trombocytopenia incidence is approximately %6-15 during pregnancy and %75 of them is gestational trombocytopenia (GT). Pathophysiologically of GT is unknown exactly but gestastional haemodilution, decreased platelet production, increased platelet clearance and increased thrombocyte activation are relevant reasons.

**Case**

Patient was 33 years old, full term (38+3), fifth gravida, and was admitted for C/S and bilateral tube ligation. She had trombocytopenia in her previous antenatal reports during 3rd trimester between 70000 and 100000mm<sup>3</sup>. Her total blood count, INR, and biochemical parameters were normal except thrombocyte count (51000 mm<sup>3</sup>). Bleeding history, anticoagulan drug usage and herbal medication usage were not found during the examination of her. 4 unite (U) trombocyte concentrate and 1U erithrocyte suspansion was prepared. After preoxygenation, general anesthesia is applied with 2 mg/kg propofol and 1 mg/kg rocuronium and maintained with sevoflurane in oxygen / air mixture. Trombosite transfusion was done during the surgery. A 3220 gr male baby was born with APGAR of 9-10. After delivery 100 mcg fentanyl was applied. She was extubated without any problem and transferred to intensive care unit (ICU). Postoperative platelet count was 155000mm<sup>3</sup> and there was no bleeding complication. The baby platelet count was also in normal range. She was transferred to ICU and stayed there for 24 hours and discharged 2 days after the surgery.

**Conclusion**

Although trombocyte number function and halflife didnt change during pregnancy, most frequent trombocyte pathology is trombocytopenia. There was no threatment indication in GT patient if trombocyte count is typically above 70000 mm<sup>3</sup>. 51000 mm<sup>3</sup> count of our patients is very severe. There was no data about GT less then 70000 mm<sup>3</sup> in the literature. Therapy was recommended in mild and severe trombocytopenia with spontaneous hemorragia symptom. There was not spontaneous haemorhage in our patient so we transfused trombocyte consantrate at periopoperative period.

In GT trombocyte count is more than 70000 mm<sup>3</sup> usually and does not need any treatment and in patient with severe GT as our patient general anesthesia for C/S with trombocyte concentrate replacement can be applied safely.

## OP-050

### A CASE REPORT OF ULTRASOUND GUIDED STELLATE GANGLION BLOCK FOR PERIPHERAL VASCULAR DISEASE IN CRITICAL CARE

İlksen Dönmez, Aysu Hayriye Tezcan, Mesut Öterkuş, Ömür Öztürk, Eşref Erdem  
Kafkas University School of Medicine, Anesthesiology and Reanimation Department

#### Aim

Ischemic changes may be seen in the extremities due to various factors during the hospitalization period in ICU patients. These factors include radial artery cannulation, accidental intraarterial interventions, embolies, vasoactive drugs and pre-existing diseases of patients. Sympathetic system dysfunction with brachial plexus block or stellate ganglion block are the interventional methods used for treatment. So ultrasound guided stellate ganglion block becomes more important than usual.

#### Case

72 year old female patient was in critical care secondary to acute coronary syndrome and acute cerebrovascular event. Secondary to patient's significant blood pressure alterations, she was monitored with radial artery cannulation for invasive blood pressure follow up. During the follow up patient's right hand circulation deteriorated. In terms of this kind of acute ischemia; anticoagulants, vasodilators and sympathetic blockage are alternative treatment methods. As an example of upper extremity main sympathetic blockage; stellate ganglion block was performed with ultrasound guidance. In the following day circulatory impairment progressed besides medical therapies.

#### Discussion

In this case report, it is aimed to present the beneficial results of ultrasound guided stellate ganglion block by its sympatholytic effect in addition to medical treatment in a patient with ischemia in the right hand. Arterial perfusion of the hand may impaired secondary to prolonged inactivity, radial artery cannulation, septic embolism, vasospasm and underlying diseases in critical care. Ultrasound guided stellate ganglion block is an alternative treatment option near anticoagulant therapy and vasodilating drugs.

**OP-051**

**THE EFFECTS OF TRANSVERSUS ABDOMINIS PLANE BLOCK ON ANALGESIC AND ANESTHETIC CONSUMPTION DURING TOTAL ABDOMINAL HYSTERECTOMY: A RANDOMIZED CONTROLLED STUDY**

Tugba Karaman\*, Asker Zeki Ozsoy\*\*, Serkan Karaman\*, Serkan Dogru\*, Hakan Tapar\*, Aynur Sahin\*, Hatice Dogru\*\*, Mustafa Suren\*

\* Gaziosmanpasa University, School of Medicine, Department of Anesthesiology and Reanimation, Tokat, Turkey

\*\*Gaziosmanpasa University, School of Medicine, Department of Gynecology and Obstetrics, Tokat, Turkey

**Introduction**

A transversus abdominis plane (TAP) block is a peripheral block method that anesthetizes the somatic nerves underlying the abdominal wall, which is an important component of the pain during abdominal incisions. TAP block has been used successfully for pain relief after total abdominal hysterectomy (TAH). However, the effects of the combination of the TAP block and general anesthesia on analgesic and anesthetic requirements remain unclear. This randomized placebo-controlled study is aimed to evaluate the effects of TAP block on analgesic and anesthetic consumption during TAH under general anesthesia.

**Material and Methods**

Local ethical committee approval (14-KAEK-155, 22/07/2014) was obtained prior to the study. Sixty-six patients undergoing TAH from September 2014 to February 2016 were enrolled into the study to receive TAP block with general anesthesia (TAP group) or alone general anesthesia (Control group). Intraoperative remifentanil and sevoflurane consumption were recorded during surgery. We also evaluated the postoperative pain, nausea, quality of recovery scores and rescue analgesic requirement.

**Results**

The total remifentanil and sevoflurane consumption is significantly lower in TAP group (respectively  $p < 0,01$ ;  $p < 0,01$ ). In the postoperative period, pain scores (at 0, 2,6 and 12th hours after surgery) and rescue analgesic requirement (at 24th hours) were significantly reduced in TAP block group compared with Control group (Table 1, table 2). Quality of recovery scores were improved with the TAP block at 24 hours after surgery (Table 2).

**Discussion and Conclusion**

Combining TAP block with general anesthesia can provide satisfactory anesthesia with reduced opioid and anesthetic consumption during TAH. Also TAP block can improve postoperative pain and quality of recovery scores in patients undergoing TAH.

Table 1: Pain Scores (Visual Analog Scale) of the Patients

	<b>0</b>	<b>2h</b>	<b>6h</b>	<b>12h</b>	<b>24h</b>
<b>TAP</b>	3(0-5)	2,5(0-6)	3(0-6)	2(1-5)	2(1-4)
<b>Control</b>	6(2-10)	5 (3-9)	4 (2-7)	3,5 (1-6)	3(0-4)
<b>p</b>	<0,001*	<0,001*	<0,001*	0,003*	0,25

All values are expressed as median(Range). Mann Whitney-U test \*: significantly difference between groups

Table 2: The rescue analgesic requirement and Quality of Recovery-40 Scores of the patients

	<b>TAP</b>	<b>Control</b>	<b>p value</b>
<b>Rescue analgesic</b>	0 [0-2]	2 [0-4]	<0,001*
<b>QoR-40 score</b>	190,5(175-197)	176,5(141-187)	<0,001*

All values are expressed as median(Range). Mann Whitney-U test \*: significantly difference between groups



**OP-052****THE TIME FACTOR ON PATIENT OUTCOMES?**

Serkan Dogru, Hakan Tapar, Aynur Sahin, Tugba Karaman, Serkan Karaman, Mustafa Suren

\* Gaziosmanpasa University, School of Medicine, Department of Anesthesiology and Reanimation, Tokat, Turkey

\*\*Gaziosmanpasa University, School of Medicine, Department of Gynecology and Obstetrics, Tokat, Turkey

**Introduction**

The present study is aimed to determine a possible relation between admission on intensive care unit and exact time of death.

**Material and Methods**

All records of deaths in Surgical Intensive Care Unit between January 2012 and December 2015 were obtained from the hospital database. Age, gender, admission date/time to intensive care unit, and date/time of death were recorded and analyzed.

**Results**

A total of 443 cases were included in this retrospective study. Number of admissions had a regular distribution in daily working hours. Number of deaths revealed a diverse distribution from 08:00 to 14:00, where it showed a peak in morning shift at 14:00. At night shift hours, an evident peak was shown between 23:00 and 00:00, after a stable period. From 00:00 to 08:00 in night shifts, lower death numbers were observed compared to morning shift. The number of deaths in night shifts were higher than in morning. Since Monday and Thursday had the highest admission rate, Tuesday and Wednesday were the following ones. Weekend admissions had longer hospital stay than weekdays in which Monday had the second higher hospital stay times.

**Discussion and Conclusion**

In contrast with the magnitude of admissions in the morning, number of deaths are high in night shifts. Patients admitted to the intensive care unit on the weekend have the higher intensive care unit length of stay. Higher death levels on Monday suggests a possible "weekend effect" because of potential difficulties in completing examinations, initiating treatment on the weekend or discontinuity of care related to weekend coverage. Working with lower staffing may become with a reasonable decrease on the availability of resources, thus leading to occur adverse outcomes. In this respect, admission on weekend may result in a lower quality of care, since admission on weekdays might be exposed to detrimental effects of weekend care. However, this study is also showed that the length of stay in intensive care unit was longer on weekend compared to weekdays resulting in the rejection of a possible weekend effect hypothesis, or this outcome is likely to be an artefact caused by selection bias.

## OP-053

### ANESTHESIA MANAGEMENT IN A PATIENT WITH BARAITSER SYNDROME

Nihal Deniz Bulut Yüksel, Melahat Yalçın Solak, Fatma Sarıcaoğlu  
Hacettepe University Department of Anesthesiology and Reanimation

#### Introduction

Baraitser syndrome (OMIM 609945) with brachyphalangy, polydactyly and tibial aplasia/hypoplasia syndrome is a rare congenital disorder, and the etiology of this syndrome is unknown. Clinically, this syndrome is characterized by severe limb malformations (aplastic or hypoplastic tibia, brachydactyly, polydactyly), abnormalities of pelvic bones, abnormalities of vertebral bodies, sacral dimples, nail hypoplasia and facial dysmorphic signs (3).

#### Case Report

The right knee disarticulation operation was planned by the orthopedic department to the 3 year old patient. The patient had tibial agenesis, polydactyly, absence of proximal interphalangeal joints in the hand, brachyphalangy, developmental retardation, absence of nail on the thumbs, marked sacrum, flattened nasal root, hypertelorism, low settlement curled ears and low resilient hair line. There was no sign in ECHO except PFO. Patient were consulted preoperatively with pediatric cardiology and genetics. After taking patient to the operation room, intravenous cannulization with 24G needle was completed. Patient was easily entubated with 4.5 cuffless tubes following after induction. Although the risk of malignant hyperthermia in the patient was not specified, intravenous anesthesia was preferred because of lack of information in the literature on anesthesia management. The operation was completed succesfully without any intraoperative complication.

#### Discussion

The syndrome was first described in 1997 by Baraitser et al (2). It is thought that the disease has shown an OD transition, but information on heredity is limited in the literature and the genetic transition of this disease has not been identified (3). Sufficient information is not available in the literature on anesthesia management of Baraitser syndrome. We intend to share our experience of anesthetic management on this occasion.

#### References

1. Yousef Shafeghati, Kimia Kahrizi, Hossein Najmabadi, Andreas Walter Kuss, Hans-Hilger Ropers, Andreas Tzschac. Brachyphalangy, polydactyly and tibial aplasia/hypoplasia syndrome (OMIM 609945): case report and review of the literature. *Eur J Pediatr* (2010) 169:1535–1539.
2. Baraitser M, Stewart F, Winter RM, Hall CM, Herman S, Nevin NC (1997) A syndrome of brachyphalangy, polydactyly and absent tibiae. *Clin Dysmorphol* 6:111–121.
3. Bernardi P, Graziadio C, Rosa RF, Dall’Agnol L, Zen PR, Paskulin GA (2009) Additional features in a new case of a girl presenting brachyphalangy, polydactyly and tibial aplasia/hypoplasia. *Am J Med Genet A* 149A:1532–1538.

**OP-054****THE EFFECTS OF LEPTIN ON CARDIAC POTASSIUM CHANNEL TYPES IN AN EXPERIMENTAL DIABETIC CARDIOMYOPATHY MODEL**

Murat Simsek\*, Bahar Oc\*\*, Murat Ayaz\*\*\*, Basak Sirma Yanardag\*\*\*, Oguzhan Arun\*\*, Ates Duman\*\*, Mehmet Oc\*

\*Selcuk University, Faculty of Medicine, Department of Cardiovascular Surgery, Konya, Turkey

\*\*Selcuk University, Faculty of Medicine, Department of Anesthesia and Intensive Care, Konya, Turkey

\*\*\*Selcuk University, Faculty of Medicine, Department of Biophysics, Konya, Turkey

**Introduction and Aim:**

This experimental diabetic cardiomyopathy model, aims to investigate the effects of incubation with leptin on electrical currents of potassium channels of cultured rats cardiomyocytes.

**Materials and Methods:**

The study was performed in Selcuk University Research Laboratories of Biophysics Department with ethical committee approval. Adult male Vistar rats (200-250 g) were used. Intraperitoneal streptozotocine was used to induce diabetes. The rats were considered diabetic if blood sugars were  $\geq 300$  mg/dL at 7 days (Group DM, n=8). Rats with blood sugar  $< 300$  mg/dL were excluded. Citrate buffer was used for electro-physiologic measurements after single dose intraperitoneal injection at the 5<sup>th</sup> week (Group Con, n=8). End of the 5 weeks the hearts were excised and put into cold calcium free solutions. Cells were isolated after perfusion with collagenase. The isolated cells were incubated for one hour at 37°C before taking records. The potassium channel recordings ( $I_{t_{of}}$ ,  $I_{t_{os}}$ , and  $I_{K1}$ ) were performed with whole-cell patch clamp technique. Flow of potassium ions was recorded at every 7 seconds with patch amplifier and flow curves were digitalized at 5 kHz. After incubation for 1 hour and 3 different dosages (0.1, 0.5, 1 nM) at 37°C, flow recordings were performed for cardiomyocytes isolated from both groups. Data are mean  $\pm$  standard deviation. Student t test was used,  $p < 0.05$  = significant.

**Results:**

There was significant increase at blood glucose level in DM group compared with control group. While in diabetic group flow of  $I_{t_{of}}$  were reducing half, after leptin incubation a dose-dependent increase in flow was seen. While during diabetic course all flows were decreased, after leptin incubation a dose-dependent increase was seen. In  $I_{K1}$  flow, no significant recovery was seen on the decreased flow rate due to diabetes.

**Discussion and Conclusion:**

Leptin that has positive effects with proposed dosage and usage time (0.1, 0.5, and 1nM for 1 hour) with the favorable effects in anti-oxidant pathway on pathologic conditions that have depressant effects on myocardium contraction, can be seen as a therapeutic agent in diabetes based excitation step cardiac problems.

## OP-055

### THE COMPARISON OF THE EFFECTS OF MILD AND MODERATE HYPOTHERMIA ON SERUM NEURON-SPECIFIC ENOLASE (NSE), S-100 B AND NEAR-INFRARED SPECTROSCOPY (NIRS) IN PATIENTS UNDERGOING OPEN HEART SURGERY WITH CARDIOPULMONARY BYPASS

Feyza Tulek\*, Bahar Oc\*, Oguzhan Arun\*, Ali Unlu\*\*, Mehmet Oc\*\*\*,  
Jale Bengi Celik\*, Ates Duman\*

\*Selcuk University, Faculty of Medicine, Department of Anesthesia and Intensive Care,  
Konya, Turkey

\*\*Selcuk University, Faculty of Medicine, Department of Biochemistry, Konya, Turkey

\*\*\*Selcuk University, Faculty of Medicine, Department of Cardiovascular Surgery, Konya,  
Turkey

#### Introduction

We aimed to evaluate the difference between mild and moderate hypothermia in the prevention of neurological damage caused by cardiopulmonary bypass (CPB) with neuro-specific enzymes, clinical tests and intraoperative cerebral oxygenation.

#### Materials and Methods

After institutional ethical committee approval, forty adult patients who underwent CABG surgery with CPB, were randomized into two groups (n=20); mild hypothermia (32<sup>0</sup>C) Group MLD and moderate hypothermia (28<sup>0</sup>C) Group MOD. Standard anesthesia was used. Serum NSE and S100 $\beta$  measured and recorded preoperatively and at postoperative 12<sup>th</sup>, 24<sup>th</sup> and 48<sup>th</sup> hours and NIRS values were recorded at same time points and MMT was done at preoperative, postoperative 24<sup>th</sup> and 48<sup>th</sup> hours. Student t, Mann Whitney U and Friedman tests were used. p<0.05=significant.

#### Results

Demographic data and CPB, operation, intensive care and hospital stay time were similar (p>0.05). Serum NSE values were similar between groups, serum s100 $\beta$  values at postoperative 24<sup>th</sup> and 48<sup>th</sup> hours were significantly higher in the group MLD (p<0.05). No significant difference was found NIRS values (p>0.05). The MMT values were reduced significantly at postoperative 24<sup>th</sup> hour when compared with preoperative values (p<0.05). Postoperative 48<sup>th</sup> hour MMT values were found significantly reduced in the MLD group when compared with 24<sup>th</sup> hour values (p<0.05). In the MOD group, postoperative 48<sup>th</sup> hour MMT values were significantly reduced when compared with preoperative values (p<0.05).

#### Conclusion

As a conclusion in our study, when the patients who undergone CPB with mild and moderate hypothermia were evaluated with the cerebral injury markers of serum s100 $\beta$  and NSE, CPB with moderate hypothermia was found more protective than mild hypothermia technique at postoperative 24<sup>th</sup> and 48<sup>th</sup> hours. The results of NIRS monitorization were found similar between groups. When cognitive functions are assessed, moderate hypothermia was found superior in the postoperative 1<sup>st</sup> day but in the 2<sup>nd</sup> postoperative day it was observed that the cognitive functions of the patients undergone CPB with mild hypothermia were better. We are in the opinion that there is need for further studies to exhibit the reasons of the differentiation between the biochemical and clinical results.

**OP-056****EFFECTS OF ENDOTRACHEAL TUBE SIZE DETERMINATION WITH TRADITIONAL FORMULARY VS. ULTRASONOGRAPHICAL METHOD ON POSTOPERATIVE AIRWAY COMPLICATIONS IN PEDIATRIC PATIENTS**

Büşra Yorulmazlar Solgun\*, Aslı Dönmez\*, Azad Hekimoğlu\*\*,  
Derya Özkan\*, M. Murat Sayın\*

\* Dışkapı Yıldırım Beyazıt E.A.H, Anesteziyoloji ve Reanimasyon Kliniği

\*\* Dışkapı Yıldırım Beyazıt E.A.H, Radyoloji Kliniği

**Aim**

The aim of this study was investigate the success of ultrasound guided predicting an appropriate cuffed endotracheal tube (ETT) size and the effect on respiratory complications that seen during the surgery, extubation or in postoperative care unit (PCU) in pediatric patients.

**Methods**

118 children who were 2-10 years of age (ASA I-II) and assigned to receive general anesthesia for adenoidectomy, adenotonsillectomy and tonsillectomy were enrolled in the study. 59 of them, intubated with the ETT predicted by USG measurement, while the rest were intubated with the ETT by Motoyama's formula. In USG group, the transvers diameter of the subglottic airway was measured with US at the cricoid level during apnea. The outer diameter (OD) of the maximum available ETT which cuff was totally deflated was chosen according to the measured subglottic airway diameter. In the absence of audible leak at airway pressure >20 cmH<sub>2</sub>O, the ETT was replaced with a tube 0.5 mm smaller. If a leak was audible at airway pressure <10 cmH<sub>2</sub>O, the tube was changed to a tube one size larger. The requirement for ETT replacement, the duration of measurement by USG, the cuff volume needed to achieve a seal, the volume of the leak that develop when the cuff deflated, the complications which seen during USG measurement, intubation, extubation or in PCU were recorded.

**Results**

The success rate of first attempt with USG was %98.3. The cuff volumes that needed were lower (p= 0,006), the size of the tubes chosen were larger (according to ID; median for formula group: 5.0, USG group: 5.5), and the rates of stridor (p=0,021), bucking (p=0,004) and laryngospasm (p=0,011) were lower in USG group. Other complications were not significant statistically (p>0,05).

**Conclusion**

Our findings show the subglottic measurement by USG at cricoid level to be a reliable method for estimating the appropriate pediatric ETT size. And also USG may decrease stridor, bucking and laryngospasm in early period especially during extubation and after.

## OP-057

### ANESTHETIC MANAGEMENT OF A PREMATURE NEWBORN WITH CONGENITAL CYSTIC ADENOID MALFORMATION UNDERGOING CLOSURE OF PATENT DUCTUS ARTERIOSUS

Bahar Oc\*, Oguzhan Arun\*, Ozlem Tas\*, Serkan Akcan\*\*, Ates Duman\*, Mehmet Oc\*\*

\*Selcuk University, Faculty of Medicine, Department of Anesthesia and Intensive Care, Konya, Turkey

\*\*Selcuk University, Faculty of Medicine, Department of Cardiovascular Surgery, Konya, Turkey

#### Introduction and Aim

Congenital cystic adenoid malformation (CCAM) is the second most common congenital lung lesion in children. It is more common in males and is the result of an embryologic insult before the 50th day of gestation causing mal-development of the terminal bronchiolar structures. This usually occurs in a single lobe causing ipsilateral lung compression, pulmonary hypoplasia, and occasional mediastinal shift. We present our anesthesia experience in a newborn with CCAM undergoing closure of PDA.

#### Case

A 34 weeks gestational, 26 days old, 3700g. male baby, was diagnosed as CCAM, Atrial Septal Defect, PDA and respiratory distress. In the ICU the patient, was ventilated via 3.5 mm ID cuffless intubation tube and was managed with dopamine (5mcg/kg/min), dobutamine (10mcg/kg/min) and vancomycine.

Anesthetic induction was performed with pentothal sodium 4mg/kg, rocuronium 0.4mg/kg, fentanyl 3mcg/kg via I.V. catheter after ECG, SpO<sub>2</sub>, NIP monitorisation. Sevoflurane (2-3%) and 50% O<sub>2</sub> in air was used for maintenance. Right internal jugular vein (4F) and left femoral artery (20G) catheterization were performed. After the right side position was given to the patient, posterior muscle protective thoracotomy was performed and the PDA was clipped with metal clip. Initial ABG during surgery showed pH:7.13, pCO<sub>2</sub>:164 mmHg, pO<sub>2</sub>:90 mmHg, O<sub>2</sub>sat:%93.4, HCO<sub>3</sub>:55 mmol/L, BE:19.0 mmol/L. The patient was hyperventilated and 25cmH<sub>2</sub>O of positive pressure ventilation was applied for 15 seconds before the closure of thoracotomy without administration of thorax tube. The patient was transferred intubated to the NICU. ABG at the end of surgery and NICU were normal.

#### Discussion

This is the first case of CCOM combined with PDA on literature. Standard invasive monitors and meticulous anesthesia and ventilation is required for these patients who are prone to respiratory acidosis. Transfer of infants into the intensive care unit without a thoracic tube has positive effects on ventilation, reduces total cost by reducing postoperative pain, shortening extubation times. We believe that co-operating with the surgical team in these operations and carefully applied positive pressure ventilation significantly reduces morbidity and mortality.

**OP-058****EVALUATION OF ANESTHETIC APPROACH IN CHILDREN'S DENTAL TREATMENT WITH DEEP SEDATION**

Sengül Özmert\*, Fatma Kavak Akelma\*\* , Zeynep Candan Ökten\*\*\*

\*Department of Anaesthesiology, Health Sciences University Ankara Children's Haematology Oncology Training and Research Hospital, Ankara, Turkey

\*\*Department of Anesthesiology, Health Sciences University Ankara Zubeyde Hanim Etlik Maternity and Gynecology Teaching and Research Hospital, Ankara, Turkey

\*\*\*Department of Anesthesiology, Ankara 75th Year Ministry of Health Oral and Dental Health Hospital, Turkey

**Introduction-Aim**

The aim of this retrospective study was to compare reliability, efficiency and discharge times of two different combinations that are ketamine-propofol and fentanyl-propofol, in pediatric patients undergoing dental treatment with deep sedation.

**Material-Method**

The records of 88 children diagnosed between 4- 11 years old and ASA I-III scale under dental treatment with deep sedation were examined retrospectively. According to our routine clinic protocol, deeply sedated cases are given 0.3 mg/kg nasal midazolam as premedication, afterwards 100 % Oxygen and 8 % sevorane are applied by mask and intravenous catheter is placed. After this step, Sevorane application is stopped and either 1 mg/kg ketamine or 1 mcg/kg fentanyl is infused with 6 lt/min nasal O<sub>2</sub>. Maintenance is carried out with 1-2 mg/kg propofol. Propofol is added if movement, tachycardia or increase in blood pressure is observed as a response to stimulants during the process. The group receiving fentanyl is labelled as group F and the group receiving ketamine is labelled as group K. Patient's data of the heart rate, blood pressure, oxygen saturation, total propofol consumption, side effects that are observed, discharge times, oral intake times were noted from medical records. The differences between the outcomes in these groups were investigated statistically.

**Results**

The total amount of propofol consumed was statistically higher in group F than in group K ( $p=0.001$ ). It was found that the average duration of discharge was higher for those using ketamine than for those using fentanyl ( $p=0.001$ ) The ketamine group was found to have a later onset of oral intake compared to the group given fentanyl ( $p=0.001$ ). When hemodynamic parameters were compared, the reduction in F group was determined as greater than that in K group ( $p<0.05$ ) In terms of oxygen saturation, no difference was found between the groups.

**Discussion and Conclusion**

Safe and effective sedation has been obtained with both protocols during dental treatment. The group that had ketamine propofol combination had lower requirements for additional doses while fentanyl propofol combination group had earlier discharge times. As a result, we think that both combinations are suitable for dental treatment with deep sedation in children.

## OP-059

### EXTREMELY LOW FREQUENCY ELECTROMAGNETIC FIELD FROM FMS 2000 ON VARIOUS INFUSION RATES

Kyu Won Lee, Yong Han Kim\*

Department of Anesthesiology and pain medicine,  
Haeundae Paik Hospital, Inje University, Busan, South Korea

#### Objective

Extremely low frequency electromagnetic field (ELF-EMF) has a harmful effect on human health. FMS 2000 is the essential device for preventing hypothermia and hypovolemia in the operating room. We investigate that FMS 2000 generates higher ELF-EMF on higher infusion rate.

#### Methods

The intensity of ELF-EMF from FMS 2000 was measured as two-second interval up to 120 samples on various distance (30, 60, 90 and 120 centimeters) and infusion velocity (0, 250, 500 and 750 ml/min). This experiment was performed in empty operating room without any electrical device. Groups were compared using Kruskal-Wallis test.  $P < 0.05$  was considered as statistically significant.

#### Results:

Mean values of ELF-EMF were 2.4810, 4.6118, 7.6502 and 11.3162 milligauss (mG) respectively on velocity of 0, 250, 500 and 750 ml/min in the distance of 30 cm. ELF-EMF of high infusion rate was higher than values of low infusion velocity in all the distances ( $p < 0.05$ ).

#### Conclusion

ELF-EMF from FMS 2000 is higher in more rapid infusion rate. Intensity of ELF-EMF from FMS 2000 in the distance of 30cm is over 2 mG by TCO guideline.

**Keywords:** ELF-EMF, operating room, FMS 2000



**OP-060****ABDOMINAL COMPARTMENT SYNDROME: CURRENT INSIGHTS IN ACUTE INTESTINAL DISTRESS SYNDROME**

Shosholcheva M\*, Kartalov A\*\*, Kuzmanovska B\*\*, Jankulovski N\*\*\*, Ristovski S\*.

\*University Clinic of Surgery "Ss Naum Ohridski", "Ss Cyril & Methodius" University, Faculty of Medicine, Macedonia

\*\*Clinic for Anesthesiology, Reanimatology and Intensive Care Unit, "Ss Cyril & Methodius" University, Faculty of Medicine, Macedonia

\*\*\*University Clinic for Abdominal Surgery, "Ss Cyril & Methodius" University, Faculty of Medicine, Macedonia

**Introduction**

Abdominal compartment syndrome (ACS) may result in another life-threatening condition, a separate entity which refers to the gut, named acute intestinal distress syndrome (AIDS). Increased intra-abdominal pressure (IAP) causes severe intestinal ischemia by diminished perfusion and together with mucosal acidosis sets the stage for multiple organ failure (1). The ischemia and reperfusion injury to the gut serves as a second insult in a two hit model of multiorgan failure (MOF) where the lymph flow conducts gut-derived pro-inflammatory cytokines to remote organs (2).

**Material and Methods**

In order to find the effects of abdominal hypertension on the gut, literature search through Medline and Pub Med with key words "abdomen compartment syndrome, "abdominal hypertension", "acute intestinal distress syndrome", "effects of increased abdominal pressure" was performed. Critical analysis on the data included huge number of studies.

**Results**

Review of the literature shows that there are no articles focusing on examining the effect of increased intra-abdominal pressure on digestive tract. There are only few reports confirming that impact of different values of increased IAP on bowel mucosa sensitivity, where the increase IAP of only 10 mmHg reduces intestinal blood flow. Data base searches refer mostly on the effects on respiratory and cardiovascular systems. Recently there are few researches on the role of intestinal mucosa injury induced by intra-abdominal hypertension in the development of multiple organ dysfunction syndrome.

**Conclusion**

Increased IAP can cause severe intestinal ischemia which may be more important than cardiac, pulmonary, and renal changes which are usually described. The dysfunction of the intestinal mucosal barrier may also increase IAP and this vicious cycle is one of the important initial factors responsible for the onset of MOF. These complex mechanisms are not yet sufficiently clarified; there is need for further studies.

## OP-061

### EARLY POSTOPERATIVE COMPLICATIONS IN PATIENTS AFTER REPAIR OF RUPTURED ABDOMINAL AORTIC ANEURYSM

Tahto E, Selimovic M, Kusturica A, Kovcic J, Selimovic Ceke L, Krdzalic A  
Department of Intensive Care Medicine, Clinic for Cardiovascular Diseases, University Clinical Center Tuzla, Bosnia and Herzegovina

#### Introduction

This study evaluated postoperative complications in patients who underwent open repair of ruptured abdominal aortic aneurysm (rAAA) and compared it with those observed in patients who underwent elective open repair of abdominal aortic aneurysm (AAA).

#### Patients and Methods

The retrospective analysis included patients who underwent open repair surgery of AAA or rAAA, in two year period (January/2015-December/2016). Patients were hospitalized at the Clinic for Cardiovascular Diseases University Clinical Center Tuzla and the data were obtained from patients medical histories. Type and incidence of complications were analysed and detected in early postoperative period in both group of patients.

#### Results

Study included 85 adult patients, 74(87.05%) male and 11(12.94%) female. The mean age of the male patients was  $66.81 \pm 12.07$ , and of the female patients  $70.45 \pm 11.33$  years. Patients were divided into two groups: urgent group (n=25) and elective group (n=60). The mean age of urgent group was higher than elective group, 76.0/62.2 years, and also women were older than men, 80.75/67.57 years. Complications which we observed in patients in urgent/elective group were: renal 18(72%)/8(13.33%), gastrointestinal 21(84%)/9(15%), heart 11(25%)/5(8.3%), lung 19(76%)/2(3.33%), bleeding 21(84%)/3(5%), and neurologic 0/0. Respiratory ICU support in urgent/elective group was  $49.4 \pm 23.4/3.1 \pm 1.78$  hours ( $p=0.0013$ ), ICU stay was  $8.1 \pm 6.2/2.2 \pm 1.16$  days ( $p=0.02$ ), and clamp duration was  $109 \pm 31.5/35 \pm 17.8$  minutes. Mortality rate in urgent group was 11(52.3%) and in elective group 4(6.66%).

#### Conclusion

The most common complications in early postoperative period after open repair of rAAA are high mortality rate, acute renal failure and paralytic ileus. These complications are the result of the duration of hemorrhagic shock, although therapeutic guidelines are well known. In this study, postoperative complications were more frequent in urgent group. In elective patients the duration of aortic cross clamp is major factor for all postoperative complications. Most of patients with rAAA spend a long time in diagnostic procedures. One of the solutions for reducing mortality and postoperative complications can be early therapeutic treatment of admitted patients during diagnostic procedures and quick transport to surgery department. Skills of a surgeon to complete an operation as quickly as possible are decisive factors for reducing most postoperative complications in both group of patients.

**Key words:** abdominal aortic aneurysm, complications, rupture, aortic cross-clamping

**OP-062****LEOPARD SYNDROME**

Emira Mešanović, Prim Senida Keser, Suada Salkić  
University Clinical Centre Tuzla, Clinic for Anesthesiology and resuscitation

**Introduction and Aim:**

Leopard syndrome is rare autosomal, dominant, hereditary disorder. It is an acronym as the name of the syndrome originated in 1969, but it appeared in literature in the 30'.

L: Lentigenes

E: ECG Conduction abnormalities

O: Ocular hypertelorism

P: Pulmonary stenosis

A: Abnormal genitals

R: Retardation of growth

D: Deafness (Sensorineural)

To assure the affiliation of the syndrome, the presence of all symptoms is not necessary.

**Case:**

The case report of the 36 year-old expectant mother B.K. Height: 157 cm ; Weight: 56Kg with expressed pretibial edema, pale skin with diffusional lentigiform changes. Visible Hypertelorism and prominent lower jaw. While examining auscultational finds rough systolic murmur above Erb's point.

The patient gives information that in her childhood catheterization was done, and that she never took any therapy related to the CV System.

As the obstetrician suspects that it is a placenta ablation, he decides to terminate pregnancy by caesarean section. With that decision, there is no space left for a detailed preoperative diagnostic treatment, so basic laboratory was done, where they did not find a significant deviation from the physiological framework.

Coagulogram - Hyperfibrinogenemia was found with normal medical report.

Proteinogram - Somewhat lower albumines (26,5mm/l)

Jonogram - With Na < 130mmol/l.

The ECG shows sinus tachycardia with conduction disturbances in the bundle of His. Ultrasound of the heart is described as orderly.

The patient is administered IV. (intravenous) cephalosporin antibiotic with accesses to rapid induction of anesthesia with propofol and succinylcholine. Analgesia after extraction of the fetus to provide fentanyl, relaxation with atracurium. The support is a mixture of oxygen with Sevoflurane with oxide. Oxytocin IV is administered as a uterotonic. At the uterus visible signs of development of the Couvelaire syndrome with consequent slightly more plentiful bleeding. During this time the patient is cardiovascular stable, and the compensation of the

lost volume is achieved with crystalloid until the moment when the preparations for blood transfusion is completed. The patient is administered RBC concentrates and FFP.

After waking up the patient is placed in the intensive care ward with the necessary monitoring. In the postoperative period no signs of pathological uterine bleeding, the patient is stable, establishing the sufficient diuresis, edema is subside. The patients undergoes the test laboratory which corresponds to the preoperative.

ECG without any changes ;

Ultrasound of the hearth - a little VSD with L-R Shunt was found with a consequent acceleration of flow through the mitral valve and the pulmonary, mild mitral and tricuspid insufficiency without signs of pulmonary insufficiency.

The sixth postoperative day the patient is discharged home in good health condition with a recommendation of further diagnostic treatment - Ophthalmology, ENT, dermatology and of course cytogenetics.

**Keywords:** pregnat women, leopard syndrome

**OP-063****SUBPHRENIC ABCESS AS A CAUSE OF CHEST PAIN**Jasmina Smajić, Fatima Iljazagić-Halilović

University Clinical Centre Tuzla, Clinic for anesthesiology and resuscitation

**Introduction**

Pain perceived in the chest by the patient may originate from the heart, lungs, oesophagus, upper GI tract, inter costal muscles, skin, ribs, thoracic vertebrae, or any structures in the mediastinum. Various organ systems may share innervations such that a perceived complaint of pain is often not localized to the precise area of pathology.

**Case Presentation**

Twenty nine year old male patient was admitted to emergency department of Clinic for Infectious Diseases due to fever and chest pain followed by dyspnea. Laboratory findings showed elevated parameters of inflammation, lungs x-ray showed bilateral infiltration also bilateral pleural exudations and widening of mediastinum. These findings were confirmed with chest CT scan. Chest tube was inserted in the right pleural cavity and trough it immediately drained larger amount of purulent content. In the following days clinical condition of the patient worsened, chest pain intensified and dyspnea increased. Hearth ultrasound was preformed and it showed pericardial effusion, after that pericardiocentesis was preformed and 500 ml of purulent fluid was aspirated. Follow up chest CT scan and also abdomen CT scan were conducted, aside from already described pathological findings in the chest cavity it detected abscesses in the region between stomach and left liver lobe. Inside the abscess mass foreign body density of bone 5 cm long and 2 to 3 mm wide was detected.

Detailed anamnesis discovered that the patient consumed smoked carp month ago but he declined any possibility of accidental bone ingesting. Surgeon indicates explorative laparotomy based on the CT findings. During the surgery intra abdominal abscesses were evacuated together with foreign body (fish bone). Postoperatively patient returned to the ICU where he stayed for three days and then was transferred to Department of Thoracic Surgery. Patients condition improved significantly immediately after the surgery and he was discharged thirteen day after the surgery.

**Discussion**

Perforation of the gastrointestinal tract due to fish bone ingestion is rare. Perforation of GIT causes inflammation of surrounding tissue that can lead to intra abdominal abscess formation. Location of intra abdominal abscess influences to clinical manifestations.

**Conclusion**

Differential diagnosis of chest pain is widespread and inadequate anamnesis delays timely diagnosis.

**Key words** Chest pain, subphrenic abscesses, differential diagnosis.

**OP-064****INTRAHOSPITAL INFECTIONS AFTER ABDOMINAL SURGERY IN THE SURGICAL ICU OF  
GENERAL HOSPITAL "PRIM. DR. ABDULAH NAKAŠ" SARAJEVO**

Lejla Muminagić-Hamza, Davorka Matković, Vesna Čengiđ  
General Hospital "Prim.dr. Abdulah Nakaš"; Kranjčevićeva 12, 71000 Sarajevo; Bosnia and  
Herzegovina

**Introduction/Aim of study**

Health-care associated infections are the most frequent adverse event in health-care delivery worldwide, affecting up to 9% of inpatients at any one time. Prevalence rates of infections acquired in ICUs vary from 9 to 37% when assessed in Europe and the USA, but can be reportedly up to three times higher in developing countries. They are associated with increased mortality, morbidity, huge financial and resource costs. The goal of this study is to determine the rate, sites and causative agents of intrahospital infections in the SICU of our hospital in abdominal surgical patients.

**Materials and methods**

This study is a retrospective data analysis of the results of microbiological testing of abdominal surgical patients hospitalized in the Surgical ICU of General Hospital "Prim.dr. Abdulah Nakaš" Sarajevo, during the period of 01/01/2014 to 27/02/2017. Identification of bacterial isolates and antibiotic susceptibility was confirmed by standard methods at the Hospital's Dept. of Microbiology, with results being reported within 72 hours.

**Results**

An overall intrahospital infection rate of 10,68% was determined, among which 49,22% (63 patients) were abdominal surgical patients. Most of the patients were male and over 75 years of age. 7 patients had 2 samples with different bacteria isolated and 7 patients had 2 different isolates in the same specimen. Surgical site infections accounted for 68,57% of cases, followed by pneumonia (18,57%), bloodstream (7,14%) and urinary tract infections (4,29%). The most common isolates were *Escherichia coli* (29,87%), *Klebsiella pneumoniae* (15,58%), *Pseudomonas aeruginosa* (12,99%), *Proteus* species (*P.mirabilis* and *P.vulgaris*-11,68%) and *Acinetobacter* species (including *A.Baumannii*-10,39%). *S. aureus* infections accounted for 7,8% of nosocomial infections, with half of those being methicillin-resistant strains. Lethal outcome was observed in 6,35% patients.

**Discussion and conclusion**

Nosocomial infection rates in our SICU can be compared to those in other European countries. In our analysis, the most common isolate in SSI was *E.coli*, whereas in many other studies it is *S. aureus*. In accordance with other reports, most of the affected patients were male and of advanced age.

**Keywords:** intrahospital infections, abdominal surgery, ICU

**OP-065****PULMONARY EMBOLISM AFTER SURGERY**

Erna Buro, Senida Keser, Emira Mesanovic, S. Salkic  
University Clinical Centre Tuzla, Clinic for Anesthesiology and Reanimation KC Tuzla

**Introduction**

Thromboembolic complications are common causes of morbidity and mortality after surgery even though preventive measures are taken.

**Material and Methods**

A 75 year old patient was admitted to Gynecology clinic because of massive postmenopausal uterine bleeding. Dilatation and curettage was performed, anemia corrected by a transfusion. She was diagnosed with Carcinoma endometrii invasivum et infiltrativum myometrii G3.

Operative treatment was suggested, which patient refused.

After two month, because of heavy bleeding, she was underwent urgent surgery. The patient was also diabetic, having arterial hypertension, and non specific pneumonia with left and right pleural effusion and pericardial one as well. At the time there was no indication for thoracic surgeon intervention.

Surgery went smoothly and recovery from anesthesia as well

Pre and postoperative thromboprophylaxis was done (elastic socks, low-molecular-weight heparin, early mobilisation).

On the fourth day after surgery, patient complained of cough, chest pain, heavy breathing.

Auscultation of lungs, EKG, Rtg of lungs show no differences compared to preoperative (Q at D III, decreased to silent lung sounding right lower parts of lungs pleural effusion.

D-DIMER LEVEL WAS HIGH 4,0.

CT angiography of lungs shows hypodensity defect in contrast filling in several branches of arteria pulmonalis left and right for lower parts of lungs.

According to this, the patient was diagnosed with a pulmonary embolism.

LMWH was continued and after few days combined with Warfarin.

**RESULTS**

However, the patient was feeling better, but D-dimer level even rises (over 5,0), there was no changes in auscultatory of lungs and EKG, Rtg even showed some progression of pleural effusion comparing to the previous one.

After eight days, she was discharged feeling well with recommendation for further treatment.

**CONCLUSION**

Even though all precautions of thromboembolic complications are taken, it is still a very common cause of morbidity and mortality after surgery, especially when combined with risk factors such as in this case (age, cancer diagnosis, diabetes, arterial hypertension and pelvic surgery)

**Keywords:** Key words: pulmonary embolism, surgery,

## OP-066

### ANESTHESIA AND INTENSIVE THERAPEUTIC PROCEDURE AT ECLAMPSIA IN THE PERIOD 2011.-2015.

Emira Mešanović, prim Senida Keser, Erna Buro  
University Clinical Centre Tuzla, Clinic of anesthesiology and resuscitation

#### **Aim**

Pregnancy is a physiological condition in which a woman can be during her generative age. Sometimes as certain mechanisms are getting started, pregnancy can become a pathological condition leading to the life threat both to a mother and baby.

The main death causes are noted as follows: hypertension condition, obstetric bleeding and thrombo-embolic disease. Each of these causes individually gives a very serious clinical picture. One of the most serious conditions is eclampsia.

Tension higher than 160/110, proteinuria higher 5g/24h, cerebral disturbances, headache, scotomas, pain in epigastrium, liver damage, thrombocytopenia, oedema pulmonale are symptoms of threatening eclampsia.

#### **Methods**

This is a retrospective study of 20488 deliveries.

#### **Results**

In the period 2011.-2015. 20488 deliveries were performed in the GAK Tuzla. 14 cases of eclampsia were noticed. There were no lethal cases. Caesarian section was performed in 13 cases. Convulsion and hypertension were dominant symptoms in these cases. Convulsions were treated with particular and continual infusion of MgSO<sub>4</sub>. Hypertension was treated with antihypertensives such as urapidil. Sedatives, analgesia, antioedema therapy, prevention of thromboembolic disease were applied. We applied albumin periodically.

#### **Discussion and conclusion**

Eclampsia, as a complex systematic disease, requires on-time, intensive and adequate treatment.

**Keywords:** Pregnancy, hypertension, convulsion, eclampsia



**OP-067****INFECTIONS OF ABDOMINAL SURGICAL WOUNDS IN  
A POST-OPERATIVE INTENSIVE CARE UNIT**

L. Osmić\*, Š. Tupajić, A. Bukvarević, E. Halilbašić

Clinic for Anesthesiology and Reanimatology, University Clinical Center Tuzla, Bosnia i  
Hercegovina**Introduction**

A wound is a physical injury of living tissue affecting skin, mucosa, or deeper tissue layers to various degrees. Surgical wound infections constitute a serious problem, because the infection often involves not only the skin and directly underlying tissues, but also deeper tissues such as muscles, bones, peritoneum, and even organs.

**Aim**

To determine the spectrum of microorganisms isolated from abdominal surgical wound swabs and to assess antimicrobial sensitivity and resistance.

**Methods**

This study involves patients admitted to the ICU, after undergoing abdominal surgical procedure in the period from January to December 2016. For microbiological analysis, swab samples were taken from surgical wounds. Samples were taken using standard procedures and analyzed in the microbiological laboratory.

**Results**

In total 53 surgical wound swab samples were taken (43 patients). 48 samples had microbial isolates and 5 samples had not. In the isolates, gram-negative (G-) bacteria dominate (87.5%). Among the gram-positive (G+) bacteria *Enterococcus faecalis* (4 isolates) and *Enterococcus faecium* (3 isolates) were isolated. Among the gram-negative bacteria the most frequent is *Escherichia coli* (18 isolates), followed by *Acinetobacter* species (13 isolates), *Klebsiella pneumoniae* and *Proteus mirabilis* (9 isolates), *Enterobacter* species i *Pseudomonas aeruginosa* (4 isolates), *Acinetobacter baumannii* and *Proteus vulgaris* (2 isolates), *Stenotrophomonas maltophilia*, *Enterobacter aerogenes*, *Serratia marcescens*, *Morganella morganii*, *Pseudomonas* species, *Enterobacter cloacae* (1 isolate).

*Acinetobacter baumannii* is 100% sensitive to colistin and rifampicin. *Klebsiella pneumoniae* is 100% sensitive to carbapenems. *Enterococcus faecalis* is sensitive to fluoroquinolones (100%), penicillins (100%) and aminoglycosides (83.3%). *Escherichia coli* is 100% sensitive to carbapenems, colistin and rifampicin. *Enterococcus faecium* is resistant to penicillins (100%) and sensitive to oxazolidinones (100%), tetracyclines (100%) i glycopeptid (50%).

**Conclusion**

Surgical wound infections are a cause of increased morbidity and mortality in post-operative intensive care units. Targeted antimicrobial therapy based on antibiograms, together with the implementation of guidelines and procedures for prevention, is the only choice for reducing surgical wound infection rates. Microbiological analysis of swab samples taken from abdominal surgical wounds shows presence of mostly gram-negative bacteria.

**Keywords:** surgical wound, bacteria, infection

## OP-068

### INTERMITTENT VERSUS EXTENDED INFUSION CARBAPENEMS IN INTENSIVE CARE UNIT PATIENTS AT UNIVERSITY CLINICAL CENTER TUZLA

Lejla Rakovac Tupković\*, Aldina Ahmetagić\*, Jasmina Smajić\*\*

\*University Clinical Centre Tuzla, Department for clinical pharmacology

\*\*University Clinical Centre Tuzla, Clinic for anesthesiology and resuscitation,  
Department of intensive care

#### Objective

To identify clinical efficacy of 30 min. intermittent infusion versus 3 hours extended carbapenem infusion in treatment of abdominal infections in intensive care unit (ICU).

#### Methods

A retrospective observational study was conducted. Study included 200 consecutive adult patients who were treated with meropenem and imipenem due to intraabdominal infections from 2012. to 2016. From 2012. til the end of 2014. patients were treated with standard intermittent 30 min. infusion and from 2015 til present patients were treated with 3 hours extended infusion of carbapenems. The patients were divided in two groups, based on the duration of carbapenem infusion. We compared difference between ICU stay days, duration of carbapenem therapy and mortality under 28 days after dismissal from ICU between these 2 groups.

#### Results

There were no significant difference in mortality under 28 days after dismissal between intermitent infusion group and extended infusion group (50% vs, 42%;  $p < 0,12$ ). ICU stay days were reduced in second group by 20% (15,58 days vs. 12,57 days;  $p < 0,07$ ). Total given dose per patient in second group was reduced by 26% (14,46 grams vs. 10,83 grams;  $p < 0,001$ ).

#### Conclusion

Extended dose infusion of carbapenems is superior to intermittent infusion because of the significant reduction of ICU stay days and total given dose of carbapenems.

**Keywords:** abdominal infections, imipenem, meropenem, extended infusion, intermittent infusion

**OP-069****EFFECTS OF EXTRACELLULAR ION CONCENTRATIONS ON THE NEURONAL EXCITABILITY:  
SIMULATION STUDY**Murat AYZAZ\*, Funda ARUN\*\*

\*Selcuk University Faculty of Medicine, Department of Biophysics, Konya, TURKEY

\*\* Beyhekim State Hospital, Anesthesiology and Reanimation Clinic, Konya, TURKEY  
PhD student in Biophysics Department, Selcuk University, Konya, TURKEY**Introduction-Aim**

Neurons convey information from one part of the body to another in the form of electricity – action potential-. This transmission is dependent on the ions around their membranes. We aimed to test the effects of extracellular ion concentrations on a single nerve fiber action potential.

**Material and Methods**

Tests were designed to mimic the hypo/hyperkalemic and hypo/hypernatremic conditions through an axonal simulation program. To obtain the hypo/hypernatremic condition extracellular sodium concentration ( $[Na]_o$ ) (125, 142 and 160 mM) was changed and measurements were repeated for different axon diameters ( $(\mu m)$ ): 430, 515, 520, 533, 542 and 605). Similarly, the extracellular potassium ( $[K]_o$ ) concentrations has chosen as 3, 4 and 6 mM [1, 2]. The physiological sodium and potassium concentrations were chosen as 142 mM and 4 mM, respectively. For the measurements, applied stimulus amplitude was 30 mV and the injected current charge was 3.58 nanoQ.

**Results**

There was no significance regarding the axonal diameters for both of the extracellular ionic conditions. Under hyponatremic conditions all the measured repolarization times were prolonged. Furthermore, simulated single nerve fiber AP's time to peak and resting membrane potentials increased and maximum depolarization points decreased. Following to hypokalemia all of the measured repolarization phases of AP prolonged significantly. Moreover time to peak, the resting membrane potential and maximum depolarization values were also increased. In parallel to increase in the repolarization phase, potassium currents were also increased. Interestingly, not only the potassium channel conductivity but also sodium channel conductivity has found to be effected from this conduction.

**Discussion and Conclusion**

For many of the neurological pathologies both the action potential and the ion channels play important role. Our simulation results have shown that sodium ion channel conductivity is much more susceptible for the changes in the extracellular ion concentrations. All changes established under hyponatremic conditions can be explained by the rundown of the measured sodium currents. Under hypernatremic conditions however, all modifications were just the reverse of the ones seen under hyponatremic conditions. The only exception was the degree of severity of the sodium conductivity. Being more susceptible to the sodium channel conductivity makes hypokalemic conditions much more dangerous for patients at least for neuronal conduction.

## References

1. Vanderghyest F, Gombeir Y, Bellante F, Perrotta G, Remiche G, Mélot C, et al. Impact of hyponatremia on nerve conduction and muscle strength. *Eur J Clin Invest* 2016; 46(4): 328-33.
2. Mohapatra BN, Lenka SK, Acharya M, Majhi C, Oram G, Tudu KM. Clinical and aetiological spectrum of hypokalemic flaccid paralysis in western odisha. *J Assoc Physicians India*. 2016; 64(5): 52-58.

**OP-070****DENTAL INJURY RELATED TO CONVENTIONAL DIRECT LARYNGOSCOPY:  
A PRELIMINARY REPORT OF A PROSPECTIVE OBSERVATIONAL STUDY**

Funda Arun\*, Oguzhan Arun\*\*, Ahmet Emin Sonmez\*\*, Ozlem Tas\*\*,  
Nimet UNLU\*\*\*, Bahar OC\*\*

\*Beyhekim State Hospital, Anesthesiology and Reanimation Clinic, Konya, TURKEY

\*\*Selcuk University Faculty of Medicine,  
Department of Anesthesiology and Reanimation, Konya, TURKEY

\*\*\*Selcuk University Faculty of Dentistry,  
Department of Restorative Dentistry, Konya, TURKEY

**Introduction**

Damage to dentoalveolar structures during endotracheal intubation is a well-known complication and commonly reported in association with anesthesia (1). The incidence of dental trauma in anesthesia practice varies from 1:150 to 1:1000 (2). We aimed to evaluate the frequency, outcomes, and risk factors for dental injury related to conventional direct laryngoscopy.

**Material and Methods**

After obtaining approval from the institutional ethics committee, sequential adult patients undergoing elective surgical procedures requiring orotracheal intubation were included in the study. Before anesthesia, all patients' dental condition and mobility of the six anterior teeth of both jaws using decayed, missing and filled teeth (DMFT) index criteria was recorded. The patient characteristics that could affect the intubation such as Mallampati class, inter-incisor gap, thyromental distance, head and neck mobility, etc. were also assessed. After anesthesia induction, photos of the teeth were taken just before and after intubation. For the true determination of the dental injury, trans-illumination technique via a light source was used. The specific features of intubation such as difficulty of intubation and number of attempts were also recorded. The same dentist who was blinded to the study evaluated all photos in terms of dental injury, plaque status and bruise activity.

**Results**

Of the 132 patients, dental injuries were found in 13 patients (9.8%) affecting 16 teeth (14 maxilla, 2 mandible). The commonest new lesion was enamel fracture in 12 patients. Avulsion was realized in one tooth only in one patient. There was bruise activity in 33 patients in 42 teeth. There was no dental plaque in 27 patients while in 24 patients plaque covering was greater than two-thirds of the buccal tooth surface.

**Conclusion**

The incidence of dental damage during orotracheal intubation depends on several factors, the most important being poor dental conditions and important impingement against dental arch. A thorough preoperative evaluation including a review of the patient's dental history; identification of any existing dentures or crowns with an oral/dental examination, particularly of the patient's upper incisors is crucial.

## References

1. Owen H, Waddell-Smith I. Dental trauma associated with anaesthesia. *Anaesth Intensive Care* 2000;28:133-45.
2. Lockhart P, Feldban E, Gabel R, et al. Dental complications during and after tracheal intubation. *J Am Dent Assoc* 1986;112:480-3.

**OP-071****EVALUATION OF THE PATIENTS DIAGNOSED WITH BRAIN DEATH IN PEDIATRIC INTENSIVE CARE UNIT WITH APNEA TEST**

Sengül Özmert\*, Feyza Sever\*, Ganime Ayar\*\*,  
Mutlu Uysal Yazıcı\*\*\*, Dilek Kahraman Öztaş\*\*\*\*

\*Ankara Children's Haematology Oncology Training and Research Hospital,  
Department of Anaesthesiology, Ankara, Turkey

\*\* Ankara Children's Haematology Oncology Training and Research Hospital,  
Department of Pediatric Intensive Care Unit, Ankara, Turkey

\*\*\* Hacettepe University Ihsan Dogramaci Children's Hospital,  
Department of Pediatric Intensive Care Unit, Ankara, Turkey

\*\*\*\* Ankara Atatürk Training and Research Hospital /  
Yıldırım Beyazıt University Medical Faculty, Department of Public Health, Ankara, Turkey

**Purpose**

The purpose of this study is to retrospectively analyze the brain death (BD) cases that were specified within the last eight years in pediatric intensive care unit of our hospital.

**Material-Method**

The files of pediatric cases diagnosed with brain death between 13.02.2009 and 18.08.2016 were examined. The demographic data of the cases, their diagnosis, time of diagnosis and the additional tests used were recorded. Pediatric Risk of Mortality (PRISM) III scores, the complications after BD, rate of organ donation. The duration of cardiac arrest occurrence in the cases not being donor after BD diagnosis and receiving on-going life support was recorded.

**Findings**

23 pediatric cases diagnosed with brain death were recorded. The average age was  $6.8 \pm 5.5$ . The diagnoses that resulted in brain death were examined in six groups, it was found that BD occurred most often after intracranial hemorrhage (%30,4 n=7). The duration of putting a diagnosis was found to be  $5.9 \pm 6.2$  days on average from the moment suspected BD occurred. Apnea test was applied to all cases and it was observed to be uncompleted only in one case. Hypothermia was observed in 34.7% of the cases (n=8), diabetes insipidus in 4.3% (n=1), both diabetes insipidus and hypothermia were observed in 43.4% (n=10) and no complication was observed in 17.3% (n=4). Average PRISM III score of the patients were found to be  $22 \pm 9.2$ . While the family donation rate was 17% (n = 4), only three cases could become donors. The duration of cardiac arrest occurrence in the cases not being donor after BD diagnosis and receiving on-going life support was found to be  $6.9 \pm 7.4$  days.

**Conclusion**

Any patient with a neurologically poor prognosis in intensive care unit should be considered to develop BD and diagnosed with BD without delay. The presence of an experienced radiologist in diagnostic supportive testing is important in acceleration of putting a diagnosis. In this regard, intensive care doctors, nurses and organ transplantation coordinators should be trained at regular intervals in order to raise their awareness. The donation rate will increase if family interviews are done by an experienced and educated coordinator.

**OP-072****COMPARISON OF EFFECTS OF PREOPERATIVE MELATONIN OR VITAMIN C ADMINISTRATION ON POSTOPERATIVE ANALGESIA**Demet Lafli Tunay

Cukurova University Faculty of Medicine Department of Anesthesiology and Reanimation

**Aim**

We designed a randomized double-blind placebo-controlled trial to evaluate the effect of preoperative single dose of oral melatonin and vitamin C administration on postoperative analgesia in patients undergoing elective major abdominal surgery.

**Material and Methods**

One hundred-sixty five ASA I-II adult patients between 18-65 years of age, undergoing elective major abdominal surgery with general anesthesia were included in this study, randomly divided into three groups. Patients received oral 6 mg melatonin tablet (n=55) or 2 gr vitamin C tablet (n=55) or placebo tablet 1 hour before surgery, and a standard anesthetic protocol was administered to all patients. At the end of surgery, postoperative pain control was provided via a patient controlled analgesia (PCA) device including morphine for all patients. Starting from perioperative period, during 24 hours hemodynamic parameters, pain, sedation, patient satisfaction scores, total morphine consumption, additional analgesic requirement, nausea / vomiting and other side effects were recorded for all patients.

**Results**

24 hours total VAS scores were significantly lower in melatonin and vitamin C groups compared to placebo ( $p < 0.001$ ), there was no significant difference between melatonin and vitamin C groups ( $p = 0.117$ ). Total consumption of analgesia was found significantly lower in melatonin and vitamin C groups ( $p < 0.001$ , respectively,  $13.3 \pm 4.7$ ,  $15.1 \pm 4.0$ ,  $18.0 \pm 1.0$ ), there was no significant difference between melatonin and vitamin C groups ( $p = 0.090$ ). Side effects such as nausea / vomiting, bradycardia, hypotension, itching were less; patient satisfaction was better; additional analgesia requirements were less in melatonin and vitamin C groups. Sedation scores were higher in the group receiving melatonin for the postoperative first 30 minutes, after postoperative 1 hour sedation scores were higher in placebo group which has higher analgesic consumption.

**Discussion and Conclusion**

Preoperative oral administration of 6 mg melatonin or 2 g vitamin C, given one hour before surgery, led to reduction in VAS scores, PCA morphine consumption and the incidence of nausea/vomiting. Additionally, supplement analgesic requirement was significantly lower and patient satisfaction was significantly better in treatment groups. There were no significant difference between melatonin and vitamin C groups in terms of antinociceptive effects.



**OP-073****EFFECT OF TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION ON QUALITY OF RECOVERY AFTER MAJOR GYNECOLOGIC SURGERY**

Serkan Karaman\*, Tugba Karaman\*, Hulya Deveci\*\*, A. Zeki Ozsoy\*\*\*, I. Bahri Delibas\*\*\*

\* Gaziosmanpasa University, Scholl of Medicine,  
Department of Anesthesiology and Reanimation

\*\* Gaziosmanpasa University, Scholl of Medicine,  
Department of Physical Medicine and Rehabilitation

\*\*\* Gaziosmanpasa University, Scholl of Medicine,  
Department of Gynecology and Obstetrics

**Introduction**

Improving the patients' quality is one of the prominent issue of the health care providers. Effective pain management is also a main factor of the quality of recovery. Transcutaneous electrical nerve stimulation (TENS) has been used as a complementary pain therapy method for several diseases. This study is aimed to evaluate the effects of TENS on postoperative quality of recovery of patients after total abdominal hysterectomy with bilateral salpingo-oophorectomy (TAH+BSO).

**Material and Method**

Following local ethical committee approval, fifty-two patients undergoing TAH+BSO were enrolled into the study and randomly assigned as a TENS or Control group. Fifty subjects completed the full study protocol were included in the analysis. TENS machine (CEFAR Medical AB, Malmö, Sweden) was set with high frequency (80 Hz) and TENS treatment was applied with 30 min. sessions seven times per a day in TENS group. TENS machine was set with the same interval without any electrical stimulation and sham TENS treatment was applied in Control group. Quality of recovery-40 (QoR-40) score, pain scores at rest and movement, analgesic consumption and nausea and vomiting scores were measured during 24 hours at postoperative period.

**Results**

QoR-40 scores were significantly higher in TENS group (Mann-Whitney U;  $p=0,029$ ). Pain scores at movement were significantly different between groups (Repeated Measures Anova;  $p=0,00$ ). TENS application reduced the pain scores at movement at 0,2,4,6,12,18 and 24 hours after surgery (Repeated Measures Anova;  $p=0,00$ ). Pain scores at rest, total analgesic consumption and nausea and vomiting scores did not significantly differ between TENS and Control groups (respectively, Repeated Measures Anova;  $p=0,63$ , Unpaired T-Test;  $p=0,48$ ).

**Discussion and Conclusion**

The result of this study indicate that TENS increased the quality of recovery scores after TAH+BSO. However, TENS did not affect the pain scores at rest and total analgesic consumption, it significantly reduced the pain scores at movement. In conclusion; TENS might be a valuable tool to improve the patients' quality of recovery after TAH+BSO.

## OP-074

### THE AFFECT OF SEVOFLURANE AND DESFLURANE ON ISCHEMIA AND REPERFUSION DAMAGE ON THE DISTANT ORGAN LUNGS

\*İlknur Aytakin, \*\*Şaban Cem Sezen, \*\*\*Muhammed Enes Aydın,  
\*\*\*Naciye Türk Özterlemez, \*\*\*Mustafa Arslan, \*\*\*Meral Erdal Erbatur,  
\*\*\*\*Mustafa Kavutcu

\*Yıldırım Beyazıt Diskapı Training and Research Hospital, Ankara

\*\*Kırıkkale University School of Medicine,

Department of Histology and Embryology, Kırıkkale

\*\*\*Gazi University School of Medicine, Department of Anesthesia and Reanimation, Ankara

\*\*\*\*Gazi University Medical School, Department of Biochemistry, Ankara

#### Introduction

Desflurane and sevoflurane are commonly used as inhaler agents in anesthesia. Although protective effects of volatile anesthetics on the liver, brain and heart have been demonstrated, their effect on the distant organ lungs have not been clearly understood. In this study, we investigated the effects of sevoflurane and desflurane on ischemia reperfusion (IR) damage in the distant organ lungs.

#### Material and Methods

The animals were randomly separated into five groups, each containing 6 rats: diabetic control (group DC), diabetic IR group (group DIR), diabetic IR group with desflurane (group DIRD), and diabetic IR group with sevoflurane (group DIRS) groups. Another 6 rats without diabetes were assigned as control group (group C).

#### Results

Neutrophile infiltration/aggregation were found significantly higher in the DIR group compared to C, DC, DIRD and DIRS groups ( $p<0.0001$ ,  $p<0.0001$ ,  $p=0.005$ ,  $p=0.005$ , respectively), Alveolar wall thickening in lung tissue was found significantly higher in the DIR group compared to the C and DC groups ( $p<0.0001$ ,  $p<0.0001$ , respectively). The lung tissue injury score was found significantly higher in the DIR group compared to the C, DC, DIRD and DIRS groups ( $p<0.0001$ ,  $p<0.0001$ ,  $p=0.004$ ,  $p=0.004$ , respectively),

#### Conclusion

Sevoflurane and desflurane have positive effects on malondialdehyde, superoxide dismutase and lung tissue injury score parameters in IR damage on the distant organ lungs. It could be considered that indirect lung injury occurring is thus decreased.

**Key Words:** Ischemia reperfusion, sevoflurane, desflurane, lung, MDA, SOD

**OP-075****POST-DURAL PUNCTURE HEADACHE AFTER CESAREAN SECTION: COMPARISON WITH MEDIAN AND PARAMEDIAN APPROACHES**

Mehmet Selçuk Uluer\*, Mehmet Sargin\*\*, Osman Şahin\*, Elmas Uluer\*\*\*

\*Konya Training and Research Hospital,  
Anesthesiology and Reanimation Department, Konya, Turkey

\*\*Isparta City Hospital, Anesthesiology and Reanimation  
Department, Isparta, Turkey

\*\*\*Konya Dr. Faruk Sukan Obstetrics and Children's Hospital,  
Department of Obstetrics and Gynecology, Konya, Turkey

**Introduction-Aim**

Although the most popular and most common anesthetic technique for caesarean section is spinal anesthesia, various complications such as post-dural puncture headache (PDPH) are also mentioned (1). We evaluated the comparison with median and paramedian approaches on PDPH after cesarean section in this prospective, randomized and double blind trial.

**Material and Methods**

Institutional ethics committee approval and written consent from the patients were obtained for the study. Two hundred pregnant, gestational age 38-40, between the ages of 19-45 yr, ASA physical status I, scheduled to undergo elective caesarean section under spinal anesthesia, were studied.

All patients were expected to fast 6-8 hours before CS, and no one premedicated. Following prehydration with Ringer's lactate solution 500 mL, spinal anesthesia was induced with hyperbaric bupivacaine 10-12.5 mg via a 25 G Quincke-tip spinal needle in the sitting position at the L3-4 or L4-5 vertebral level using with median (Group I) or paramedian (Group II) approaches by an anesthesiologist with more than 5 years experience (MSU).

The patients were questioned for possible occurrence of spinal anesthesia induced headache on the first, third and seventh postoperative days. A telephone followup call was used if the hospital stay was shorter than 7 days. Post dural puncture headache was evaluated according to the International Classification of Headache Disorders (ICHD-II) diagnostic criteria (2). Intensity of headache and puncture pain were assessed on a scale of 0 to 10, where 0 means no pain and 10 the worst possible pain (0 no, 1-3 mild, 4-6 moderate, 7-10 severe). Post dural puncture headache evaluations was performed by a different anesthesiologist blinded to the study.

**Results**

There was no significant difference between groups in terms of demographic data ( $p > 0.05$ ). There was no significant difference in the incidence of PDPH (Group I: 32 % and Group II: 28 %) and severity of PDPH ( $p = 0.548$ ,  $p = 0.721$ ).

**Discussion and Conclusion**

We conclude that in pregnant women undergoing caesarean section with spinal anesthesia, the frequency and severity of PDPH does not effected by median or paramedian approach of spinal anesthesia.

**References**

1. Lybecker H, Moller JT, May O, Nielsen HK. Incidence and prediction of postdural puncture headache: a prospective study of 1021 spinal anesthetics. *Anesth Analg* 1990;70:389 –94.
2. Ross BK, Chadwick HS, Mancuso JJ, Benedetti C. Sprotte needle for obstetric anesthesia: decreased incidence of post dural puncture headache. *Reg Anesth* 1992;17:29 –33.

**Key Words:** Post-dural puncture headache, cesarean section, spinal anesthesia

**Tables**

Table I: Patients’ Demographics (Mean ± SD)

	Group I (n=100)	Group II (n=100)	p
Age, y	30.52±5.19	29.06±6.44	0.227
Weight, kg	80.74±11.54	77.14±11.02	0.114
Height, cm	159.60±6.28	160.20±6.70	0.645
BMI, kg/m <sup>2</sup>	31.71±4.42	30.10±4.32	0.080

Table II: Frequency and severity of PDPH

	Group I (n=100)	Group II (n=100)	p
PDPH (frequency), n (%)	32 (32.0)	28 (28.0)	0.548
PDPH (severity), n (%)			0.721
<i>Mild</i>	17 (53.2)	16 (57.1)	
<i>Modarete</i>	15 (46.8)	12 (42.9)	
<i>Severe</i>	-	-	

**OP-076****OVERLOOKED FOREIGN BODY ASPIRATION IN PATIENT WITH MULTIPLE TRAUMA**

Engin Erturk, Gulsah Erdogan, Dilek Kutanis, Ali Akdogan  
 Karadeniz Technical University, Faculty of Medicine, Department of Anesthesiology,  
 Trabzon, Turkey

**Introduction**

Foreign body aspiration can occur frequently in multitrauma patients. We present the aspiration of a tooth in patient with multitrauma.

**Case report**

A 27-year-old male patient who had a traffic accident was admitted to intensive care. He was intubated in emergency unit. He had maxillofacial fracture, cerebral and thoracic contusion. His cerebral magnetic resonance revealed diffuse axonal injury and brain edema. He had left third costal fracture and lung injury. He was sedated with midazolam and fentanyl. Because of prolonged ventilation, the patient underwent tracheostomy. Noradrenalin infusion was started to restoration hemodynamic. Thiopental sodium infusion was initiated to decrease cerebral metabolism and prevent cerebral damage for three days. Diuretic, antiepileptic and steroid treatments were added to patient's therapy. After the thiopental infusion he was beginning to open his eyes. Sedation level was decreased and ventilation was changed from controlled to supported mode. The patient suddenly started breathing effort after in-tube aspiration. At this point, it was seen that a foreign object came from the tracheotomy cannula with a big click into the breathing circuit. The foreign body fell into the respiratory filter at the end of the cannula. Careful look showed that it was a tooth (Picture). Carefully looking at the patient's x-ray image again, it was seen two tooth on right main bronchial line (Figure). The patient underwent right bronchoscopy by the thoracic surgeon and the other tooth was removed from the lung. The follow-up treatment of the patient lasted 2 months and the patient was discharged from the intensive care unit.

**Discussion**

It is easy to diagnose foreign body aspiration in patients who are admitted to the hospital with acute complaints such as wheezing, chronic cough or vocal fold. These complaints do not occur in patients with endotracheal intubation. Therefore, it may be difficult to diagnose patients who do not have severe clinical course. The multidisciplinary and systematic approach and examination of patients with multi trauma is very important to avoid overlooked such an aspiration.



Picture: A tooth in filter



Figure: A tooth on X-ray

## OP-077

### GUIDEWIRE RELATED COMPLICATION DURING HEMODIALYSIS CATHETER PLACEMENT IN ICU: A CASE REPORT

Bahar Oc\*, Oguzhan Arun\*, Ahmet Emin Sonmez\*, Serkan Akcan\*\*,  
Ates Duman\*, Mehmet Oc\*\*

\*Selcuk University, Faculty of Medicine,  
Department of Anesthesia and Intensive Care, Konya, Turkey

\*\*Selcuk University, Faculty of Medicine,  
Department of Cardiovascular Surgery, Konya, Turkey

#### Introduction and Aim

The Seldinger technique is widely used in anesthesia practice and the intensive care unit (ICU) to place central venous catheters, hemodialysis catheters (HDC), arterial catheters, and chest tubes. Guidewire related complications in particular are rarely reported; nevertheless, when they do occur, they can be accompanied by significant morbidity and mortality. We aimed to present a case of a lost guidewire during HDC insertion.

#### Case

A 69-year-old male patient with diabetes mellitus, hypertension, and atrial fibrillation was admitted to the ICU. After coronary angiography acute kidney failure developed in the patient. During HDC insertion using Seldinger technique from the right femoral vein, J-shaped guidewire had been lost in the patient. On the X-ray the guidewire was placed in the abdominal part of the inferior vena cava. The patient was referred to the Interventional Radiology Department. They couldn't remove the guidewire with a snare-loop. The patient was referred to the Cardiovascular Department for removal of the guidewire. On the 2<sup>nd</sup> X-ray the guidewire was in the internal jugular vein (IJV) and with thrombosis (Figure 1). The patient was taken to the theatre. After ECG, SpO<sub>2</sub>, NIBP monitoring, anesthesia induction was performed with midazolam 0.05 mg/kg, etomidate 0.3 mg/kg, fentanyl 3 mg/kg, rocuronium 0.5 mg/kg and intubated with 9.5 mm ETT. Right radial artery (20G) and left femoral vein (8.5 Fr, 3 way) catheterization were performed. Sevoflurane, fentanyl and rocuronium were used for anesthesia maintenance. A vertical incision was performed and IJV was identified and surrounded. IJV was clamped and then via vertical incision to the IJV the guidewire was removed with a clamp (Video 1). The guidewire was covered with endothelium and thrombi. The patient was admitted to the CICU on second postoperative day.

#### Discussion and Conclusion

Although considered as a safe technique, Seldinger catheterization is not without complications. It should be considered that if not inserted carefully the guidewire may be lost in the blood vessel causing need for surgical interventions.

**OP-078****ANESTHETIC MANAGEMENT FOR NEUROSURGERY DURING INTRAOPERATIVE MAGNETIC RESONANCE IMAGING**

Gozde Inan\*, Gokcen Emmez\*, Alp Borcek\*\*, Hakan Emmez\*\*,  
Murat Ucar\*\*\*, Zerrin Ozkose Satirlar\*

\*Gazi University Faculty of Medicine Department of Anesthesiology, Ankara, Turkey

\*\*Gazi University Faculty of Medicine Department of Neurosurgery, Ankara, Turkey

\*\*\*Gazi University Faculty of Medicine Department of Radiology, Ankara, Turkey

**Introduction/Aim**

Intraoperative MRI (IOMRI) technology during neurosurgery has become more common over the past several years with significant benefits in terms of increased tumor resection. These surgical procedures require a specialized operating room design as well as MRI compatible surgery and anesthesia equipment and monitors creating concerns regarding safety and infection control. Anesthesia during IOMRI poses unique risks and several challenges. Anesthetic considerations are related to transport, electromagnetic field, usage of only approved items, equipment, and MRI duration and possible emergencies. We aimed to present our experience during neurosurgery with 3T IOMRI.

**Materials and Methods**

A retrospective analysis was conducted of patients who underwent neurosurgical procedures in a high-field hybrid type 3T IOMRI setting (patient is transported to the MRI unit). Demographic data, perioperative data including neurologic, radiologic and adverse events were analyzed. A safety checklist protocol for both the patient and the staff was developed.

**Results**

For tumor resection IOMRI was performed in 46 procedures. Thirty-five adults (16 males, 19 females, mean age 42.8 years) underwent IOMRI guided intracranial tumor surgery. Mean time for preparation of IOMRI including temporary wound closure, transport and radiological examination was 54.7 minutes (21-80 minutes) in adult population. Eleven pediatric patients (mean age 7.73 years) were operated with the help of IOMRI. For the pediatric population mean total anesthesia duration was 307 minutes (205-395). Only in one adult patient who was in prone position, while sliding MRI compatible operating table over MRI table endotracheal tube's inflating tube was dissected. In other patients, there were no adverse events related to anesthesia duration, as well as during transport and MRI examination.

**Discussion/Conclusion**

The administration of safe anesthesia in this new and challenging environment requires high levels of vigilance. Anesthesia and perioperative care of patients in our institution's IOMRI setting were associated with a very low incidence of complications, despite increased anesthesia duration. The creation and use of a checklist and teamwork helped to maximize both patient and providers safety during IOMRI.

## OP-079

### ANESTHETIC APPROACH TO TRAUMATIC PREGNANCY

Ali Akdoğan, Dilek Kutanis, Ahmet Ebeşli, Engin Ertürk  
Karadeniz Technical University, Faculty of Medicine, Department of Anesthesiology and Intensive Care, Trabzon, Turkey

#### Introduction

Trauma and anesthesia in pregnancy is a serious condition that requires attention as it affects both the mother and the baby. We presented an emergency anesthesia approach to our pregnant woman who had a traffic accident when going to go hospital in order to operation for elective cesarean section.

#### Case

A 22-year-old 39-week pregnant was admitted emergency service due to traffic accident. Interestingly, the patient came to the hospital for elective cesarean that day. The patient was assessed as conscious but anxious. She could not speak because of the maxillofacial trauma. Additionally the patient's left arm was fractured. The brain and cervical tomography were normal. The obstetric ultrasonography was revealed emergency caesarean section because of abruptio placenta with amniotic bleeding. She was transferred operating room. Her blood pressure was 140/75mmHg and heart rate was 110/min, SpO<sub>2</sub> was 99%. The patient's forehead area was scratched from the scalpel, the eyelids were torn, the nose was split in half, and the lips were traumatized. The mask ventilation was difficult. Spinal anesthesia was performed in order to prevent possible hypoxia, which might be difficult to intubate the patient because of the hemofacialia, excessive edema, and impaired integrity of the airway. After the delivery a child as healthy, difficult intubation conditions were prepared and it was decided to perform general anesthesia. The patient was given 100% oxygen throughout five minutes. After the anesthesia induction, tissue loss in the airway was filled with bandage, the mucus secretion was aspirated and the patient was intubated with McCoy blade. After plastic and orthopedic surgical procedures, the patient was transferred to intensive care. Patient who having normal vital findings and conscious was extubated 12 hours after.





### Discussion

Multidisciplinary approach is needed for maternal and child health in pregnancy with trauma. The hypoxic condition of the baby, especially due to difficult intubation in airway trauma, must be considered. Prior to the attempt of intubation as in our case, regional anesthesia that protects the baby from possible risks should be considered. After the delivery general anesthesia and intubation may be applied in difficult intubation conditions.

WITHDRAWN

## OP-080

### A PATIENT WITH A TRACHEOESOPHAGEAL FISTULA FORMED 11 YEARS AFTER LUNG CANCER TREATMENT

Goksen Oz\*, Serpil Ocal\*\*

\*SBU Kayseri Education and Research Hospital, Anesthesiology ICU  
(Formerly in Hacettepe University Medical Faculty Anesthesiology ICU), Kayseri, Turkey

\*\*Hacettepe University Medical Faculty Medical ICU, Ankara, Turkey

#### Aim

We aimed to take attention to the late presentation of tracheoesophageal fistula(TOF) and TOF treatment.

#### Case

A 82 year old gentlemen was presented with cough, vomiting and dyspnea to the emergency department. He was pre-diagnosed as aspiration pneumonia and for the non-invasive mechanical ventilation(NIMV) requirement he was admitted to intensive care unit(ICU). In ICU while he was drinking water, simultaneous bronchorrhea was observed; in the detailed history he told not eating/drinking for a week because all the food was purging out with a rapid cough. For clear diagnosis of TOF, a CT scan was performed; TOF was identified above the manubrium of sternum (Figure1). Pneumonia and small airway disease is also notified.

He was diagnosed lung squamous cell carcinoma 11 years ago and had chemo-radiotherapy with right upper-intermediate lobectomy. He also had chronic obstructive pulmonary disease(COPD) with 2.5L/min nasal oxygen at nights for the last 2 years. Chronic heart failure, chronic kidney and coronary artery disease were the other co-morbidities.

Bronchoscopy revealed a fistula 4cm away from vocal cords, on the posterior wall of trachea. Endoscopically 7-8mm fistula orifice approximately 21cm away from the mouth was viewed (Figure2) and clipping of the orifice was failed. Then an oesophageal stent was placed; after orally fed for two days without any problem he was discharged to the ward. In the ward he developed aspiration symptoms again and septic shock led to his death.

#### Discussion

TOF is a rare life-threatening complication of thorax cancers and/or its treatments. It may occur directly by tumour invasion mediastinally, by instrumentation or by therapies (e.g. radiotherapy)(1).

In literature, there is a patient with Hodgkin's Lymphoma and after 27 years an iatrogenic TOF due to oesophageal stenosis was reported(2). We speculate that our patient had a late TOF due to radiotherapy.

Oesophageal stent is a suitable option for the treatment of TOF but without an oesophageal stenosis it should be used with an airway stent; if not, stent migration is a common complication(3). Symptoms of aspiration of our patient that re-occurred in a week after oesophageal stenting might be a result of stent migration.

#### References

1.Spigel David R. et al: Tracheoesophageal Fistula Formation in Patients With Lung Cancer Treated With Chemoradiation and Bevacizumab. J Clin Oncol 28:43-48, 2009

2. Hagendoorn J et al: A patient with tracheoesophageal fistula and esophageal cancer after radiotherapy. *Nat Rev Gastroenterol Hepatol.* 12:702-6, 2010
3. Ke M., Wu X., Zeng J. The treatment strategy for tracheoesophageal fistula. *J Thorac Dis;*7(S4):S389-S397, 2015

**OP-081****RETROSPECTIVE ANALYSIS OF LUNG PROTECTIVE MECHANICAL VENTILATION OF ELDERLY PATIENTS UNDERGOING ROBOTIC RECTUM RESECTION**

Nurdan Bedirli\*, Ömer Kurtipek\*, Çağrı Büyükkasap\*\*, Abdulkadir Bedirli\*\*  
Gazi University, Medical Faculty, Departments of Anesthesiology and Reanimation\* and  
General Surgery\*\*

**Introduction**

Robot-assisted laparoscopic rectum resection have gradually become the preferred choice but needs steep Trendelenburg position and pneumoperitoneum that results in low lung compliance model associated with ventilation, oxygenation and hemodynamic problems during the perioperative period. This retrospective study compared a lung-protective mechanical ventilation (PLV) strategy combining the use of lower tidal volume (Vt), higher PEEP levels, and intraoperative RMs, with a conventional mechanical ventilation (CMV) (higher tidal volume, ZEEP without intraoperative RMs) during robotic rectal resection lasting more than 2h in patients over the age of 70 years.

**Method**

The perioperative medical records of patients over the age of 70 years undergoing robotic rectum resection were screened. We extracted and compared the data on demographics, ventilator settings [tidal volume, peak and plateau airway pressure, positive end-expiratory pressure (PEEP), recruitment maneuvers (RM)], intraoperative oxygenation and ventilation parameters, hemodynamic parameters [arterial blood pressure (BP), heart rate (HR)], and early postoperative complications. Patients were divided based on data of mechanical ventilation parameters applied into 2 group: LPV and CLV groups. Primary outcome was assessment of intraoperative ventilator setting and early postoperative pulmonary complications occurred within the postoperative 48 hours. These complications included hypoxemia, severe hypoxemia, bronchospasm, suspected pulmonary infection, pulmonary infiltrate, aspiration pneumonitis, development of acute respiratory distress syndrome, atelectasis, pleural effusion, pulmonary edema, and pneumothorax.

**Results**

61 cases met the inclusion criteria where 30 patients included in PLV and 31 patients in CLV group. Mean age was 71.35 years  $\pm$ 3.05 in LPV while 71.49  $\pm$  2.18 in CLV group. In PLV group VT was 7 mL/kg predicted body weight and in CLV group VT was 10 mL/kg predicted body weight. Peak and plateau pressures, respiratory compliance, and SpO<sub>2</sub> were significantly higher while postoperative pulmonary complications were significantly lower in LPV group (12%) than in the CLV group (33%). There were no significant difference regarding HR but CLV group developed intraoperative hypotension and needed more vasoactive drugs.

**Discussion and Conclusion**

A strategy with a high level of PEEP and RM during robotic rectum resection was effective in protection against postoperative pulmonary complications in patients over the age of 70 years.

**OP-082****ULTRASOUND-GUIDED BILATERAL TRANSVERSUS ABDOMINIS PLANE BLOCK VERSUS PATIENT CONTROL ANALGESIA IN PATIENTS UNDERGOING IN AUTOLOGOUS BREAST RECONSTRUCTION FOR POSTOPERATIVE PAIN MANAGEMENT**

Nurdañ Bedirli, Berrin Işık, Hakan Tuzlalı, Ömer Kurtipek  
Gazi university, Medical Faculty, Department of Anesthesiology and Reanimation

**Introduction**

Breast reconstruction by means of a deep inferior epigastric perforator (DIEP) flap raised on the deep inferior epigastric pedicle is the most frequently used technique for autologous breast reconstruction. This approach covers mastectomy and laparotomy that considered intermediate and major sources of postoperative pain. The aim of this retrospective study is to evaluate the postoperative analgesic efficacy of ultrasound guided transverse abdominis plane block (TAP) and patient control analgesia (PCA) for first 2 days after immediate breast reconstruction by DIEP flap.

**Methods**

The perioperative medical records of patients undergoing autologous breast reconstruction using abdominally-based free flaps were screened. Data on method for providing postoperative analgesia, postoperative morphine consumption, postoperative pain levels, postoperative nausea/vomiting, and postoperative sedation levels were extracted. According to the selected analgesia method patients were divided into 2 groups: the TAP block group (n=20) and the PCA group (n=19). Patients in the TAP block group received ten milliliters of 0.35% bupivacaine bilaterally before the surgical incision while morphine (bolus dose, 1mg; lockout, 6 minutes; 4-hour maximum dose, 40 mg) was installed for PCA. In both groups. Data was analyzed using Student's t-test and assessed for significance of results using  $p < 0.05$  as the threshold of significance.

**Results**

Postoperative rescue morphine requirements were significantly lower in the block group than in the control group for the first 24 hours but the difference was not significant for the second 24 hours. Moreover, total morphine usage, the incidence of nausea/vomiting and the sedation levels were significantly lower in TAP block group comparing to PCA group.

**Discussion and conclusion**

Bilateral ultrasound-guided transversus abdominis plane block applied before breast reconstruction by DIEP flap reduces the interval and cumulative morphine requirements for the first 24 hours with lower unwanted side effects comparing to PCA installed with morphine.

**OP-083****PERITONEO-PLEURAL LEAKAGE OF PARENTERAL NUTRITION SOLUTION VIA FEMORAL VENOUS CATHETER DUE TO EXTRAVASATION**

Filiz Üzümcügil, Fatmanur Aslan, Nihal Deniz Bulut Yüksel  
Hacettepe University School of Medicine, Department of Anesthesiology and Reanimation

**Background**

Central venous catheter placement and its maintenance may be complicated by various factors, one of which is extravasation.<sup>1</sup> These catheters should be checked before use to determine whether they are intact or not. We present a case of peritoneo-pleural leakage of femoral venous catheter resulting in bilateral pleural effusion.

**Case**

A 10-year-old female patient diagnosed to have Maple Syrup Urine Disease (MSUD) was operated for congenital hip dislocation. She had mental and motor retardation and she was receiving enteral nutrition via gastrostomy due to impairment of swallowing. After the operation, a femoral catheter was inserted for intravenous antibiotic treatment, because the peripheral intravenous access was difficult. She developed an acute abdomen, which was considered as abdominal sepsis or acute perforated appendicitis. The use of gastrostomy was stopped and femoral catheter was used for total parenteral nutrition as well as antibiotic treatment. Due to the progression of abdominal distension and the simultaneous development of bilateral pleural effusion, the patient was scheduled for laparotomy and bilateral chest tube insertion. The femoral catheter was checked; the distal port was intact (checked by blood withdrawal), but the proximal was not. Intravenous induction was provided via distal port. The laparotomy revealed intraabdominal collection of fluid with milky appearance. The femoral catheter was checked with contrast media and abdominal x-ray showed extravasation into abdominal cavity. Bilateral chest tube insertion resulted in discharge of a similar fluid with milky appearance, both fluid samples from peritoneal and pleural cavities proved to be parenteral solution.

**Discussion and Conclusion**

Pleural effusion due to intraabdominal collection can be explained by leakage of fluid from the peritoneal cavity through small pleuroperitoneal fenestrations, which may be congenital or acquired; or through diaphragmatic defects. The same mechanism has been reported for pleural effusion as a complication of peritoneal dialysis and also for hepatic hydrothorax as a complication of liver cirrhosis.<sup>1,2</sup> Extravasation of fluid from a central venous catheter should be considered in case of any unexplained fluid accumulation and all lumens should be checked before use.

**References**

1. Been JV, Degraeuwe PLJ. Pleural effusion due to intra-abdominal extravasation of parenteral nutrition. *Pediatr Pulmonol* 2008; 43: 1033-1035
2. Yaxley J, Twomey K. Peritoneal dialysis complicated by pleuroperitoneal communication and hydrothorax. *Ochsner Journal* 2017; 17: 124-127

**OP-084****EFFECT OF INTERSCALENE BLOCK ON INTRAOCULAR PRESSURE AND OCULAR PERFUSION PRESSURE**Betul Basaran\*, Aysun Ankaç Yılmaz\*\*

\*Department of Anesthesiology, Konya Training and Research Hospital, Konya, Turkey

\*\*Department of Anesthesiology and Reanimation, Hacettepe University, Faculty of Medicine, Ankara, Turkey

**Introduction-Aim**

Interscalene block (ISB) is commonly associated with Horner's syndrome due to spread of local anesthetic to the cervical sympathetic chain. Postganglionic neurons that originate from superior cervical ganglia form the sympathetic innervation of eye. Decrease in sympathetic tone may change intraocular pressure (IOP) and intraocular perfusion pressure (OPP). The aim of study was to investigate whether ISB affects IOP and/or OPP.

**Material-Methods**

Thirty patients scheduled for ambulatory shoulder surgery under regional anesthesia with single-shot ISB (15 mL 0.5% bupivacaine and 15 mL 2% lidocaine). IOP and OPP in both eyes, mean arterial pressure (MAP), heart rate(HR) and end-tidal CO<sub>2</sub> (ETCO<sub>2</sub>) were measured before ISB and 5, 10, 20, 30 and 60 minutes after ISB in the beach-chair position.

**Results**

Baseline IOP and OPP were similar in blocked and unblocked sides (IOP 17.60±1.69 and 17.40± 1.96 respectively p=0.432; IOPP 48.62 ± 8.05 and 48.82± 7.92 respectively p=0.432). The IOP in the blocked side significantly decreased between 10<sup>th</sup> to 60<sup>th</sup>min following ISB, compared to the baseline values. On the other hand OPP remained unchanged in the blocked side compared to baseline. But there was a significant difference in OPP between blocked and unblocked sides from 10<sup>th</sup> to 60<sup>th</sup>min. There were no significant changes in MAP, HR and ETCO<sub>2</sub>.

**Discussion**

ISB can be used as a sole anesthetic technique or in combination with general anesthesia for shoulder surgery. Regional anesthesia has been advocated several advantages over general anesthesia. These include shorter hospital stay, reduced postoperative analgesia requirement and avoidance of risks and side effects of general anesthesia (1-3). It could be the anesthetic choice especially in elderly population with underlying comorbidities, in whom the risk of harboring glaucoma is six times higher (4). Thus, it is important that any intervention that is intended for use in patients with glaucoma should not increase intraocular tension. We have shown that ISB decreases IOP in blocked side and does not change in unblocked side. However further studies are required in patients with preexisting eye disorders.

**Conclusion**

ISB decreased IOP in the blocked side eye. ISB could be considered as a safe regional technique of choice in elderly patients at higher risks for developing glaucoma.

Key words: Interscalene block, intraocular pressure, ocular perfusion pressure

1. Gonano C, Kettner SC, Ernstbrunner M, Schebesta K, Chiari A, Marhofer P. Comparison of economical aspects of interscalene brachial plexus blockade and general anaesthesia for arthroscopic shoulder surgery. *Br J Anaesth*. 2009 Sep;103(3):428-33.
2. Brown AR, Weiss R, Greenberg C, Flatow EL, Bigliani LU. Interscalene block for shoulder arthroscopy: comparison with general anesthesia. *Arthroscopy*. 1993;9(3):295-300.
3. Sulaiman L, Macfarlane RJ, Waseem M. Current concepts in anaesthesia for shoulder surgery. *Open Orthop J*. 2013;7:323-8.
4. Wolfs RC, Borger PH, Ramrattan RS, Klaver CC, Hulsman CA, Hofman A, et al. Changing views on open-angle glaucoma: definitions and prevalences--The Rotterdam Study. *Invest Ophthalmol Vis Sci*. 2000 Oct;41(11):3309-21.



**OP-085****PAIN CONTROL OF A PATIENT WITH RECTUS MUSCLE HAEMATOMA WITH RESPIRATORY DISTRESS: TRANSVERSUS ABDOMINIS PLANE BLOCK PROCEDURE**

Emine Uzunoğlu, Muhammed Ahmet Karakaya, Çiğdem Heyik, Esra Kutlu, Pelin Karaaslan  
Istanbul Medipol University

**Introduction-Aim**

Rectus muscle haematoma is a rare condition occurring due to damage of inferior or superior epigastric arteries. It may either happen spontaneously or following trauma, surgical intervention, anticoagulant therapy, hematologic disorders, arterial hypertension, coughing, physical exercise; during pregnancy, or any other reason increasing intraabdominal pressure. The most common symptom is a sudden and severe abdominal pain. Computed tomography (CT) is helpful in establishing the final diagnosis. Conservative treatment is usually sufficient.

An 88-year-old woman with history of congestive heart failure, chronic atrial fibrillation (AF) and asthma was hospitalized due to pneumonia. She had been complaining of coughing 10 days before the hospitalization. She was receiving anticoagulant treatment for chronic AF for approximately 1 year. During investigation of abdominal pain, a rectus haematoma was detected on CT. Subsequently, 1 gr of parasetamol iv, 75 mg of diclofenac sodium im, 50 mg of tramadol iv were administered to the patient. She was consulted with critical care unit for respiratory distress. Arterial blood gas values were as follows; pH: 7.48, pCO<sub>2</sub>: 46 mmHg, pO<sub>2</sub>: 52 mmHg, HCO<sub>3</sub>: 36 mmol/l, lactate: 2,5 mmol/l. She was hardly communicating due to pain. The Visual Analogue Scale (VAS) was evaluated as 9. Hypoventilation was considered to be related to severe pain.

**Material-Method**

Ultrasonography guided transversus abdominis plane (TAP) block was performed. Bilateral injections of 0.25% bupivacaine and 0.5% lidocaine were given as 20 ml on each side.

**Result**

Her VAS score was assessed as 2 after 40 minutes and her breathing was improved. One hour later, arterial blood gas values were as follows : pH: 7,41, pCO<sub>2</sub>: 40 mmHg, pO<sub>2</sub>: 83 mmHg, HCO<sub>3</sub>: 28 mmol/L, lactate: 2.2 mmol/L. This indicated there was no indication for intensive care unit stay due to hypoxia. The patient was given 50 mg of tramadol tablet three times daily as analgesic. During hospital stay, the patient's VAS score did not exceed 3. The patient was discharged after on seventh day after TAP block.

**Discussion**

We consider TAP block to be a good alternative for pain control in cases which didn't respond to routine analgesics for pain induced hypoventilation.

**OP-086****DOES REDUCING HEPARIN DOSE BY CALCULATING DUE TO LEAN BODY WEIGHT, DECREASE THE TRANSFUSION REQUIREMENT IN PERIOPERATIVE PERIOD? A RANDOMIZED CONTROLLED TRIAL**

Aslihan Aykut\*, Ulku Sabuncu\*, Zeliha Asli Demir\*, Eda Balci\*,  
Başak Soran Turkcan\*\*, Utku Unal\*\*, Aysegul Ozkok\*

\*Turkiye Yuksek Ihtisas Training and Research Hospital,  
Department of Anesthesiology and Reanimation, Ankara, Turkey

\*\*Turkiye Yuksek Ihtisas Training and Research Hospital,  
Cardiovascular Surgery Clinic, Ankara, Turkey

**Introduction**

Heparin dosing is calculated based on actual body weight (ABW) during cardiac surgery performed under cardiopulmonary by-pass (CPB). It's possible that this conventional heparin regimen may cause redundant anticoagulation and increase bleeding, transfusion requirement and reoperation in perioperative period.

**Aim**

The aim of this study is to compare heparin dose regimen based on lean body weight (LBW) with traditional heparin regimen in terms of ensuring adequate anticoagulation and complications associated with perioperative bleeding.

**Materials and Methods**

The randomized controlled trial was conducted in 100 patients who underwent aortic and mitral valve replacement and combined cardiac surgery including valve replacement. Prior to CPB heparin dose was adjusted as 4 mg/kg, according to patients ABW in Group A (n=50), and LBW in Group L (n=50). In Group L, the LBW was calculated based on the James Formula. The minimal Activated Coagulation Time (ACT) target value is accepted as 400 secs. required for CPB initiation. In all groups, demographic and hemodynamic data, post-heparin ACT values, additional heparin and intraoperative transfusion requirements, postoperative drainage volumes, Hb/Hct values, postoperative transfusion requirements, reoperations related to bleeding and mortalities were recorded.

**Results**

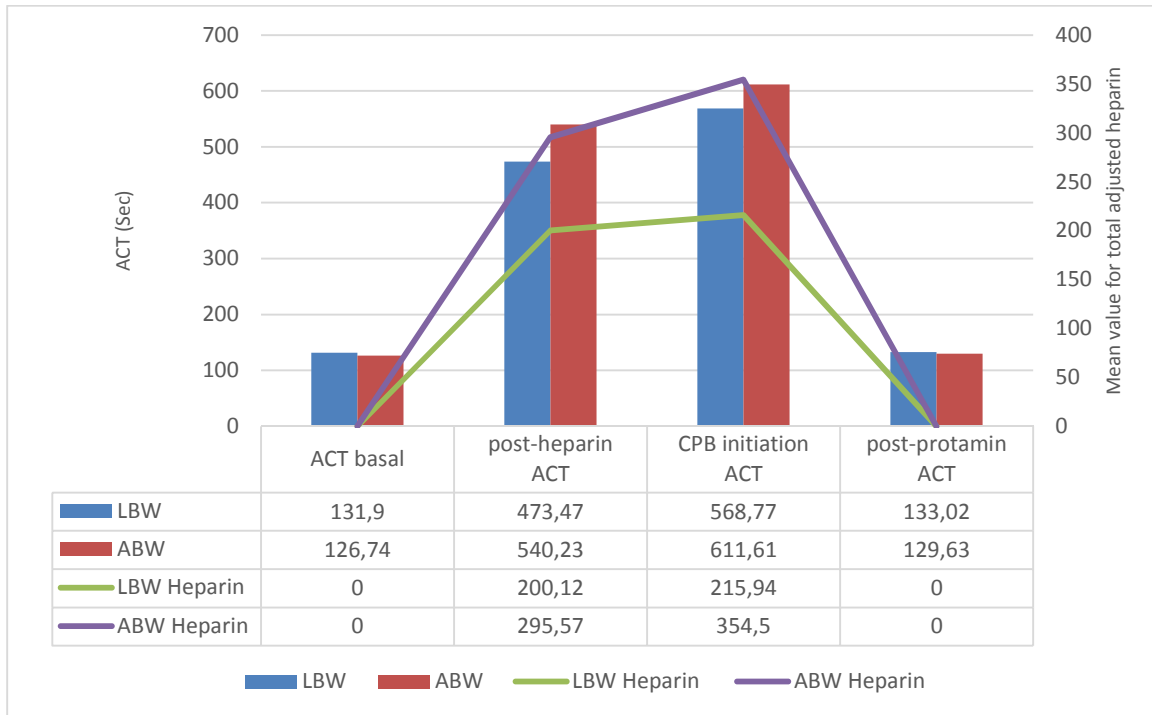
Demographic data, LBWs, comorbidities, medications and preoperative laboratory results were similar. The CPB durations, aortic cross-clamping times, type of surgery and intraoperative transfusion requirements were not significantly different. The first heparin dose administered in Group L (mean= 200.12 mg) was significantly lower than Group A (mean=295.57; p \*0.001). The post-heparin ACTs were significantly higher in Group A when compared to Group L ( p=0. 011). Additional heparin dose required to achieve target ACTs were similar in both groups as well. Postoperative transfusion rates were significantly higher in Group A (p\*0.001). Also intensive care unit stay and mechanical ventilation durations were similar. In Group L, no reoperations related to bleeding is needed while there are 3 in Group A.

**Discussion and Conclusion**

In this study, use of heparin doses adjusted to LBW is lower than adjusted to conventional regimen, it provided enough ACTs required for CPB. Also, LBW-adjusted heparin dose, reduced blood product usage and reoperations related to bleeding.

**Key words:** lean body weight, heparin, CPB, blood transfusion

**Heparin Doses And ACTs**



## OP-087

### MANAGEMENT OF HIGH-RISK EMERGENCY ABDOMINAL SURGERIES WITH EPIDURAL ANESTHESIA IN SAKARYA UNIVERSITY TRAINING AND RESEARCH HOSPITAL (TURKEY): 15 MONTHS RETROSPECTIVE STUDY

Burak Kaya, Ali Eman, Burçin Ersoy, Candan Yılmaz Günel,  
Tuğba Çağlar, Fikret Bayar, Ali Fuat Erdem

Department of Anesthesiology and Reanimation, Sakarya University Training and Research Hospital, Sakarya, Turkey.

#### Introduction – Aim

Perioperative management of high-risk scored emergency abdominal surgeries remains a major concern for anesthesiologists due to hemodynamic and/or metabolic disorders which are often present preoperatively as well as to potential intraoperative and postoperative complications<sup>(1,2)</sup>. In this study, we aimed to share our experiences and evaluate the short-term epidemiological, diagnostic, therapeutic and prognostic factors of ASA score III or higher risked abdominal emergencies carried out with epidural anesthesia.

#### Material and Methods

This retrospective study included the analyzing the medical files of all ASA class III and IV adult patients managed for surgical abdominal emergencies with epidural anesthesia at the Sakarya University Training and Research Hospital from January 1, 2016, to March 31, 2017.

#### Results

The study included 23 patients with a mean age of 71.7 years (min. 54 and max. 99) and 57% female patient ratio. The surgeries were included 15 intestinal obstruction (65%), 3 lower gastrointestinal bleeding (13%), 1 cholecyst perforation (5%), 2 umbilical hernia repair (10%), 1 pelvic abscess (5%), and 1 intestinal perforation (5%). 26% of patients were ASA class IV and 74% were ASA class III. The mean surgery duration was 104 minutes (min. 60 and max. 205). All patients were undergone lumbar epidural anesthesia with mixture of lidocaine and bupivacaine. No significant hypotension, cardiac arrest, nausea, pain nor death was occurred and 52% of patients were transported to clinic wards directly. Only 3 patients (13%) required mechanical ventilation intraoperatively due to metabolic and/or respiratory problems.

#### Discussion and Conclusion

High-Risked emergency abdominal surgeries in our clinic carried out with epidural anesthesia had resulted with satisfying outcomes with no intraoperative mortality and minimal morbidity rates. The anesthetic management of emergency abdominal surgeries require a multidisciplinary approach that involves anesthesiologists and surgeons.

#### References:

- 1-Pan Afr Med J. 2016 Jul 1;24:190
- 2-Masui. 1997 Dec;46(12):1602-8.

**OP-088****RENAL EFFECTS OF CORONARY ARTERY BYPASS GRAFT SURGERY IN OBESE AND NON-OBESE PATIENTS: A STUDY WITH URINARY NEUTROPHIL GELATINASE-ASSOCIATED LIPOCALIN, SERUM CYSTATIN C AND KIDNEY INJURY MOLECULE-1**

Bahar Oc<sup>\*</sup>, Gulperi Celik<sup>\*\*</sup>, Oguzhan Arun<sup>\*</sup>, Ali Unlu<sup>\*\*\*</sup>, Ates Duman<sup>\*</sup>, Mehmet Oc<sup>\*\*\*\*</sup>  
Selcuk University, Faculty of Medicine, Departments of Anesthesiology and Reanimation<sup>\*</sup>,  
Nephrology<sup>\*\*</sup>, Biochemistry<sup>\*\*\*</sup>, Cardiovascular Surgery<sup>\*\*\*\*</sup>, Konya, Turkey

**Introduction-Aim**

Acute kidney injury (AKI) is a prominent problem in cardiac surgery and associated with increased morbidity and mortality. AKI is common in critically ill surgical or medical obese patients and that obesity is a novel risk factor for this acute renal syndrome (1). We aimed to evaluate the value of urinary neutrophil gelatinase-associated lipocalin (NGAL), serum cystatin C and kidney injury molecule-1 (Kim-1), as early biomarkers for prediction of AKI in obese and non-obese adult patients undergoing coronary artery bypass graft (CABG) surgery.

**Material and Methods**

After university ethics committee approval, 22 non-obese and 22 obese patients undergoing CABG surgery were enrolled. Pre-operative clinical and laboratory variables as well as various perioperative surgical and anesthetic data were recorded. Blood samples for creatinine (Cre) and Blood Urea Nitrogen (BUN), cystatin C, and urinary samples for NGAL and Kim-1 were collected at 5 different timing. Diagnoses of postoperative AKI were made in accordance with the International Kidney Disease: Improving Global Outcomes (KDIGO) definition of AKI (2).

**Results**

The study was completed with total of 44 patients. There were no statistically significant differences between groups regarding demographic and operational data except ICU discharge time that was shorter in non-obese group. AKI was detected in 11 patients in non-obese group (50%) and 17 patients in obese group (77.2%). In obese group, Cystatin-C levels pointed AKI more precisely and earlier than both NGAL and KIM-1.

**Discussion and Conclusion**

It is critical to detect AKI in a timely fashion to initiate rapid interventions. The results of this study support that a combination of urinary and serum biomarkers of AKI may allow early detection of postoperative AKI in obese patients undergoing CABG surgery before a rise in serum creatinine and BUN.

**References**

1. Schiff H, Lang SM. Obesity, acute kidney injury and outcome of critical illness. *Int Urol Nephrol*. 2017 Mar;49(3):461-466.
2. Kidney Disease: Improving Global Outcomes (KDIGO) Acute Kidney Injury Work Group. KDIGO Clinical Practice Guideline for Acute Kidney Injury. *Kidney inter., Suppl*. 2012;2:1-138.

**OP-089****THROMBOCYTOPENIA IN PREGNANCY (CASE REPORT)**

Denis Odobašić, Senida Keser, Suada Salkić  
JZU UKC Tuzla, Prof.dr. Ibri Pašića, 75 000 Tuzla; spec. anesteziolog-reanimatolog

**Abstract**

Thrombocytopenia is the medical term for the levels of platelets in the blood. It often occurs as a result of other conditions, such as leukemia or disorders of the immune system or as a consequence of medication action. Sometimes medications, surgery or blood transfusions may help in the treatment.

**Materials and Methods**

Retrospective study we analyzed the anesthetic approach to the patient with thrombocytopenia in the last trimester of pregnancy, which is engendered at the Department of Gynecology and Obstetrics Clinical Center Tuzla.

**Results**

A pregnant woman, 34 years old, second child, was hospitalized at the Clinic of Gynecology and Obstetrics Clinical Center Tuzla in the 34 weeks of gestation, because of dexamethasone prophylaxis, to preterm birth in the previous pregnancy. During hospitalization was diagnosed with anemia and thrombocytopenia. Pregnant women had asymptomatic. Since therapy is taken Ginipral pills, tablets Izoptin, denied subjective symptoms and fetal heart was normal. Consulted the hematologist on several occasions, due to low platelet count  $23 \times 10^9 / L$  and anemia. Included are corticosteroids and given blood transfusions. Every day we monitor the CBC and DR. After seven days of receiving therapy, there was no adequate response, platelets were still low and the consultative decided that the pregnancy ends by Caesarean section under general anesthesia. A live born male infant weighing 3320/46. The operative and postoperative course was uneventful. Upon the recommendation of hematologists, patient and postoperatively received blood transfusions and corticosteroids. The fourth postoperative day we diagnosed Pancytopenia and the sternal puncture was done twice, with a score of dry puncture, and the fifth postoperative day, the patient that was demonstrated leukosis was moved on the hematological department for further diagnostic processing and to continue the treatment.

**Conclusion**

In pregnancy are benign thrombocytopenia relatively frequent. Malignant thrombocytopenia in pregnancy is rare but it always have to be on your mind. Teamwork anesthetist, obstetrician and hematologist in these situations, with proper preparation of perioperative and postoperative monitoring and intensive biochemical control, guarantee successful labor.

**Keywords:** thrombocytopenia, pregnancy, Caesarean Section, pancytopenia, leukosis

**OP-090****ANESTHETIC MANAGEMENT OF PATIENT WITH TRANSCATHETER AORTIC VALVE IMPLANTATION UNDERGOING ABDOMINAL SURGERY: CASE REPORT**

Burmuzoska M. MD, Naumovski F. MD, Kartalov A. PhD,  
Kuzmanovska B. MD PhD, Donev Lj. MD

<sup>1</sup>PHI University Clinic Of Anesthesiology, Reanimation and Intensive care – Skopje

**INTRODUCTION**

The increasing patient population which benefits from transcatheter aortic valve implantation (TAVI) shows particular characteristics and needs special care during follow-up<sup>1</sup>. These patients still remain as high-risky for surgery and anesthesiology management because of their age and many comorbidities.

**MATERIALS AND METHODS**

A 64 years old female patient was admitted to our hospital with symptoms of bowel obstruction. Patient history revealed previous TAVI intervention 3 months ago, hypothyroidism, COPD, LBBB and hypertension. Preoperative laboratory results showed anemia, hypokalemia (2.9 mmol/L), hypoglycemia and hypoproteinemia. Indication for urgent surgery was made and crush induction in anesthesia was performed. Placing an epidural catheter was contraindicated because patient received oral anticoagulant therapy with Aspirin and Clopidogrel till 2 days before surgery. During the perioperative period substitution with erythrocyte, fresh frozen plasma, potassium chloride 7.4% was made and maintained balanced anesthesia. After the intervention, patient was admitted to ICU intubated and maintained mechanically ventilated for 2 days. In good condition, she was discharged from hospital 2 weeks after admitting.

**DISCUSSION**

Many aspects in perioperative and postoperative management of patients with TAVI are important, like good analgesia, antithrombotic prophylaxis, antibiotics, electrolyte balance and fluid balance<sup>2</sup>. Patients with TAVI have particular risks after the implantation like increased risk of infective endocarditis, thrombosis and thromboembolism, aortic regurgitation and heart conduction defects<sup>1,3</sup>. This conditions should be considered by the anesthesiologist during the surgery and in the postoperative period and well managed.



## CONCLUSION

Patients undergone TAVI, despite improving their heart and overall condition, are still having high mortality rate of 31% in the first year<sup>4</sup>. Good preoperative preparation, perioperative monitoring and management and postoperative care are crucial for better outcome.

## REFERENCES

1. Dr. Tiziana Claudia Aranzulla, MD, MSC, Dr. Mauro De Benedictis, MD, Dr. Riccardo Asteggiano, MD, FESC; FOLLOW-UP MANAGEMENT AFTER TRANSCATHETER AORTIC VALVE IMPLANTATION (TAVI); *E-Journal of Cardiology Practice* VOL.14,N°7 - 05 APR 2016
2. R. Peter Alston, Paul Myles, Marco Ranucci; Oxford Textbook of Cardiothoracic Anaesthesia, Oxford University Press 2015
3. Jan-Malte Sinning and Eberhard Grube; Transcatheter heart valve failure: the sword of Damocles over our heads?; *European Heart Journal* (2015) 36, 1284–1287
4. Leon MB, Smith CR, Mack M, et al. Transcatheter aortic - valve implantation for aortic stenosis in patients who cannot undergo surgery. *N Engl J Med* 2010; 363: 1597-607



**OP-091****LAPAROSCOPIC CHOLECYSTECTOMY AND LARYNGEAL MASK AIRWAY**

Cengic Vesna , Juros-Zovko Marina, Keser Ivan  
General Hospital "Prim.dr.Abdulah Nakas" Sarajevo

**Introduction and Aim**

Laryngeal mask airway (LMA) is accepted in clinical anaesthesia practice as alternative device to the endotracheal tube (ETT), which is gold standard of airway management for general anaesthesia. Primary indications for LMA use were limited but by the time and good experience they were dramatically extended in the last 20 years, also for the laparoscopic surgery. This nonconventional indication is still controversial.

The aim of this study is to investigate efficacy and safety of the LMA (Ambu Aura Once) comparing to the ETT, during laparoscopic cholecystectomy.

**Material and methods**

This is prospective, randomized, single blinded study with 30 patients enrolled, ASA I/II, age 18-60 years, without contraindications for LMA use, planned for elective laparoscopic cholecystectomy, under 60 minutes of duration. Patients were randomized in the two groups according to the airway management device: LMA and ETT group. Anaesthesia was provided by an experienced anaesthesiologist (more than 800 use of LMA). Standard anaesthesia protocols were used: noninvasive monitoring, ECG, BP,  $sO_2$ ,  $ETCO_2$ . Blood gas analyses were controlled 15 minutes after creation of pneumoperitoneum.

**Study results**

There were not statistically significant differences between two groups for  $SpO_2$ ,  $EtCO_2$  and blood gas analysis. Oropharyngeal leak pressure in the LMA group was up to 20 cm  $H_2O$ . No complications, desaturation, laryngospasm, obstruction of airway, bronchospasm and aspiration were noted.

**Discussion and Conclusion**

The results of our pilot study are consistent with results of previous studies. Ambu Aura Ones LMA used by an experienced anaesthesiologist, respecting contraindications, is an efficient and safe device for airway management in laparoscopic cholecystectomy.

## OP-092

### SEVERE ACUTE NECROTIZING PANCREATITIS PRESENTING WITH RHABDOMYOLYSIS, ACUTE RENAL FAILURE AND ARDS : CASE REPORT

Arijana Horman-Leventić, Amela-Katica Mulalić, Lejla Tafro, Hilmi Kačamaković, Jasna Karakaš-Zukić, Ines Abdagić, Belma Pašić-Torlak, Aida Smajić  
Clinic of Anesthesiology and reanimation,  
Clinical Center University of Sarajevo, Bosnia and Herzegovina

#### Introduction

Severe acute pancreatitis (SAP) is associated with organ dysfunction, what leads to local or regional complications. Acute respiratory distress syndrome (ARDS) is frequent complication of SAP and it is a major component of multiple organ dysfunction syndrome (MODS). Rhabdomyolysis is a rare complication of pancreatitis associated with high mortality rate.

#### Case Presentation

A 29-year-old man was admitted to local hospital with complains of severe pain in stomach, vomiting and high fever. He was diagnosed and treated for acute pancreatitis. After 5 days patient's condition deteriorated and he was transferred to Intensive care unit (ICU) of University Clinical Center. On the admission patient showed signs of ARDS requiring mechanical ventilation. His laboratory results showed leukocytosis, thrombocytopenia, hypokalemia, hypocalcaemia and high transaminase and creatinin kinase (CK) levels. Urine was concentrated. A CT scan of abdomen showed signs of necrotizing pancreatitis and CT-guided retroperitoneal percutaneous catheter drainage was performed. In the next 48 hours CK levels continues to rise reaching peak of 140 860 U/L followed by acute renal failure development. Patient becomes oliguric/anuric with a rise of CK levels so hemofiltration was started. In the next two months of hospitalization, patient developed multiple complications, which required laparotomy because of the intraabdominal bleeding and right thoracotomy for interlobar organized collection evacuation. Antibiotic therapy was corrected together with infectologist due to development of intrahospital infection. After two months of hospitalization patient was discharge from our ICU.

#### Conclusion

Severe acute pancreatitis with multiple organ dysfunction has still high rate of mortality, especially in the presence of rhabdomyolysis. Early hemofiltration and non-surgical first line treatment may play an important role in positive outcome of our patient.

## OP-093

### TAKING CARE OF INJURED PATIENTS WITH FIREARM IN SMALL HOSPITALS- CASE REPORT

Elvira Kazagic  
Kantonalna bolnica Gorazde

#### Introduction

Abdominal injury can penetrate or it cannot. Regardless of which organ is injured, there are two effects: shock and peritonitis. Penetrants or an open injury can occur when a foreign body enters the peritoneal cavity or when it penetrates through it.

#### Aim

The aim of this presentation is to emphasize the importance of existence and adequate equipment for smaller hospitals such as ours.

#### Materials and methods

Retrospective description of the case of injury by fire arms of a 45years old patient by using the data from the hospital history of this case.

#### Results and discussion

A private car brought the patient in the hospital of Gorazde, the shock results were the violation of the abdomen and sustained wounding. The patient when brought was confused, had a lighter skin tone, was tachydyspnoic, was sweating, had an hypotension with accelerated pulse and a frequency about 135/Minute, 80% SpO<sub>2</sub>, urinaire catheter placed, was obtained clear urine. The patient was urgently brought to the surgery room for surgical management for the injuries that have damaged the small intestines and meso small intestine.

After the surgery, the patient has been intubated and was taken in the department of intensive care for breathing control. The patient was mechanically hemodynamically unstable, blood flow continues charging large amounts colloid and crystalloid solution 20%, albumin, include antibiotic therapy, H<sub>2</sub> blockers, Low molecular weight heparin, analgesics. Then the patient was placed on the central venous catheter to monitor the central venous pressure then was corrected by the laboratory findings while monitoring the content theap. The patient was gradually separated from the ventilator with spontaneous breathing. We introduced the oral route according to the protocol, the patient recovered eight postoperative day shifts after the surgery.

#### Conclusion

This case report emphasizes the importance of having small hospitals in the area because these young lives wouldn't be saved if it was not for the complete operating team and the intensive care units in the field.

## OP-094

### TRACHEAL INTUBATING CONDITIONS FOLLOWING ATRACURIUM IN CHILDREN UNDERGOING SEVOFLURANE AND THIOPENTONE-FENTANYL INDUCTION

Lejla Dedić Simendić, Selma Sijerčić Avdagić

University Clinical Centre Tuzla, Clinic for anesthesiology and resuscitation,  
Specialist of Anesthesiology and Intensive care

#### Abstract

Background: We aimed to randomly compare intubation conditions and adverse events during sevoflurane vs thiopentone-fentanyl induction after atracurium administration in 60 children ASA grade I and II between 2 and 8 years undergoing elective surgery.

#### Methods

All children were randomly allocated to receive anesthesia with nitrous oxide-oxygen-thiopentone-fentanyl (group T) or nitrous oxide-oxygen-sevoflurane (group S). Intubating conditions were assessed 120s after atracurium administration. The secondary outcome criteria were respiratory (SpO<sub>2</sub> < 90%, laryngospasm, closed vocal cords preventing intubation, bronchospasm) and hemodynamic adverse events (heart rate and mean arterial pressure variations ≥ 30% control value).

#### Results

Excellent and good intubation conditions were achieved in 30 and 29 patients induced with sevoflurane and thiopentone-fentanyl respectively. Excellent intubating conditions were significantly better in the sevoflurane group: 80% vs 33.3% in the thiopentone-fentanyl group. There were also significantly more good intubation conditions in the sevoflurane group: 63.3% vs 20% in the thiopentone-fentanyl group. There were no respiratory and hemodynamic adverse events in both group patients.

#### Conclusions

Though sevoflurane and thiopentone-fentanyl both provided similar intubation conditions after atracurium administration in children, excellent and good intubation conditions were significantly better in the sevoflurane group. In both groups there were no respiratory and hemodynamic adverse events.

**Keywords:** Intubation, pediatric, atracurium, thiopentone, sevoflurane.

**OP-095****PULMONARY EMBOLISM AND INFECTION FOLLOWING ABDOMINAL SURGERY:  
CASE REPORT**

Senita Beharić, Ismet Suljević, Jasna Bučo

Klinika za anesteziju i reanimaciju, Klinički centar Univerziteta Sarajevo, Bolnička 25, 71000 Sarajevo, Klinika za anesteziju i reanimaciju, KCU Sarajevo

**Introduction**

We present case of 67-old male patient, who was hospitalized at the ICU of Clinic of Anesthesiology, Resuscitation and Intensive Care of Clinical Center of University in Sarajevo from 04.11.2016 to 04.01.2017.

**Background**

On 01 November the patient was admitted at the Clinic of Gastroenterology under dg: Ulcus bulbi duodeni sanguinas. After endoscopy the next day he was transferred to Clinic of General and Abdominal Surgery. In the morning on 4th Nov the patient suddenly collapsed (hemodynamically unstable with signs of bleeding), so urgent gastroscopic hemostasis was done and the patient was transferred to the ICU. Because of persisting bleeding ulcer, on 5th Nov. abdominal surgeon performed: Resectio Billroth II ventriculi mod; and on 10th Nov: Gastrectomia totalis cum oesophagojejuno anastomosis et entero-entero anast. Postoperatively, the patient was extubated. During the night there was a deterioration of patient health condition (clinically hypotension, tachycardia and fall of SpO<sub>2</sub> were registered). Urgent CT of chest presented massive pulmonary embolism on the right side and subsegmental PTE on the left, so low molecular weight heparins were administered (laboratory findings and clinical signs were constantly monitored).

Antibiotics were administered in agreement with the infectologist on the basis of microbiological findings (blood culture: MRSA; tracheal aspirate: Acinetobacter baumannii, wound swab: Escherichia coli). Because of dehiscence the patient underwent surgery on 2nd December: Thoracotomia posterolat. lat. dex. Lysis adhesionem. Oesophagectomia partialis. Double drainage cavi pleurae lat. dex.; and on 5th Dec Tracheotomia chirurgica inferior was performed as prolonged mechanical ventilation was expected.

**Results**

Due to applied complex intensive care treatment, the patient health condition gradually improved: he was „weaned“ from ventilator, and later tracheoflex was removed. Control chest X-ray: regression of intrapulmonary changes and pleural effusions were verified. On 4th January, 2017 the patient was conscious, respiratory and hemodynamically stable, so he was transferred to the Clinic of Abdominal Surgery. Finally on 23rd January he was discharged home.

**Discussion and Conclusion**

We emphasize the importance of complex intensive care treatment, multidisciplinary approach and teamwork during this hospitalization.

Keywords: Key words: bleeding ulcer, PTE, infection

**OP-096****ANESTHETIC IMPLICATIONS FOR INVASIVE MONITORING DURING VIDEO ASSISTED THORACOSCOPIC SURGERY IN CHILDREN - A CASE REPORT**

Donev Lj, Naumovski F, Burmuzoska M, Kartalov A, Kuzmanovska B  
PHI – University Clinic of Anesthesiology, Reanimation and Intensive Care – Skopje

**Introduction**

Video-assisted thoracoscopic surgery (VATS) has been in wide use recently for its many advantages such as minimal invasiveness, marked reduction in post-operative pain and faster recovery rate. The anesthetic management in infants and younger children is more difficult than older children because of the difficulty in one-lung ventilation, carbon dioxide insufflation, hypothermia, and the effect of lateral decubital position<sup>1</sup>. Thoracoscopy in children brings certain respiratory and cardiocirculatory changes, so invasive monitoring during surgery could be essential.

**Material and methods**

We present a case report of 6 year old child who underwent VATS for left sided empyema. We reviewed the literature and the anesthetic technique in our case.

The child underwent VATS for adhaesiolysis and pleural drainage. The procedure was made in GA. For induction we've used 70mg of Propofol, 20mg of Rocuronium and 50mcg of Fentanyl. Sevoflurane was used also. We've cannulated the left radial artery in order to follow the arterial pressure. At the beginning of the procedure BP was 84/52, after what BP became normal. SpO<sub>2</sub> wasn't under 97% during the whole procedure, ETCO<sub>2</sub> was from 49 to 57.

**Discussion**

During the procedure hypoxemia was not present, but hypercarbia and hypotension were noted. Hypoxemia and hypercapnia were the more commonly observed events in infants and younger children compared with older children<sup>2</sup>. The majority of the patients, particularly infants and younger children, needed two-lung ventilation for VATS because of intolerance<sup>3</sup>. The CO<sub>2</sub> insufflation causes hypercarbia and acidosis, but not hypoxemia during VATS in children<sup>4</sup>. Because of the CO<sub>2</sub> insufflation and the possible hemodynamic effects we've used invasive monitoring of the arterial pressure. Because of the changes in arterial CO<sub>2</sub>, oxygen saturation, and ventilation/perfusion mismatch during the procedure respiratory acidosis is expected, so the arterial line could serve as a source for blood sampling for intra and postoperative acido-base status monitoring.

**Conclusion**

Invasive monitoring during VATS in children is an essential anesthetic setting regarding the possible hemodynamic and acido-base disorders.

**References:**

1. .Gentili A, Lima M, De Rose R, Pigna A, Codeluppi V, Baroncini S. Thoracoscopy in children: anaesthesiological implications and case reports. *Minerva Anesthesiol.* 2007;73:161–171.
2. Hyo-Jin Byon,<sup>1</sup> Ji-Won Lee,<sup>1</sup> Jong-Kuk Kim,<sup>2</sup> Jin-Tae Kim <sup>1</sup> Young Tae Kim,<sup>3</sup> Hee-Soo Kim,<sup>1</sup> Sang Chul Lee,<sup>1</sup> and Chong Sung Kim<sup>1</sup> Anesthetic management of video-assisted

thoracoscopic surgery (VATS) in pediatric patients: the issue of safety in infant and younger children Korean J Anesthesiol. 2010 Aug; 59(2): 99–103.

3. McGahren ED, Kern JA, Rodgers BM. Anesthetic techniques for pediatric thoracoscopy. *Ann Thorac Surg.* 1995;60:927–930
4. McHoney M, Corizia L, Eaton S, Kiely EM, Drake DP, Tan HL, et al. Carbon dioxide elimination during laparoscopy in children is age dependent. *J Pediatr Surg.* 2003;38:105–110.

## OP-097

### ENDOTRACHEAL TUBE CUFF PRESSURE AND POSTOPERATIVE PHARYNGOLARYNGEAL DISCOMFORT WITH VARIOUS CUFF INFLATION MEDIA: AIR, SALINE AND ALKALINIZED LIDOCAINE

Nermina Rizvanović

University of Zenica, Faculty of Medicine, Department of Anesthesiology and Intensive Care,  
Cantonal Hospital Zenica, Crkvice 67, 72000 Zenica

#### Aim

The primary outcome was to compare the change of the endotracheal tube cuff pressure (CP) during anesthesia between cuff inflation media: air, saline and alcalinized lidocaine.

The secondary outcomes were to compare the incidence and severity of postoperative pharyngolaryngeal discomfort and postoperative pharyngolaryngeal injuries depend on three cuff inflation media.

#### Methods

The prospective randomized double blinded study was carried out 90 patients undergoing elective surgery and general anesthesia with nitrous oxide. Patients were randomly allocated into 3 groups either cuff inflation media: air (group A), saline (group S) and alkalized lidocaine (group L).

CP was monitored immediateli after cuff inflation (t0) and further at 5 (t1), 15 (t2), 30 (t3), 60 (t4) and 90 (t5) minutes after intubation.

The incidence and intensity of postoperative pharingolaryngeal discomfort (sore throat, hoarseness, dysphagia and cough) were evaluated at 2, 6 and 24 h after extubation, according to a 4 point verbal rating scale.

The incidence and intensity of postoperative pharingolaryngeal injury (erithema, edema, haemathoma, subluxatio/luxatio, granuloma) was evaluated 24 h after extubation, using indirect laryngoscopy examination. Patients were questioned by observer who was blinded to the study protocol. The otorhinolaryngologist who performed indirect laryngoscopy was not involved in the study.

#### Results

The mean CP increased gradually during anesthesia in group A (21,63 – 40,00 cmH<sub>2</sub>O) in group S (19,30-26,52 cmH<sub>2</sub>O) but remaind stabile in group L (17,83 -19,18 cmH<sub>2</sub>O).

All symptoms of pharyngolaryngeal discomfort was the most expressive in group A, than in group S (p<0,05). The highest number patients without symptoms were in group L (76,67%-100%; p<0,05).

Indirect laryngoscopy examination was found 7-28 (23,33-93,33%) patients without morbidity, depends on the part of the pharynx and larynx which was examined, in group A, 19-30 ( 63,33- 100%) patients in group S and 25-30 ( 83,3-100%) patients in group L.



**Conclusion**

Increase of CP during anesthesia is related to incidence and severity of the postoperative pharyngolaryngeal discomfort and pharyngolaryngeal injuries. Alcalinized lidocaine is better cuff inflation medium than saline or air in intention to prevent CP increase and postoperative pharyngolaryngeal adverse events.

**Key words:** cuff pressure, lidocaine, pharyngolaryngeal discomfort, indirect laryngoscopy.

## OP-098

### CAN CLOSTRIDIUM DIFFICILE INFECTION LEAD TO COLONIC PERFORATION?: CASE REPORT

Burmuzoska M, Naumovski F, Kartalov A, Kuzmanovska B, Donev Lj

<sup>1</sup>PHI University Clinic Of Anesthesiology, Reanimation and Intensive care – Skopje

#### Background

Clostridium difficile overgrowth in the colon, mostly is associated with use of broad spectrum antibiotics, especially cephalosporins, penicillins, clindamycin and fluoroquinolones<sup>1</sup>. It manifests as diarrhea, colitis or even toxic megacolon with risk of perforation and peritonitis<sup>3</sup>.

#### Materials and Methods

A 31 years old male was admitted to ICU after a car accident, injured as pedestrian. He had severe head trauma with subarachnoid hemorrhage and cerebral edema, and facial bones fractures. On admission he had Glasgow Coma Scale 8, was intubated and mechanically ventilated. During the first 10 days was sedated with continuous Midazolam and Fentanyl. He was treated with cefalosporins and metronidazole and clindamycin. On the 4<sup>th</sup> day he started being febrile, developing a ventilator associated pneumonia with Acinetobacter species. He was extubated on the 13<sup>th</sup> day, with good reaction to antibiotics and lowering of infective parameters. On 18<sup>th</sup> day started having frequent diarrheas and fevers, coproculture was made and empirically given Vancomycin orally and Metronidazole and Loperamide included in therapy. After 8 days diarrheas were reduced with no fever and improving infective parameters. He was discharged from ICU after 26 days. Five days later he was readmitted with symptoms of acute abdomen, with distension, no peristalsis, hydroaeric levels on X-ray and free fluid in abdominal cavity on CT scan. Total colectomy was made with ileostomy and also chest tube was placed. Perforations of cecum and ascending colon were noted with diffuse stercoral peritonitis. During the ICU hospitalization he was septic, with thrombocytosis, leucosis and mild anemia. On the 16<sup>th</sup> day he was discharged in good condition.

#### Discussion

Approximately 1-3% of patients with Clostridium difficile infection develop fulminant form of colitis with life-threatening complication like toxic megacolon and colonic perforation<sup>3</sup>. Mortality in this group of patients increases up to 60%<sup>2,3</sup>.

#### Conclusion

Early made diagnosis and treatment are crucial. Using antidiarrheal agents like loperamide is questionable, because it may delay clearance of toxins and lead to fulminant form<sup>3</sup>.

#### References:

1. Udayakumar Navaneethan, Preethi GK Venkatesh, Bo Shen. Clostridium infection and inflammatory bowel disease: Understanding the evolving relationship . *World J Gastroenterol* 2010 October 21; 16(39): 4892-4904
2. Longo WE, Mazuski JE, Virgo KS, et al. Outcome after colectomy for Clostridium difficile colitis. *Dis Colon Rectum* 2004 Oct;47 (10):1620-6
3. Clostridium Difficile: A sometimes fatal complication of antibiotic use. *PA-PSRS Patient Safety Advisory*, Vol. 2, No.2—June 2005.

**OP-099****THE CAUDAL BLOCK WITH ANALGOSEDATION IS A GOOD ALTERNATIVE TO GENERAL ANAESTHESIA IN PEDIATRIC SURGERY**

Adisa Šabanović Adilović  
Cantonal Hospital Zenica

**Aim**

To compare intraoperative haemodynamic and respiratory stability and postoperative emergence agitation in children between caudal block with analgo sedation and general endotracheal anaesthesia.

To compare postoperative pain, the first time used analgesic and overall dose of analgesic in the 24 hours postoperatively between two anaesthesia regimens.

**Method and Material**

Randomized double blind study involving 40 children aged 2-6 years undergoing elective surgery. In the group CB, a caudal epidural block was performed with combination of propofol and ketamine as analgo sedation. Conventional general endotracheal anaesthesia were performed in the group OA.

Systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial blood pressure (MBP), heart rate (HR) were observed in following time: t0 - preinduction, t1 - surgical incision, t2 - 10 minutes after incision and t3 - suturing skin.

Emergence agitation was evaluated with the Paediatric Anaesthesia Emergence Delirium score (PAED). Postoperative pain assessment was evaluated using Children's and Infant's Postoperative Pain (CHIPPS). We recorded the first time used analgesic and overall dose of analgesic in the 24 hours postoperatively.

**Results**

In the group CB comparing to the group OA, SBP was significant lower at t2 and t3 study period. DBP was lower at t1, t2 and t3. MBP was significant lower at t1, t2 and t3. HR was significant lower at all study period.

PAED score was statistically significant higher in the group OA comparing to the CB group. CHIPPS score was also higher in the OA group.

In the CB group, the first dose of analgesic was used between 8 and 13 hours postoperatively until in the group OA the first dose was used between 30 minutes and 3 hours postoperatively.

All of the children in the OA group needed the two doses of analgesic in the 24 hours postoperatively and only one child in the CB group.

**Conclusion**

The caudal block with analgo sedation is a good alternative to general anaesthesia in pediatric surgery, providing better haemodynamic condition, less emergence agitation and less postoperative pain.

**Key Words:** children, caudal block, analgo sedation, emergence agitation, postoperative pain.

**OP-100****THE USE OF CLONIDINE IN LAPAROSCOPIC SURGERY**

Merlina Kalaidžija , Lejla Nukić  
Cantonal Hospital Zenica

**Aim**

To provide benefit of  $\alpha_2$  agonists in the laparoscopic surgery. Clonidine is  $\alpha_2$  agonists. It increases the haemodynamic stability during the surgery because its sympatholytic function impacts the decrease of the blood pressure and the heart frequency in all critical stages of anaesthesia. Clonidine has significant impact on the suppression of the surgery stress response, which is evident through the lower levels of the cortisol and glycemia.

**Methods**

60 patients, ASA I and II prepared for the laparoscopic cholecystectomy, divided in two groups. The test group (T) ordered Clonidine, and the second was the controlled group (C). T group, 30 minutes before the surgery Clonidine was introduced into the infusion at 0.02 ml/kg/min, while the group C received the saline solution at the same speed. The therapeutical efficacy was conducted following the basic cardiovascular parameters (systolic-SBP and diastolic-DBP blood pressure and heart frequency-HR) during the critical phases of anaesthesia comparing to the preoperative values. The parameter for the strength of the stress reaction, the increase in cortisol and glycemia were considered in their interoperative levels, comparing to preoperative levels.

The results of preoperative values of the cardiovascular parameters, cortisol and glycemia did not notably differ between T group, that had received the Clonidine, and the C group. However, the intraoperative results showed that the stress response of T group was significantly weaker, followed through the levels of cortisol and the glycemia.

In the T group cortisol measured 679, and in the C group it was 1185 ( $p < 0.001$ ), the glycemia in the T group was 6.5 mmol/l and in the C group it was 8.3 mmol/l ( $p < 0.001$ ). Same was with the basic parameters of the cardiovascular function at intubation. SBP in the T group was 131.10 mmHg, DBP was 87.80 mmHg, and HR was 81.86/min. In the C group the SBP was 167.83 mmHg, the DBP was 106.83 mmHg, and HR was 112.50 ( $p < 0.001$ ).

**Conclusion**

Clonidine increased significantly the hemodynamic stability and decreased the stress response during the surgery.

**Key Words:**  $\alpha_2$  agonists, Clonidine, laparoscopic surgery, stress response, cortisol, glycemia.

---

## OP-101

### REFRACTORY BRADYCARDIA AND HYPOTENSION DURING SPINAL ANESTHESIA - A CASE REPORT

Naumovski E, Burmuzoska M, Kartalov A. PhD MD1, Kuzmanovska B. PhD  
PHI – University Clinic of Anesthesiology, Reanimation and Intensive Care – Skopje

#### Introduction

Spinal anesthesia is a safe anesthetic technique besides the fact that it could be a cause for intraoperative hypotension and bradycardia. Spinal anesthesia affects sympathetic activity, which depends of the block level and compensatory sympathetic activity<sup>1</sup>. Hypotension and bradycardia during spinal anesthesia are common and may relate to severe adverse events such as cardiac arrest or death.

#### Material and methods

This is a case report of 58 year old healthy patient, who underwent hernioplasty under SAB. The patient received 3.6ml of 0.5% Marcaine and 20 mcg Fentanyl at the L3-L4 level. After 30 minutes of the onset of procedure, suddenly he developed bradycardia with 35 bpm and BP fall to 89mmHg systolic pressure. Immediately 1mg of Atropine was given but without any response. Another 1mg of Atropine and 2mg of Effortil were given after what the patient was hemodynamically stabilized till the end of the procedure. No nausea was present. Literature review was done.

#### Discussion

The vasovagal response is characterized by an inappropriate combination of bradycardia and paradoxical vasodilation. During a neuraxial anesthesia-induced sympathectomy, a sudden vagal activation or an acute reduction in sympathetic tone can cause serious vasovagal responses<sup>2</sup>. The incidence of hypotension and bradycardia may increase with increasing age and analgesic level > or = T4 dermatome<sup>3</sup>. Severe bradycardia and cardiac arrest under spinal anesthesia occurs more frequently in healthy, young and vagotonic patients. Worsening bradycardia (HR of 30–60 bpm) often precedes the onset of cardiac arrest during spinal anesthesia; intravenous administration of atropine or ephedrine has been recommended as a treatment for this condition<sup>4</sup>. Reflex cardiovascular depression with vasodilation and bradycardia has been termed vasovagal syncope, the Bezold-Jarisch reflex and neurocardiogenic syncope. Reduced cardiac venous return as well as through affective mechanisms such as pain or fear could lead to severe bradycardia due to vasovagal activation<sup>5</sup>.

#### Conclusion

The common mechanism of bradycardia and hypotension under SAB is sympathetic blockade, decreased venous return, and parasympathetic over-dominance. Intravenous administration of atropine or ephedrine has been recommended as a treatment for this condition.

**References:**

1. Tae Dong Kweon, 1 So Yeon Kim, 1 Sung Ah Cho, 2 Ji Hoon Kim, 2 Young Ran Kang, 2 and Yang-Sik Shin Heart rate variability as a predictor of hypotension after spinal anesthesia in hypertensive patients Korean J Anesthesiol. 2013 Oct; 65(4): 317–321
2. Young-Eun Jang, Sang-Hwan Do, and In-Ae Song Vasovagal cardiac arrest during spinal anesthesia for Cesarean section -A case report Korean J Anesthesiol. 2013 Jan; 64(1): 77–81.
3. Kyokong O, Charuluxananan S, Sripajittichai P, Poomseetong T, Naksin P The incidence and risk factors of hypotension and bradycardia associated with spinal anesthesia. J Med Assoc Thai. 2006 Sep; 89 Suppl 3:S58-64.
4. Dyamanna DN, Bs SK, Zacharia BT Unexpected bradycardia and cardiac arrest under spinal anesthesia: case reports and review of literature. Middle East J Anaesthesiol. 2013 Feb; 22(1):121-5.
5. Kinsella SM, Tuckey JP. Perioperative bradycardia and asystole: relationship to vasovagal syncope and the Bezold-Jarisch reflex. Br J Anaesth. 2001;86:859–868.

## OP-102

### SEALING ETT CUFF PRESSURE IS RELIABLE TECHNIQUE FOR CUFF INFLATION

Marina Juros-Zovko, Vesna Cengic, Haris Pandza  
General Hospital "Prim.dr.Abdulah Nakas" Sarajevo

#### Introduction and aim

Endotracheal tube (ETT) cuff pressure commonly exceeds the recommended range of 20-30 cm H<sub>2</sub>O during anesthesia. It has been shown that continuous lateral wall cuff pressure above 30 cm H<sub>2</sub>O compromises blood flow, and cuff pressure above 50 cm H<sub>2</sub>O completely obstruct the tracheal wall blood flow. It can lead to serious postoperative complication. We presume that inflation of the cuff to a sealing pressure is an easy way to maintain safe and effective ETT cuff pressure.

#### Material and method

In this prospective, observational study were enrolled 56 adult consecutive patients scheduled for general anesthesia. After induction of anesthesia, ETT endotracheal tube size 7 mm and 7.5 mm for female and 8mm for mail were used. The cuff was inflated to prevent air leaks at airway pressure of 20 cm H<sub>2</sub>O. Anesthesiologist assessed tracheal leak by both: audible technique and by observing the difference between inspiratory and expiratory tidal volume. The cuff pressure was measured using manometer (Ambu-gauge) to control sealing pressure.

#### Results

The mean recorded ETT cuff pressure was 27.89 cm H<sub>2</sub>O, range 18-45 cm H<sub>2</sub>O. The recommended ETT cuff pressure within range of 20-30 cm H<sub>2</sub>O had 38 patients or 68%. High cuff pressure (> 30 cm H<sub>2</sub>O) was observed in 12 patients or 21.42 %, and low (<20 ) in 5 patient or 8.92%. There was no statistically significant difference between the mean ETT cuff pressure of the female ( 27.00 cm H<sub>2</sub>O) and male (28.2 cm H<sub>2</sub>O ) patients.

#### Discussion and Conclusion

Many studies suggest that estimation of the cuff pressure by finger palpation of the pilot balloon is an unreliable technique. Instrumental cuff pressure monitoring is the most reliable and safe technique whenever is possible. Our results advocate that ETT sealing cuff pressure assessment is useful technique of inflating the cuff, but require continuous anesthesia team vigilance.

## OP-103

### CHALLENGE AND CHANGES OF THE AIRWAY MANAGEMENT: INCREASING USE OF THE LARYNGEAL MASK AIRWAY IN THE GENERAL HOSPITAL SARAJEVO

Vesna Cengic, Marina Juros-Zovko, Haris Pandza  
General Hospital "Prim.dr.Abdulah Nakas" Sarajevo

#### Background and aim

The laryngeal mask airway (LMA) is an essential enrichment to conventional airway management and an established tool for all anesthesia practitioners.

The primary goal of this study were to determine increasing use of LMA in every day anesthesia practice in our hospital, number of rescue use in situation of failed intubation and determination of complications.

#### Material and methods

This is a retrospective, observational study, which include all adult patients operated under general anesthesia for variety of surgery (abdominal, orthopedic, urology, gynecology) in the period of 7 years. Several data were noted: airway management device, LMA or endotracheal tube (ETT), first LMA placement attempt rate, rescue LMA placement rate, induction agent, mode of ventilation, duration of anesthesia and complications.

#### Results

In total we performed 18 143 general anesthesia in the study period. The primary airway management device was ETT in 12 382 (92.0 %) and LMA in 1466 (8.0 %), increasing from 2.6% in 2006 to 16.2% in 2012. First attempt of LMA placement was 95% and 1.9 % placement of LMA was in the situation of failed intubation, including 10 caesarian deliveries. For anesthesia induction we used mainly propofol (83.2%) and thiopental (16.8%), with or without muscle relaxant for LMA placement, using spontaneous/assisted (56.0%) or controlled ventilation (44.0%). Average duration of anesthesia was 55.7 minutes. No complications were noted.

#### Discussion and Conclusion

The laryngeal mask airway is the most common supraglottic airway device used by the anesthesiologists to manage airway during general anesthesia, considered to be the most significant improvement in the last 20 years in this domain.

Use of LMA in our practice increased dramatically during a study period from 2006-2012, thanks to good experience, without complications. All grades of anesthetists accepted the LMA use routinely and also in the difficult airway scenario.

We conclude that the use of the LMA safely protects the airway and it can be used in all cases where the ETT is not necessary, respecting the basic contraindications.



**OP-104****EVALUATION OF PATIENT SATISFACTION WITH ANESTHETIC MANAGEMENT  
USING THE IOWA SCORING**

L.Pasic; M.Haznadar; M.Muhovic; I.Heric; S. Ridjesic  
Hospital "Dr Safet Mujić" Mostar

**Definition**

Iowa Satisfaction with Anesthesia Scale (ISAS) is a questionnaire that assessed patient satisfaction with anesthesiology treatment. Assessment of patient satisfaction enables monitoring and improving the quality of health care.

**Objectives**

The aim of this study was to evaluate the patient's anesthetic treatment by applying ISAS questionnaire and analyze the factors that could affect the satisfaction of patients: age, gender, type of surgery, type of anesthesia, duration of surgery.

**Materials (subjects) and Methods**

The study was conducted as a prospective study so far included 120 patients, aged 18 to 75 years, undergoing anesthesia for elective and emergency surgery in hospital "Dr Safet Mujić" Mostar during February-April 2017. Satisfaction of the patient's anesthetic treatment was measured by ISAS scale after discharge from the hospital. The questionnaire consisted of 11 statements. For each statement offered the scale estimates of 6 degrees to which respondents correspond by checking the degree to which accepted the claim. The levels of assessment are stated numerical scale of 1-6 (1 Strongly Agree; 6 - strongly disagree).

**Results**

The patients' satisfaction with anesthesia was influenced by age, type of surgery and duration of anesthesia. Patient satisfaction was higher in younger patients and patients undergoing general surgical elective surgery. Type of anesthetic and gender had no effect on patient satisfaction anesthesia. Nausea, vomiting and moderate postoperative pain contributed to the dissatisfaction of patients.

**Conclusion**

The level of patient satisfaction is generally high. Greater satisfaction is present in younger patients undergoing elective surgery.

**Keywords:** patient satisfaction, anesthetic treatment

**OP-105****CORRELATION BETWEEN INCIDENCE OF VENTILATOR ASSOCIATED PNEUMONIA AND TIME OF TRACHEOTOMY IN PATIENTS SUBJECTED TO ABDOMINAL SURGERY**

Maia Tomić Sejrančić\*, Fatima Iljazagić-Halilović  
University Clinical Centre Tuzla, Clinic for anesthesiology and resuscitation

**Introduction**

Ventilator acquired pneumonia (VAP) is defined as nosocomial pneumonia that occurs in patients who are mechanically ventilated longer than 48 h and whose air way is provided by endotracheal tube or endotracheal cannula. Early onset VAP is pneumonia develops in first 96 hours after endotracheal intubation and beginning of mechanical ventilation (MV), late onset VAP develops 96 hours after beginning of MV. Risk factor for VAP are: chronic lounge diseases, operative procedures in thorax and abdomen, use of nasogastric tube, repeated intubations, use of H2 blockers and antacids as well as length of mechanical ventilation.

**Methods and Patients**

Study included patients older than 18 years undergoing abdominal surgery in period from 01.01.2008 to 31.12.2011 in University Clinical Centre Tuzla and who were mechanically ventilated longer than 48 hours. Patients were divided in two groups: first group encountered patients who undergone tracheotomy in period of first nine days after ICU admittance and second patients who undergone tracheotomy after nine days of ICU staying. Using retrospective method medical data in above mentioned period (anamnesis, leukocyte count, C-reactive protein, microbiological findings, chest x-ray) regarding these patients were analyzed.

**Results and Discusion**

In total 163 patients were included in the study, VAP developed in 74 patients (45. 4%), early onset VAP developed in 36 patients (22. 1%) and late in 38 patients (23. 3%). Duration of MV was longer in the patients with VAP. Average time to tracheotomy was 14. 6 days and was between 6 and 25 days. 91.7% patients in whom tracheotomy was preformed nine days after beginning of MV developed VAP versus 40% of patients who developed VAP in whom tracheotomy was performed in first nine days after beginning of MV

**Conclusion**

We concluded that prolonged time of tracheotomy which was preformed between 6 and 25 day in our ICU, increased incidence of VAP.

**Key Words:** VAP, mechanical ventilation, risk factors

## **POSTER PRESENTATIONS**

## PP-001

### METASTASIZED PANCREATIC NEUROENDOCRINE TUMOR IN A YOUNG ADULT: A CASE REPORT

Dženita Ahmetašević\*, Lejla Žilić, Jasmila Jakupović  
University Clinical Centre Tuzla, Department of anesthesiology and reanimatology

#### Introduction

Metastasized pancreatic neuroendocrine tumors are extremely rare malignancies, especially in children and young adults. Therefore, therapeutic options are limited, and few standardized therapy regimens exist.

#### Case Presentation

We present a 34-year-old patient with liver metastases from nonfunctional pancreatic neuroendocrine tumor. The disease is found incidentally in a patient with nonspecific symptoms. Conventional abdominal ultrasound establishes several liver lesions. Subsequent imaging methods and biochemical tests diagnose a primary pancreatic neuroendocrine tumor with distant metastases in liver and colon. Surgical procedure included transanal excision of rectal tumor, left liver lobe metastasectomy and pancreaticoduodenectomy (Whipple procedure). We describe patient's clinical course with special attention brought to anesthesiological approach and her individual therapeutic regimens while bringing together several disciplines of medicine.

#### Discussion

Neuroendocrine tumors (NETs) are rare groups of neoplasm that can commonly metastasize to the liver. There are no unique guidelines for anesthesiological intraoperative management of pancreatic neuroendocrine tumors and this emphasizes importance of case reports. These case reports are the main source of information's used by anesthesiologists until uniform guidelines are reached.

#### Conclusion

In patients such as ours, surgical intervention may be the only treatment that will lead to long-term survival.

**Keywords:** neuroendocrine tumor, pancreas, liver metastases, anesthesiology approach

**PP-002****NAME OF THE WORK: ANALYSIS OF COURSE, TREATMENT AND OUTCOME OF PREGNANCY COMPLICATED BY HELLP SYNDROME AT THE OBSTETRIC AND GYNECOLOGY CLINIC TUZLA DURING THE PERIOD FROM 2015 TO 2017**

Fatima Trebinčević, Senida Keser, Dobrica Simić  
University Clinical Center Tuzla, Prof.dr. Ibrić Pašića, Clinic for anesthesiology and resuscitation

**Introduction**

HELLP syndrome, severe form of preeclampsia clinically characterized by hemolysis, elevated liver enzymes and low platelet count. It was identified in 1982. HELLP syndrome affects about 0,2 to 0,8% of all pregnancies. It is mostly considered to be related to preeclampsia, although it can be separate disease entity.

**Aim**

The purpose of this study is to determine the course and the outcome of pregnancies complicated by HELLP syndrome in women received at the Obstetrics and Gynecology Clinic Tuzla during the period from 2015 to 2017. This study describes incidence, diagnosis, cause of risk, treatment and mode of delivery with the pregnancies complicated by HELLP syndrome.

**Results**

We analyzed seven pregnant women with HELLP syndrome. HELLP syndrome manifested itself in seven pregnant women in the period from 2015 to 2017 with the highest incidence in year 2016. HELLP syndrome represented the most in nulliparous single pregnancies, in pregnant women aged from 31 to 35 years and natural pregnancies. Most pregnant women had an ideal BMI before pregnancy and had no recorded hypertensive disorder. The most frequently mentioned symptoms in hospitalization were headache, nausea, vomit, epigastria pain, fatigue and weakness. The most common comorbidities were preeclampsia, IUGR and chronic placental insufficiency. All HELLP syndrome pregnancies were completed by caesarean section. The gestational age of newborns was < 36 weeks in 90%. In 70% of pregnant women, HELLP syndrome presented itself with mild laboratory abnormalities. There was no statistically significant difference in examining the relationship between the stages of HELLP syndrome and the parameters listed below: maternal age, BMI before pregnancy and gestational age of the child.

**Discussion**

In this analysis, it has been proven that HELLP syndrome complicates pregnancy, childbirth and the puerperium, but the diagnosis and early termination of pregnancy lead to good perinatal outcomes in children of mothers with HELLP syndrome. Despite numerous literature that talks about HELLP syndrome there is a need to do further research on this topic.

**Conclusion**

Early diagnosis is critical because the morbidity and mortality rates associated with the syndrome have been reported to be high.

Keywords: KEY WORDS. HELLP syndrome, complication

## PP-003

### ANESTHESIA FOR BARIATRIC SURGERY AT THE UNIVERSITY CLINIC CENTER TUZLA, OUR EXPERIENCE

Jasmina Ahmetovic Đug, Alma Jahic Campara, Lejla Vikalo  
Clinic of Anesthesiology and Resuscitation at the University Clinic Center Tuzla

#### **Abstract**

Obesity is a chronic disease characterised by excessive increase in fat deposits, and is defined on the basis body mass index (BMI). Obesity is epidemic in the world and in our country. In overweight patients may pathophysiological changes that make it causes difficulties during anesthesia. Obesity is associated with numerous pathological conditions (diseases of the respiratory system, cardiovascular, endocrine and metabolic disorders, etc.), leading to high rates of mortality and morbidity, which affects the quality and length of hospital stay. A multidisciplinary approach is the key to good treatment outcomes and reduced percentage of complications. The anesthesiologist plays a key role throughout the perioperative period (pre, intra-operative, time stay in the intensive care unit). Anesthesia preoperative evaluation of comorbid be carried out with particular emphasis on pre-existing disorders of heart and lung function (eg, cardiomyopathy, respiratory dysfunction). General anesthesia in obese patients is challenging and demanding. The pharmacokinetics and pharmacodynamics of drugs has changed in a population of patients with obesity. We briefly transferred anesthetic experience gained from the 2011 year, since the introduction of bariatric procedures so far. Obese patients are at a disadvantage during anesthesia, due to the surgical technique performed by gravity and the risk of complications increases. Obesity increases the risk of cardiovascular complications and pulmonary, the anesthesiologist is faced with a much more of a problem when the patient is overweight. The goal of this study is to understand the pathophysiology of obesity, as well as the implications for anesthesia in the context of bariatric operations, as the results would improve.

**Keywords:** obesity, BMI, bariatrics, anesthesia complications

**PP-004****VENTILATOR ASSOCIATED PNEUMONIA IN SURGICAL PATIENTS**

Mujkic Lejla, Pojskic Aida, Smajic Jasmina  
University Clinical Center Tuzla, Prof.dr. Ibre Pasica,  
Clinic for anesthesiology and resuscitation

**Introduction**

Infections caused during treatment in hospital (hospital or nosocomial infection) are a significant health and financial problem in almost all hospitals in the world. Pneumonia is the second most common nosocomial infection and the leading cause of death. The most frequent complications in the intensive care unit is associated with the ventilator-associated pneumonia (VAP).

**Aim**

To investigate incidence of VAP in Intensive care unit (ICU) in patients after abdominal surgery.

**Results**

We assessed the patients after abdominal surgery treated in intensive care department of the University Clinical Center in Tuzla, who required mechanical ventilation. Independent predictors for the development of pneumonia associated with mechanical ventilation are: values WBC count, sedimentation, C-reactive protein, the radiology of lung/heart (preoperative and the first postoperative radiology of lung/heart in describing infiltration or progression of existing infiltration while the patient is on the program mechanical ventilation and it takes a period of 48 to 72 hours of placing the patient on the program mechanical ventilation), and microbiological analysis. Patients who developed pneumonia had prolonged mechanical ventilation and had a longer stay in the intensive care units.

**Discussion**

VAP occurs frequently and is associated with significant morbidity in critically ill patients. The major goals of VAP management are early, appropriate antibiotics in adequate doses followed by de-escalation based on microbiological culture results and the clinical response of the patient.

**Conclusion**

Based on the results we will propose the introduction of protocols and measures to act on preventable risk factors for the sake of reduction in the incidence of pneumonia associated with mechanical ventilation in order to prevent complications and reduce mortality in patients in Intensive Care Units.

**Keywords:** Keywords: mechanical ventilation, pneumonia, ventilator associated pneumonia

## PP-005

### THROMBOCYTOPENIA IN PREGNANCY

S.Salkić, S.Keser, E.Buro, E.Mešanović  
Clinic for Anesthesiology and Reanimation KC Tuzla

#### Introduction

Thrombocytopenia affects 8-10% of all pregnant women, and it is the second most common hematological diseases. thrombocytopenia is condition in which platelet are less of 100,000.

There are many potential causes for thrombocytopenia in pregnancy, some of these are unique to pregnancy, whereas the others have an increased incidence in pregnancy. Thrombocytopenia may occur as an isolated disorder or as part of other diseases. Approximately 75% of these cases are gestational thrombocytopenia and their symptoms disappears within months after delivery, and their laboratory tests are normalised.

#### Material and Methods

Retrospectively we have analysed history of diseases with the patients who have had heavy thrombocytopenia and had delivery in the GAK Tuzla in the period 2013-2016.

#### Results

In the period of 2013-2016 in the GAK Tuzla have been 15331 patients who have had delivery, and at 11 of them we detected heavy thrombocytopenia. All patients had platelets below 50.000, and the lowest value was 17.000, without clinical manifestations.

From these patients we had taken personally and family anamnesis, and from laboratory tests we controled total blood count, a blood smear, liver blood tests, renal function and make tests of CMV (to be rule out secondary thrombocytopenia). For each tests reference values were established. In consultation with the hematologist, we involved them corticosteroid therapy, and every day we controlled platelets, which have been in increase. All patients had delivery by cesarean section in general aneesthesia. During and after surgery, there wasn't need for giving platelets or other blood products. After surgery, platelets were increased for 10 patients, for one patient we were hematologist consulted, and 4th day after surgery for her had been done marrow puncture, and diagnosed acut leucemia.

#### Conclusion

In Thrombocytopenia is not a significant predictor of adverse perinatal outcomes

**Keywords:** trombocytopenia, pregnancy



**PP-006****EPIDURAL ANALGESIA AND ANESTHESIA FOR HERNIOPLASTY IN ASA II/III PATIENTS –  
A CASE REPORT**

Naumovski F, Burmuzoska M, Kartalov A, Kuzmanovska B  
PHI – University Clinic of Anesthesiology, Reanimation and Intensive Care – Skopje

**Introduction**

Inguinal hernia is a frequent condition in elder patients which needs surgical treatment . Most of the patients who are >65 years of age have comorbidities which makes them ASA II/III patients who are not fit to undergo general anesthesia. Hence SAB could cause more profound hemodynamic instability in ASA II/III patients, hernioplasty could be done in epidural anesthesia as a safer technique. Aim of this study is to present an epidural anesthesia technique as a safe anesthetic technique which provides hemodynamic stability in ASA II/III patients.

**Material and methods**

We present a case report of 68 year old male with left sided Inguinal hernia with chronic myocardopathy who underwent hernioplasty in epidural anesthesia as a single anesthetic technique. From previous medical history the patient has Hypertension and CMP with reduced ejection fraction. We performed an epidural block at L1-L2 level. The epidural catheter was tested with 2ml Bupivacaine 0.5%. Test was negative. One hour before surgery he received 8ml of Bupivacaine 0.25% divided in 4 doses on every 15min. Intraoperatively the patient received 8ml Bupivacaine 0.25% in 2 doses. The patient received 50mcg of Fentanyl intravenously. The surgery has lasted 95 min and the patient was pain free and haemodynamically stable during the procedure.

**Discussion**

The advantages of epidural anaesthesia include less hypotension, titratable local anaesthetics and better haemodynamic stability in patients with heart diseases or with a high risk<sup>1</sup> Lumbar epidural anesthesia do not depresses phasic and tonic dynamic modulation of the cardiac cycle by the vagal nerve<sup>2</sup>. Preemptive analgesia with local anesthetic causes significant reduction in pain perception, request for an analgesic and hospital stay<sup>3</sup>. Neuraxial blockade reduces postoperative mortality and other serious complications also. Epidural anesthesia results in less urinary retention and earlier mobility than spinal anesthesia in men undergoing inguinal hernia repair.

**Conclusion**

We can conclude that epidural anesthesia could be a suitable and safe anesthetic technique for hernia repair in elder ASA II/III patients providing good hemodynamic stability.

**References**

1. Erdine S. Rejyonel Anestezi Nobel Tip Kitabevleri. 2005:135–52.
2. Tanaka M, Goyagi T, Kimura T, Nishikawa T. The effects of cervical and lumbar epidural anesthesia on heart rate variability and spontaneous sequence baroreflex sensitivity. *Anesth Analg*. 2004;99:924–9.
3. Saeed M, Andrabi WI, Rabbani S, et al. The impact of preemptive ropivacaine in inguinal hernioplasty – a randomized controlled trial. *Int J Surg*. 2015;13:76–79.

**PP-007****LARYNGOSPASM DURING GASTROENDOSCOPY: CASE REPORT**

Donev Lj, Burmuzoska M, Naumovski F, Kartalov A, Kuzmanovska B  
PHI University Clinic Of Anesthesiology, Reanimation and Intensive care – Skopje

**Introduction**

Gastrointestinal endoscopic procedures are relatively safe. However, these procedures have been shown to cause various effects on cardiorespiratory systems<sup>1</sup>. Laryngospasm is a reflex closure or spasm of the glottic muscles, including the false and true vocal cords. Airway management is one of the most important aspects of patient care for anesthesiologist.

**Materials and Methods**

A 37 years old female patient (68kg weight) was admitted for gastroendoscopy with ambulatory anesthesia. Routine examination, ECG and medical history were taken, showing normal chest sounds, sinus rhythm and no history of allergies. History included 10 years of impaired renal function with hypertension regulated with antihypertensive and diuretic medications (Losartan, Hydrochlorothiazide, Spironolactone and Furosemide). Before the intervention monitoring, Oxygen therapy via nasal cannula and intravenous line were placed. Ambulatory anesthesia with Midazolam, Fentanyl and Propofol was administered. Few moments after starting the endoscopy, harsh sounds were noted with difficulty of breathing and lowering the oxygen saturation to 80%. The procedure was interrupted immediately and suspicion of laryngospasm was made. Sixty mg of Lidocaine were given and all the symptoms retreated.

**Discussion**

Sedation-related complications are relatively common, in particular cardiorespiratory ones, with incidence of 50% of all<sup>1, 3</sup>. Laryngospasm is rare complication, mostly during inducing the endoscope<sup>2</sup>. Proper management is very important, using 100% oxygen, jaw thrust, placing oropharyngeal airway and medications like Lidocaine, Magnesium and Dexamethasone.

**Conclusion**

Providing anesthesia for GI endoscopy is more unique than many other subspecialties in anesthesia<sup>3</sup>. The goal of procedural sedation is the safe and effective control of pain and anxiety, as well as to provide an appropriate degree of memory loss or decreased awareness. Sedation-related complications may be severe if physicians do not detect and treat patients earlier<sup>1</sup>.

**References**

4. Somchai Amorniyotin; Sedation-related complications in gastrointestinal Endoscopy; *World J Gastrointest Endosc* 2013 November 16; 5(11): 527-533
5. Annery G. Garcia-Marcinkiewicz, MD, David W. Barbara, MD, Prasad G. Iyer, MD, Daniel A. Diedrich, MD; Endoscopic epiglottic mucosal banding as a cause of laryngospasm; *Can J Anesth/J Can Anesth* (2013) 60:1020–1021
6. Basavana Goudra and Preet Mohinder Singh; Anesthesia for gastrointestinal endoscopy: A subspecialty in evolution?; *Saudi J Anaesth*. 2015 Jul-Sep; 9(3): 237–238.

**PP-008****CASE REPORT****ICU MANAGEMENT OF THE BIZARRE TRAUMA – FALL FROM A HEIGHT  
ONTO THE BROOM HANDLE**

Selimović Jašarević J, Pištoljević D, Jahić Čampara A  
Clinic of Anesthesiology and Resuscitation, University Clinical Center Tuzla , Bosnia nad  
Herzegovina

**Introduction**

Unintentional falls from a low level heights are common cause of traumatic brain injuries, bone fractures and internal injuries of various degrees, but when combined with major impalement injuries, if not fatal, they lead to prolonged stay in the ICU with all expected complications.

**Methods**

We herein report a 60-year-old man who fell from the 3 meter height onto broom handle, which was removed before coming to the clinic, had multi-organ injuries, and was successfully rescued.

**Results**

The man sustained multi-organ injuries, such as brain injuries, multiple fractures, contusive internal injuries, penetrative and perforative injuries of the rectum, bladder and intestines followed by hemoperitoneum, diffuse acute peritonitis and penetration of the right toracoabdominal tegmentum. His condition deteriorated due to sepsis, acute renal failure and heart failure with consequent malignant cardiac arrhythmias, but successfully recovered after 32-days-long ICU treatment.

**Conclusion**

This case illustrates that a man who live through a bizarre trauma, with the help of experienced anesthesiologists who were able to recognize and treat early all the injuries and complications, with a multidisciplinary approach and the help of other medical specialists, can be rescued.

**Key Words:** Fall from a height; impalement injury; trauma; ICU; sepsis

## PP-009

### OUR EXPERIENCE OF AWAKE FIBEROPTIC INTUBATION IN A PATIENT WITH MORQUIO SYNDROME: CASE REPORT

Murat Izgi, Ozgur Canbay, Pinar Ozdemir Yasar, Abdullah Yalcin,

A. Gulsun Pamuk, Fatma Saricaoglu

Hacettepe University School of Medicine, Department of Anesthesiology and Reanimation,  
Ankara, TURKEY

#### Introduction

Morquio Syndrome is an autosomal recessive skeletal dysplasia characterized with a disorder of mucopolysaccharide metabolism. Unstable keratan sulphate accumulates in cells due to enzyme deficiency, leading to severe bone deformities, upper airway problems, lung, heart and liver abnormalities, craniofacial-ocular anomalies. In addition to odontoid hypoplasia, instability and subluxation of the neck joint, lower extremity and rib cage deformities are also seen. In this case report, anesthesia techniques which we applied in a patient with Morquio Syndrome planned bilateral correction osteotomy have been discussed especially through "awake nasal fiberoptic intubation" application.

#### Case

A 21-years-old patient with Morquio Syndrome with a body weight of 24 kg was admitted to clinic of orthopedics with bilateral correction osteotomy plan. Pre-anesthesia evaluation revealed that the height, weight, and neurological and mental development of the patient were slightly lower according to age. The patient had a short neck, chest deformities and scoliosis that can cause difficulty in airway management. In the evaluation of airway, it was seen that the Mallampati score was III, mouth opening rate was 4 cm, neck was short and, as well as flexion was restricted but extension was normal. It was planned to perform "awake nasal fiberoptic intubation" to the patient evaluated as difficult ventilation and difficult intubation. Nasal endotracheal intubation was performed with an adult fiberoptic bronchoscope lodged with 6,5 millimeters internal diameter cuffed flexible endotracheal tube, and the location of the tube was checked with the fiberoptic. After end-tidal CO<sub>2</sub> was seen on the monitor and the lungs were auscultated bilaterally, the endotracheal tube left 1.5 cm proximal to carina, then nasally sutured and fixed firmly. Anesthesia was maintained by total intravenous anesthesia with propofol infusion. At the end of the operation, the muscle relaxant was reversed with sugammadex. We ensured that the patient's muscle tonus was totally reversed but for the possibility of emergency re-intubation, the patient was extubated by the help of an exchanger catheter. Following sufficient verbal responds, the exchanger catheter was taken out. The patient was admitted to the PACU for 24 hours and then transported to orthopedia ward.

#### Discussion

Airway evaluation is very important in these patients. Half of the patients reported difficulty with direct laryngoscopy and tracheal intubation. Normally smaller endotracheal tubes may be needed. Cervical spine deformities are also common in these patients and neck movements should be minimized during intubation. We preferred to perform "awake nasal fiberoptic intubation" in this patient who has anticipated difficult airway and we also had prepared for difficult extubation.

**Conclusion**

Cervical spine, pulmonary and cardiac abnormalities of Morquio Syndrome brings the high risk of anesthesia, and the "awake fiberoptic intubation" in this group of patient which has anticipated difficult airway, may be safely chosen by experienced anesthesiologists.

**PP-010****COMBINATION WITH VIDEOLARYNGOSCOPE AND GUM ELASTIC BOUGIE IN UNPREDICTABLE DIFFICULT INTUBATION**

Seda Ilhan, Handan Güleç, Esra Özayar, Aysun Kurtay, Berrin Koşar, Eyup Horasanli  
Keçiören Eğitim Araştırma Hastanesi

Although many tests are available for predicting the difficult airway and difficult endotracheal intubation (ETE) in preoperative evaluation, unpredictable difficult airway and / or difficult ETE might be seen in some of the patients.

A 55-year-old male patient (weighing 80 kg, 175 cm long) was scheduled for retrograde intrarenal surgery (RIRS) due to renal pelvic kidney stones. Preoperative anesthesia examination had no specific features. As well as maallampati score, third tiromental and sternomental distances were normal. Induction was performed with 3mg / kg Tiopental, 1mcg / kg fentanyl and 0.6mg / kg Rocuronium. Two minutes later, the ETE experiment failed three times. The Cormack evaluation was rated as 3. Because the video laryngoscope (VLS) can only see the bottom of the glottic opening, the ETE gauges were performed with the help of elastic spark plugs. Finally the maintenance treatment was performed and postoperative anesthesia was terminated. After weaning, anesthesia recovery period took so long. Bronchodilator treatment was given to the patient who had abnormal breathing sounds. During the first few hours of service, the oxygen saturation dropped to 85. Saturation improved with 2lt/min O<sub>2</sub>. First day the patient had a moderate sore throat. On the first postoperative day, the patient was discharged with the recommendations.

We know that 1-4% of difficult intubation cases are unpredictable ETE. Congenital causes, such as acquired or anatomical variation or tracheal stricture, are accepted for difficult ETE reasons. It should not be forgotten that if the cormack score, which is done by Mcintosh laryngoscopy, is 3-4 on the first assessment, it may be a difficult intubation and require additional equipment.

In such circumstances, mucosal bleeding, increased secretion, and ventilation difficulties may occur, and oxygen saturation may be reduced. One of the difficult intubation devices may not be sufficient by itself. Many clinicians combine fiberoptic bronchoscopy (FOB) with other equipment such as Mcintosh + FOB, VLS + FOB, Mcintosh + Gam elastic spark plugs. The Mcintosh + FOB combination is the gold standard for patients with Cormack values 3-4.

**References:**

1. Abdulla S<sup>1</sup>, Abdulla S<sup>2</sup>, Schwemm KP<sup>3</sup>, Eckhardt R<sup>2</sup>, Abdulla W<sup>4</sup> Making endotracheal intubation easy and successful, particularly in unexpected difficult airway Int J Crit Illn Inj Sci. 2014 Jan;4(1):24-8
2. Sgalambro F Unexpected difficult intubation: many algorithms, many devices, many techniques, the best choice would be not having to choose. Is it utopian? Br J Anaesth. 2016 Nov;117(5):672-674
3. Francesco Sgalambro\*, Angelo Denaro\*, Mario Guglielmo\*, Maria Tiziana Santonocito\*, Chiara Maria Celestre\*\*, Caterina Maria Grillo\*\*\*, Luigi Maiolino\*\*\*, Calogero Grillo\* An algorithm for easy intubation. combined use of the macintosh laryngoscope and flexible bronchoscope in unexpected difficult intubation Acta Medica Mediterranea, 2013, 29: 437
4. Lenhardt R, Burkhart Mt, Brock Gn, Kanchi-Kandadai S, Sharma R, Akça O Is Video Laryngoscope-Assisted Flexible Tracescopeintubation Feasible For Patients With Predicted Difficult Airway. A Prospective , Randomized Clinical Trial Can J Anaesth 2007;54:492-3

**PP-011****AORTIC INJURY DURING LAPAROSCOPIC ORCHIECTOMY IN PEDIATRIC PATIENT:  
CASE REPORT**

Gülsen Keskin\*, Mine Akın\*, Yeşim Şenaylı\*, Can İhsan Öztörün\*\*

\*Department of Anesthesiology, Ankara Child Health and Diseases Hematology and Oncology Education and Research Hospital, Ankara, Turkey.

\*\*Department of Pediatric Surgery, Ankara Child Health and Diseases Hematology and Oncology Education and Research Hospital, Ankara, Turkey.

**Case Report**

Although laparoscopic surgeries are becoming prevalent as less invasive method, their complications can be life-threatening. Depending on the type of surgery and the experience of the surgeon, complication ratio varies between 0.8% and 13.6%. Entrance to the peritoneal cavity is the most important stage of laparoscopy. Main artery injuries during entrance trocar, which are more common, take second place among causes of death due to laparoscopy (6.37-10.81%). Significant bleeding during laparoscopic surgery might not be noticed easily because the visible area is limited.

Difficulties in laparoscopy anesthesia are pneumoperitoneum, patient position, long operative period, intestinal or vascular injury and estimating blood loss .

In the literature, there are a few publications related with the main vessel injuries that occur during laparoscopic trocar entrance in pediatric patients. In this case report, anesthetic and surgical managements of aortic injury during the first trocar entry in a 14-year-old child, who was going to be laparoscopic orchiectomy, were discussed in the light of the literature.

An open laparoscopic approach have been used in our patient, but abdominal aortic injury occurred when attempting to place a pyramidal trocar without adequately lifting the abdominal wall with dressing clamps. Sudden fall in arterial pressure and pale appearance by inspection were noticed, median laparotomy was performed without delay. Emergency blood sample examination yielded Hb 7.1 gr / dl, Htc 21.4%. (Hb was 12.5 g/dl and Htc was % 39.6, preoperatively). Intraoperatively, total of 1500 cc of 0.9% NaCl, 1000 cc of Ringer Lactate, 1000 cc of colloid solution and 2 units of erythrocyte suspension were given.

Aortic injury in our case did not cause mortality, but intensive care was needed and the length of hospital stay have been prolonged.

As a result, if there is sudden deterioration of hemodynamic during trocar entry should fetch in to mind major vessel injury. For rapid bleeding control, laparotomy should be performed without delay. We are convinced, beside the experience of the surgical team, coordination of the surgical team with the anesthesia team, who has experience of laparoscopy, enables to intervene complications in a timely manner and reduces the morbidity - mortality rates.

## PP-012

### SEVOFLURANE INDUCTION IN A BRUGADA SYNDROME PATIENT (CASE REPORT)

Tuba Berra Saritaş, Elif Buyukerkmen, Remziye Sivaci,  
Afyon Kocatepe University, Department Of Anesthesiology And Reanimation/ Turkey

#### Purpose

Brugada Syndrome is a hereditary cardiac problem that affects 5-6000/10000 worldwide and it is an important cause of sudden death relatively in young population. It is characterized by a different electrocardiogram pattern high-coved ST segment in >2 anteroseptal precordial leads. The syndrome can be provoked by anesthetic drugs and physiological changes.

It is aimed to present 17 years old male undergoing emergent acute appendicitis case with Brugada Syndrome.

#### Case

Seventeen years old male patient admitted to the pediatric surgery department with nausea and abdominal pain. He was diagnosed as acute appendicitis according to physical examination and ultrasound findings and scheduled for surgery. Pre-anesthetic assessment was conducted. The patient has Brugada Syndrome type 3 as known for 2 years. But he was asymptomatic and his echocardiography is normal and under control of hydroquinidine therapy 300 mg two times in a day. His family story had no feature. His ECG revealed normal sinus rhythm with a heart rate of 79. The pediatric cardiology department consulted him. The pediatric cardiologist mentioned about the severity of ventricular arrhythmias and pointed for defibrillation.

His written approval of anesthesia, surgery or publication in a journal article provided from his parents. He was monitored with three leads ECG, a pulse oximeter and non-invasive blood pressure measurement. External defibrillator is maintained in the operation room for cardioversion if required. His hemodynamic parameters were stable. For anesthetic induction 2 mg midazolam, 100 mcg fentanyl, 50mg rocuronium and %8 sevoflurane concentration via mask was applied and for maintenance %2 sevoflurane in %50-%50 oxygen-medical air mixture used. Intravenous paracetamol was used for postoperative pain. 2mg/kg sugammadex was administered intravenously to reverse neuromuscular blockade. No significant difference was observed in ECG and vital signs after sugammadex administration in the postoperative period. He was observed in intensive care unit for 24 hours, 2 days later he was discharged to home.

#### Conclusion

Brugada Syndrome is rare but may be lethal with most of the general anesthetic agents. Inhalational anesthesia may be good and safe choice for induction and maintenance of general anesthesia in suitable cases.



**PP-013****OUR EXPERIENCES DURING LAPAROSCOPIC SLEEVE GASTRECTOMY IN SAKARYA TRAINING AND RESEARCH HOSPITAL: FIRST 120 CASES**

Tugce Ebiloglu\*, Umit Karadeniz\*, Burak Kaya\*, Mehmet Aziret\*\*, Kerem Karaman\*\*

\*. Department of Anesthesiology and Reanimation, Sakarya University Training and Research Hospital, Sakarya, Turkey.

\*\* . Department of General Surgery, Sakarya University Training and Research Hospital, Sakarya, Turkey.

**Introduction – Aim**

4 Sleeve gastrectomy is a safe, effective and increasingly performed procedure for morbid obesity. Obese patients have various comorbidities and are at increased risk of perioperative complications. In this study, we presented our experience of anesthesia in patients who underwent laparoscopic sleeve gastrectomy<sup>(1)</sup>

**Material and Methods**

120 consecutive morbidly obese patients who underwent SG between October 2015 and February 2017 in Sakarya University Teaching and Research Hospital were retrospectively analyzed. Demographic characteristics, BMI, duration of anesthesia and operation, hemodynamic data, drug applications and complications were recorded.

**Results**

120 patients, 100 females, 20 males. The mean age was 37 (16-61) years, the mean weight was 126 kg, and the mean BMI was 46.1 kg/m<sup>2</sup>. After pre-oxygenation, anesthetic induction was titrated with propofol 2 mg/LBW, rocuronium 0.6-0.8 mg/LBW, fentanyl 1 mcg/LBW and lidocaine. 50% oxygen-air mixture, 2% sevoflurane and 0.05-0.15 mcg/LBW/min remifentanyl infusion were administered. Neither failed ventilation nor intubation was seen. During the operation, systolic blood pressure was kept below 120 mmHg to prevent bleeding from the staple line. Peripheral arterial oxygen saturation was not decreased below 92% during the operation with lung protective ventilation. Tramadol, paracetamol and ondansetron were applied to prevent postoperative pain and nausea. The mean duration of anesthesia was 100 minutes. Neuromuscular blockages were reversed with 2 mg/kg sugammadex and patients were taken to the postoperative recovery room. No hemodynamic or respiratory complications occurred in any of the patients during postoperative period, but only one patient needed blood transfusion due to bleeding.

**Discussion and Conclusion**

Laparoscopic sleeve gastrectomy is one of the most prominent procedures in bariatric surgery due to the increasing success and decreasing perioperative complications in surgical methods.

**References:**

1. Journal of Clinical Anesthesia (2016) 34, 85–90

**PP-014****LOCAL ANESTHESIA TOXICITY DURING THE INFRACLAVICULAR BRACHIAL PLEXUS BLOCK**

Sevtap Cemaloglu, Savas Altinsoy, Julide Ergil, Derya Ozkan  
Diskapi Yildirim Beyazit Training and Research Hospital, Anesthesiology and Reanimation  
Clinics, Ankara, Turkey

**Introduction**

Local anesthetic (LA) toxicity is the most important complication of peripheral nerve block (PNB) techniques. Intravascular administration and using over safety dose range of LA are the most common cause of toxicity. We aimed to present a LA toxicity case that occurred during infraclavicular brachial plexus block (IBPB).

**Case Report**

A 43-year-old male patient weighing 90 kg, who was planned for operation due to a tissue defect on third finger. Standard monitoring, sterile conditions were provided for the IBPB. The inferolateral of the subclavian artery (SA) was targeted with a 85 mm peripheral nerve stimulator needle with ultrasound guidance. A local anesthetic mixture which was prepared with 87.5 mg of 0.5 % bupivacaine, 50 mg of 2 % lidocaine, 5 mL of saline. When the needle tip was seen near the posterior cord 2 mL LA was given after aspiration. During the intermittent aspiration blood was seen in syringe and LA infiltration was terminated. The blinking motion and slowing down in speech was occurred in the patient. It was realized that LA (approximately 10 mg 0.5 % bupivacaine) was performed intravascular accidentally. So, we considered that the needle moved during injection. The patient was ventilated via mask ventilation. The level of consciousness had become normal in a few minutes. Midazolam 2 mg and 20 % intralipid solution 350 mL was given intravenously. While vital parameters were stable, the patient was operated under general anesthesia. He was discharged postoperatively at 24 hours without complication.

**Discussion and Conclusion**

In the PNB, the nerve adjacent to the vessels can cause intravascular injection of drugs accidentally. In order to prevent this, it is recommended that slow, intermittent drug administration, aspiration and using low concentration of epinephrine in LA solutions. We performed slow, intermittent aspiration during the procedure. Our practice enabled us to recognize that LA was injected to intravascular component and we terminate the injection. So, it prevented the occurrence of more serious clinical findings by applying the necessary treatment.

**PP-015****IMPLEMENTATION OF INFRACLAVICULAR BRACHIAL PLEXUS BLOCK IN TWO CANNABIS ADDICTED PATIENTS**

Sevtap Cemaloglu, Oya Kale, Derya Ozkan, Julide Ergil, Haluk Gumus  
Diskapi Yildirim Beyazit Training and Research Hospital, Anesthesiology and Reanimation  
Clinics, Ankara, Turkey

**Introduction**

Cannabis (marijuana) is the most commonly narcotic which is used in the young population. Oral pharyngitis, acute upper airway edema and obstruction can be seen in cannabis users under general anesthesia. Cannabis potentiates the effects of thiopental and volatile agents if it was used before surgery. Cross-tolerance is associated with alcohol, barbiturate, benzodiazepine, opioid and phenothiazines. We presented two patients who became addicted to cannabis and received infraclavicular brachial plexus block (IBPB).

**Case Report**

Case number one is a 20-year-old male patient who was addicted to cannabis for 5 years and was scheduled for intersection extensor tendon repair. Case number two is a 29-year-old patient who was addicted cannabis, had to have emergency surgery due to distal radius fracture. Both of them was performed IBPB with ultrasound guidance and peripheral nerve stimulator. With standard monitoring and appropriate position, IBPB was performed with a local anesthetic mixture prepared in a total of 25 mL (87.5 mg 0.5 % bupivacaine, 50 mg 2 % lidocaine, 5 mL saline). After sensory and motor block occurred, in both patients, 0.5 mg midazolam (IV) and 2 mg midazolam (IV) followed by 2 mg/kg/h propofol infusion were administered respectively due to agitation. Following successful surgeries lasted approximately 1-1,5 hours, both patients were transferred to the related services.

**Discussion and Conclusion**

Cannabis users had symptoms such as headache, anxiety, drowsiness, depression, dysarthria, ataxia, hallucinations and delirium. Additionally, they are prone to tachycardia due to increased sympathetic activity. Thus ketamine, pancuronium, atropine and epinephrine should be avoided. In conclusion, instead of general anesthesia regional anesthesia is a preferable choice in cannabis addicted patients due to sympathetic blockade.

**PP-016****THE EFFECTS OF INTRAOPERATIVE FLUID THERAPY ON  
POSTOPERATIVE ELECTROLYTE LEVELS OF PATIENTS UNDERGOING  
PANCREATODUODENECTOMY: A RETROSPECTIVE REVIEW**

Almila Gulsun Pamuk, Murat Izgi, , Erkan Erkmen, Nalan Celebi  
Hacettepe University School of Medicine, Department of Anesthesiology and Intensive Care,  
Ankara, Turkey

**Aim**

The aim of this study was to investigate the amount and type of fluid given during pancreaticoduodenectomy operations and its effects on postoperative electrolyte levels and renal function tests.

**Material and methods**

Following ethical committee approval, files of 120 patients who had undergone pancreaticoduodenectomy were investigated. The effects of the type and amount of fluid administered intraoperatively on postoperative Na, Cl, K, BUN, creatinine and glucose levels were evaluated. The data of patients was compared by using t-test, or Kruskal-Wallis and Wilcoxon tests according to normal distribution (Kolmogorov-Smirnow), and values of  $p < 0.05$  were accepted as statistically significant.

**Results**

We observed that Isolyte-S, a balanced electrolyte solution, had been administered to all patients throughout the intraoperative period and according to hemodynamic parameters, colloid solutions (HES 130/0.4, fresh frozen plasma) and packed red blood cells had been given. When we compared preoperative and postoperative renal function tests and electrolyte levels, there was a statistically significant increase in Na, K and BUN levels but no difference in creatinine and Cl levels. While there was an increase in Na and K levels in patients who did not receive any HES 130/0.4 solution, we observed a significant increase in Cl (1.2 mmol/L) Na, K, BUN and creatinine levels in patients who had been given 1000 ml HES 130/0.4. Throughout the study all electrolyte increases were minimal, especially increases in Na were not clinically significant.

**Discussion**

Although non-liberal fluid management is now the standard procedure, type and composition of ideal fluid therapy is still under debate. According to findings obtained in our study, we concluded that the use of Isolyte-S and similar balanced electrolyte solutions during long operations with a significant amount of insensible fluid loss like pancreaticoduodenectomy does not have negative effects on postoperative electrolyte levels and renal function tests. Nevertheless, future studies with standardization in timing of checking blood samples are needed and it would be useful to analyze arterial blood gases, electrolytes reflecting renal function in the short term like phosphorus and standardize the amount and type of fluids given during the postoperative period.

**Keywords:** Pancreaticoduodenectomy, Intraoperative Fluid Therapy, Postoperative Electrolytes and Renal Function

**PP-017****PERIOPERATIVE COMMUNICATION BETWEEN SURGEONS AND ANESTHESIOLOGISTS**

Sibel Catalca, Jülide Ergil, Zeynep Koç, Derya Özkan, M. Murat Sayin  
Department of Anesthesiology and Reanimation, Ministry of Health Diskapi Yildirim Beyazit  
Training and Research Hospital, Ankara, Turkey

**Introduction-Aim**

Professional relationships between anesthesiologists and surgeons, have been identified as a major source of conflict at the work place. We aimed to investigate causes of conflict between the surgeons and anesthesiologists in a single center in Turkey. The aim of this study was to evaluate satisfaction and search for dissatisfaction points in our practice. This is the first study, to our knowledge, that investigate perioperatif surgeon and anesthesiologist communication.

**Material and Methods**

A total of 156 questionnaire forms were distributed and one hundred participants responded (response rate 66%) which includes 21 academic education person (21%), 31 specialist surgeon and (31%) and 48 surgeon assistant (48%).

**Results**

We asked surgeons 'Do you find the anesthesia clinic adequate for technical equipment (materials, technological devices)?'. %77 said 'yes' and %33 said 'no'. We asked 'Does the work of specific anesthesiologists in your clinic's special operation rooms contribute positively to the patient and the working order?' %83 said 'yes' and %17 said 'no'. We asked 'How often do you seek support from the anesthesiologist for postoperative pain assessment and management?' and %68 said 'rarely'. We asked 'What is the most common problem among the anesthesiologist and surgeon during the operation?'. Urology and cardiyovascular surgery said 'blood transfusion management'; ear-nose-throat said 'defense of controlled hypotension'; general surgery, orthopedists, neurosurgery and plastic and reconstructive said 'central/ peripheral blocks'.

**Discussion and Conclusion**

In conclusion, we identified some causes that were perceived by participants to trigger conflicts between them. This study identified numerous causes that are perceived to contribute significantly to conflicts and disturbed working relationship between surgeons and anesthesiologists. Conflicts and poor surgeon-anesthesiologist working relationships are seen world-wide and may affect physicians' productivity and attitude. Therefore, addressing these causes should help improve quality of healthcare and enhance harmony in the work environment. A key feature for maintaining an effective anesthesiologist-surgeon relationship is optimal inter-clinics coordination.

## PP-018

### ANESTHESIA FOR COLONOSCOPY IN PEDIATRIC AGE.

Cihan Doger\*, Nilgun Sahin\*\* , Gulseren Sahin\*\*\*, Eyup Sari\*\*\*\*

\*Yildirim Beyazit University Ataturk Education and Research Hospital,  
Anesthesiology and Reanimation, Ankara, Turkey

\*\*Dr. Sami Ulus Education and Research Hospital,  
Anesthesiology and Reanimation, Ankara, Turkey

\*\*\*Dr. Sami Ulus Education and Research Hospital, Pediatric Gastroenterology, Ankara,  
Turkey

\*\*\*\*Dr. Sami Ulus Education and Research Hospital, Pediatrics, Ankara, Turkey

#### Aim

Colonoscopic procedures in the pediatric age group are painful and the duration of the procedure is long. In addition, inflation of the air into bowels elevates the diaphragm, restricts respiration and causes bradycardia due to vagal reflexes. Pediatric anesthesia practice requires controlled deep sedation in these interventions. The aim of the study is to evaluate the applications of anesthesia in pediatric patients who underwent colonoscopy.

#### Material Methods

Between 2012- 2017, Colonoscopy cases under deep sedation by an anesthesiologist in Dr. Sami Ulus Children Education and Research hospital were retrospectively screened. Patients' age, sex, current diagnoses, complaints, accompanying diseases, anesthesia technique, anesthetic drugs, complications and treatments were recorded. Patients were divided according to age groups and the data were evaluated within themselves. (Group 1: 0-2, Group 2: 2-6, Group 3: 6-11, Group 4: 11-17 years)

#### Results

274 patient files between 0-17 years of age were included in the study. Endoscopy + colonoscopy was performed in 122 of the patients and colonoscopy was performed in 152 patients. 23 patients in group 1, 44 patients in group 2, 54 patients in group 3, 4 patients in 152 patients underwent colonoscopy. Colonoscopy indications of patients were chronic diarrhea, chronic abdominal pain, polyps, rectal bleeding, inflammatory bowel diseases (ulcerative colitis, chron).

The mean duration of colonoscopy in Group I was  $40.9 \pm 16.9$ . Sedoanalgesia was administered with propofol in 65% and midazolam in 70% of patients. There were no complications in this age group. In Group 2, the mean duration was  $41.3 \pm 13.3$ . Propofol was used in all patients in group 2 and midazolam was used in 80% of the patients. Complication was bronchospasm in 1 patient. The mean duration in group 3 was  $45.6 \pm 13.0$ . Propofol was used in all patients and midazolam was used in 76% of patients. One patient had bronchospasm and one patient had bradycardia. The mean duration of group 4 was  $47 \pm 14.6$ . Propofol was used in all of the patients and midazolam was used in 77% of the patients. Complications were seen in 3 patients (2%), including bradycardia in 1 patient and bronchospasm in 2 patients. In all cases ketamine or fentanyl was used for analgesic purposes. It was found that the patients included in the study were ulcerative colitis, chron,

fmf disease, and that many genetic, neurological, immunologic diseases were accompanied by the disease. No mortal complications were encountered in any of the patients.

**Discussion and conclusion**

In cases of pediatric age group colonoscopy, genetic, neurological, autoimmune, cardiac, endocrine diseases may be present. It should be kept in mind that the anesthesia depth may change rapidly due to protein depression, fluid electrolyte imbalances, anemia, and so on.

**PP-019****OUR SPINAL ANESTHESIA EXPERIENCE IN A PATIENT WITH SEVERE SCOLIOSIS**

Seda Ilhan, Münire Babayiğit, Handan Güleç, Esra Özayar, Aysun Kurtay, Eyüp Horasanlı  
Kecioren Education and Training Hospital, Ankara, Turkey

Vertebral deformities can cause difficulties in spinal and general anesthesia applications, which may lead to subsequent complications.

Transurethral resection was planned to a 62 year-old-male patient, 148 cm long and 60 kg weighed, and had a severe scoliosis. Preoperative routine examinations and physical examination were normal. Pulmonary function tests showed severe obstructive and restrictive paternity.

The patient was monitored in the operation room. O<sub>2</sub> saturation was 85%, as well as heart rate and arterial blood pressure were 95 and 140/85 mmHg respectively. Intrathecal intervention was performed between L3 and L4 intervertebral space with a 25G spinal needle. The fourth attempt was successful and 7.5 mg hyperbaric bupivacaine (Heavy Marcain®) was administered. During 40 minutes of surgery, sensory block was at T6 level. There were no complications. The patient was transferred to the service.



Kyphoscoliosis is a combination of outward (anteroposterior) curvature (kyphosis) and lateral curvature (scoliosis) of the spine. The preference for anesthesia in patients with kyphoscoliosis has not been clear yet. In these patients, respiratory volume increased due to chest wall compliance and diaphragm function impairment. Therefore, respiratory complications due to anesthesia are seen more common.

Difficult ventilation and/or intubation may be encountered in those patients .Due to respiratory failure in consequence of general anesthesia, cor pulmonale may develop in these patients. Regional anesthesia reduces mortality , may be technically difficult because of vertebral disorders and the risk of complications is increased in these patients subsequently.



**PP-020****ANESTHETIC MANAGEMENT FOR A RECURRENT RIGHT ATRIAL MYXOMA**

Bahar Oc\*, Oguzhan Arun\*, Ahmet Sert\*\*, Mehmet Oc\*\*\*

\*Selcuk University Faculty of Medicine, Department of Anesthesia and Intensive Care, Konya, Turkey

\*\*Selcuk University Faculty of Medicine Department Pediatric Cardiology, Konya, Turkey

\*\*\*Selcuk University Faculty of Medicine Department of Cardiovascular Surgery, Konya, Turkey

**Introduction and Aim**

Cardiac tumors in children are mostly benign in nature and are localized mainly in the left atrium. There are few cases of right atrial myxoma in the literature. Anesthetic management of the first case of recurring right atrial myxoma is presented in children.

**Case**

15 years old girl was presented with fatigue, dyspnea, weakness. She was operated 1.5 year ago for right atrial mixoma. She weighed 10 kg her heart was rhythmic, diastolic murmur were heard on the left lower edge of sternum and on apex. Hemoglobin was 9 g/dl. ECG was normal. Transthoracic echocardiograph revealed an 38mmx33mm echogenic intracardiac mass which prolapsed to the right ventricle through the right atrium and the tricuspid valve. It was considered as mixoma(Figure1). Blood culture studies were normal. After ECG, SpO<sub>2</sub>, NIKB monitoring, anesthesia induction was performed with midazolam 0.05 mg/kg, sodium thiopental 5 mg/kg, fentanyl 3 mg/kg, recuronium 0.5 mg/kg and intubated with 7.0 mm ETT. Right radial artery(20G) and left femoral vein(7.0 Fr, 3way) catheterization were performed. Sevoflurane, fentanyl and recuronium were used for anesthesia maintenance. Intraoperative transoesophageal echocardiography (TOE) was performed(Video1). The intracardiac mass was removed with standart surgical procedure. During the operation, it was observed that the myxoma originated from the interatrial septum where the superior vena cava opened at the right atrium, unlike the previously extracted mixoma. At the previous operation mixoma was orginated from vena cava inferior(TOEvideo2). The patient was admitted to the CICU on third postoperative day.

**Discussion and Conclusion**

Right atrial myxoma recurrence is about 3% in sporadic cases. Recurrences can be in the same location or in different locations. In our case, a recurrent myxoma appeared in the right atrium but in a different region. The exact cause of these recurrences is unknown. We believe that peroperative morbidity and mortality can be significantly reduced good preoperative evaluation and intraoperative preparation. Anesthetic management is particular regarding two aspects: high risk of pulmonary embolization due to cannulation and hemodynamic insitability and reoperation increases morbidity and mortality. TOE monitorization is very important for intraoperative follow-up.

**PP-021****ANESTHETIC MANAGEMENT OF A CHILD WITH LOEYS-DIETZ SYNDROME: CASE REPORT**

Oguzhan Arun, Bahar Oc, Serdal Bozdogan, Ozlem Tas, Mehmet Oc  
Selcuk University Faculty of Medicine, Department of Anesthesiology and Reanimation,  
Konya, TURKEY

**Introduction**

Loeys-Dietz syndrome (LDS) is a rare, autosomal dominant aortic aneurysm syndrome with multisystem involvement. The triad of arterial tortuosity and aneurysms, hypertelorism, and bifid uvula/cleft palate typically characterizes the disease (1). We report the anesthetic management of a child diagnosed as LDS.

**Case**

A 2800 g baby girl was born via Cesarean section at 38 weeks of gestation from a 25-year-old G2P2 mother. She was transferred to neonatal intensive care unit (NICU) and given non-invasive mechanical pressure support ventilation in the BIPAP mode for two days. In the echocardiographic evaluation a right to left shunt through 3 cm atrial septum defect was detected. When the patient was 1 year old the transthoracic echocardiographic evaluation revealed a 19 mm aneurysmal dilatation located in the ascendant aorta. Diagnosis of LDS was based on laboratory and clinical features, genetic results are pending. Due to the increase in the size of the aneurysmal dilatation in the following echocardiographic controls (22 mm in the 19<sup>th</sup> month, 25 mm in the 23<sup>rd</sup> month), an MRI angiography under general anesthesia was indicated. The patient was transferred to the MRI unit with 0.5 mg.kg<sup>-1</sup> oral midazolam premedication and after standard monitoring with ECG, NIBP and SpO<sub>2</sub>, anesthesia induction was achieved with 8% sevoflurane in 100% O<sub>2</sub> in the supine position during assisted ventilation with 100% oxygen. Fentanyl 2 mcg.kg<sup>-1</sup> was added after a peripheral intravenous line was obtained. LMA no 2 was inserted without any problem. At the end of unproblematic imaging and anesthesia session lasted for 60 and 85 minutes, respectively, the baby was transferred to the NICU with a stable hemodynamic and spontaneous ventilation.

**Conclusion**

As with the case of our patient, hemodynamic stability during the intra-operative period in order to minimize sheer stress and aortic wall tension is of utmost importance. It has been shown previously that general anesthesia can be successful in these patients often using a “balanced” approach of narcotic therapy along with inhalational agents. Our general anesthetic technique was effective in preventing tachycardia and hypertension in this patient.

**References**

1. Loeys BL, Schwarze U, Holm T, et al. Aneurysm syndromes caused by mutations in the TGF-beta receptor. *N Engl J Med* 2006;355:788–798.

**PP-022****ANESTHETIC CONSIDERATIONS IN A NEWBORN INFANT WITH GIANT ENCEPHALOCELE: A CASE REPORT**

Oguzhan Arun, Ozlem Tas, Ates Duman, Bahar Oc,  
Selcuk University Faculty of Medicine, Department of Anesthesiology and Reanimation,  
Konya, TURKEY

**Introduction**

Encephalocele is a midline cranial fusion defect and it is characterized with protrusion of meninges and cerebrum localized in the occipital region. An enlarged encephalocele mass can produce difficult airway management particularly in newborn infants. We report the difficult airway management of a newborn infant with a giant encephalocele mass.

**Case**

A 3150 g baby girl was born via cesarean section at 37 weeks of gestation from a 25-year-old G2P2 mother. She was transferred to our hospital's neonatal intensive care unit (NICU) due to a cervical mass. The cerebral/cervical MRI examination revealed a 15x12 cm lesion compatible with occipital encephalocele associated with Dandy Walker malformation. In the NICU she was breathing spontaneously. In the post-delivery day 2, the patient was transferred to the operating room without any premedication and after standard monitoring with ECG, NIBP and SpO<sub>2</sub>, anesthesia induction was achieved with 8% sevoflurane in 100% O<sub>2</sub> in the lateral position during assisted ventilation with 100% oxygen. Fentanyl 2 mcg.kg<sup>-1</sup> and rocuronium 0,5 mg.kg<sup>-1</sup> were added via umbilical vein. Endotracheal intubation couldn't achieve with conventional laryngoscope due to anterior larynx position. Endotracheal intubation was achieved at the 3<sup>rd</sup> attempt by using Frova intubating introducer. Then the baby's position was changed to prone. Encephalocele sac was suspended via a fixed setup with fixation sutures. At the end of the operation that lasted for 2 hours without any problem, the baby was transferred to the NICU without extubation. The patient was extubated at the same day and discharged from NICU at the postoperative 4<sup>th</sup> day.

**Conclusion**

Patients with encephalocele may present a unique set of challenges to the anesthetist. Giant occipital encephalocele sacs can limit the motion of the atlanto-occipital joint and may cause difficult intubation (1). Anesthesiologist has to be aware of possible problems particularly in the airway management. A multidisciplinary team approach with surgeons allows safer management.

**Reference**

1. Ozlu O, Sorar M, Sezer E, et al. Anesthetic management in two infants with giant occipital encephalocele. *Pediatr Anesth* 2008;18:792–793.

**PP-023****SAFE ANESTHESIA METHOD FOR CONGENITAL LONG QT SYNDROME**

Serdal Bozdogan, Zeynep Erdogan, Ahmet Emin Sonmez, Bahar Oc  
Department of Anesthesia and Intensive Care, Selcuk University Faculty of Medicine, Konya,  
Turkey

**Introduction**

Long QT syndrome (LQTS) is characterized with prolonged QT interval on the ECG and increased risk of ventricular arrhythmias, torsade de pointes (TdP), ventricular fibrillation (VF), syncope, and even sudden death. Long QT syndrome is either congenital or acquired. The congenital form arises from mutations of ion (Na, K, Ca) channels in heart muscle cells, whereas for the acquired one drugs that prolongates QT interval and the electrolyte imbalances are responsible. We report, safe anesthesia in a patient diagnosed with congenital LQTS who underwent cystoscopy operation.

**Case Report**

Cystoscopy was planned for 15-year-old male patient. He was diagnosed previously with LQTS. He suffered cardiac arrest 5 months ago, followed in intensive care unit, diagnosed with LQTS. He had implantable cardioverter defibrillator (ICD) and was using metoprolol. Midazolam was used for premedication. Induction was carried out with 1mg/kg lidocaine HCl, 2mg/kg propofol, 2mcg/kg fentanyl. LMA was used. 50% O<sub>2</sub> in air and TIVA 3 mg/kg/min propofol and 0.5 mcg/kg/min remifentanyl was used for maintenance. After 30 minutes of surgical intervention extubation was accomplished successfully. 1mg/kg tramadol was used for pain.

**Discussion**

Antimicrobials (erythromycin, clarithromycin, clindamycin etc.), antihistamines (terfenadin, astemizole) and antiarrhythmics (quinidine, procaine amide, sotalol, etc.) are drugs, which prolong QT interval. In our case the patient was not on any drug, which prolongs QT interval. For proper management, any drug that may cause prolongation of QTc interval should be stopped and electrolyte imbalances should be corrected. Beta-blockers are the gold standard treatment in LQTS. In patients not responding to beta-blocker ICD is indicated. Sympathetic stimulation and halogenated volatiles (halothane, isoflurane, desflurane and sevoflurane) prolong QT interval whereas propofol shortens it. We used TIVA for maintenance. Anxiety, crying, shouting, loud voice and surgical environment may trigger TdP since they cause sympathetic stimulation. That's why midazolam was applied as premedication. In postoperative period, tramadol at 1 mg/kg dose was applied intravenously not to see agitation related to pain. TIVA may be considered as a safe choice of anesthesia maintenance in patients diagnosed with LQTS or having the suspect of it.

**PP-024****CONSECUTIVE SUGAMMADEX APPLICATIONS TO A PREGNANT PATIENT RECEIVING ELECTROCONVULSIVE TREATMENTS AND ITS POSTPARTUM EFFECTS**

Evginar Sezer, Julide Ergil, Derya Ozkan

Sağlık Bilimleri Üniversitesi Dışkapı Yıldırım Beyazıt Eğitim ve Araştırma Hastanesi,  
Anesteziyoloji ve Reanimasyon Ana Bilim Dalı, Ankara, Türkiye

**Introduction / Background**

Sugammadex is a selective relaxant-binding agent which provides the reversal of rocuronium induced neuromuscular blockages by chemical encapsulation of rocuronium in plasma.

Electroconvulsive Treatment (ECT) is a procedure applied under anesthesia to patients diagnosed with major depression resistant to medical therapy, also to patients having a suicide tendency or self-destruction attempts in psychiatry clinic. In this case report sugammadex using during ECT applications was discussed in a pregnant woman.

**Case Presentation**

Forty years old, 69 kg, ASA II pregnant woman with 33 weeks of gestation, who was diagnosed with major depression and has self-destruction tendency, also having hypothyroidism and taking a medical treatment for it. The patient was planned to have 12 seances of ECT by psychiatry clinic. The physical examination and laboratory findings of the patient were in normal ranges. The patient recieved 12 seances of ECT during 33-37 weeks of gestational age, and after the procedure she was followed up till delivery in psychiatry clinic. Propofol, lidocaine and rocuronium were used during induction of anesthesia. After every ECT procedure sugammadex 100mg was given intravenously to provide rapid recovery after therapy to reverse the effects of rocuronium. After every procedure the pregnant woman was fully awoken, recieved full orientation and cooperation, had stable hemodynamical parameters, and was submitted to psychiatrist without any complication. After every ECT seance the patient was followed up for 2-3 hours by monitoring the vital signs and was given oxygen 1-2 lt/min. Also after every ECT seance gestational ultrasonography was performed and the patient was examined by an obstetrician. During these examinations not any problem nor a complication were seen.

The delivery of the patient was performed at the end of 38th gestational week with caesarean section under spinal anesthesia. The baby was healthy without any abnormality. The baby was followed up in three months of periods for one year by peditary clinic and during that time the baby was healthy and stable.

**Conclusion**

We think that this case will play an important role in clinical practice for the consecutive uses of Sugammadex in pregnant patients and will show important developments for its further usages.

**PP-025****ANESTHETIC MANAGEMENT IN A CHILD FOR TETHERED CORD RELEASE, NINE MONTHS AFTER LIVER TRANSPLANTATION**

Gokcen Emmez\*, Hasan Kutluk Pampal\*, Gozde Inan\*, Alp Ozgun Borcek\*\*, Zerrin Ozkose Satirlar\*

\* Gazi University Faculty of Medicine Department of Anesthesiology, Ankara, Turkey

\*\* Gazi University Faculty of Medicine Department of Neurosurgery, Ankara, Turkey

**Objective**

Nontransplant surgery in most of the liver-graft recipients are performed under general anesthesia. Anesthetic management in pediatric liver-graft recipients is extremely important. We aim to share our experience in a pediatric liver-graft recipient who was operated for tethered cord syndrome, 9 months following liver transplantation.

**Case**

A 5 years-old girl was hospitalized in neurosurgery department with the diagnosis of tethered cord syndrome. The patient had history of surgery for anal atresia after birth and liver transplantation 9 months ago because of bilier atresia. The patient was still using tacrolimus for immune suppression. Pre-operative routine tests were within normal ranges. Standard monitoring (ECG, SPO<sub>2</sub>, Non-invasive blood pressure), and bispectral index (BIS) monitoring were performed. Monitoring parameters were normal. To protect liver, TIVA (total intravenous anesthesia) was planned. Propofol 3mg/kg iv used for induction and infusion of 8-10mg/kg/hr propofol and 0.02mcg/kg/min remifentanil were performed. As intraoperative neuromonitorization was used during surgery, no muscle relaxant was administered. The patient was intubated with ID 5 reinforced endotracheal tube since the position was prone. Invasive blood pressure and arterial blood gas monitoring was performed through arterial line. Body temperature was measured with axillary probe. Hemodynamic, thermal, blood gas monitoring were within normal limits. TIVA doses were calculated according to BIS values during 50 minutes of operation. The patient was extubated and transferred to the ward after the operation. No complication was observed in follow-up.

**Conclusion**

Primary objectives of preoperative evaluation of any transplant recipient are to exclude conditions related to graft malfunction, and thus evaluation of the transplanted organ function, to determine functional adequacy of other organ systems. Anesthetic management of liver graft recipients require administration of non or minimally hepatotoxic agents with lowest doses. Although the ideal strategy is to use target controlled infusion (TCI) in such patients, we used BIS guided TIVA since pediatric TCI was not available in our department.

**PP-026****COMPARISON OF SEDATION AND GENERAL ANESTHESIA FOR TRANSCATHETER AORTIC VALVE IMPLANTATION (TAVI)**

Seyhan Yağar, Gülseren Süer Kaya  
Türkiye Yüksek İhtisas Training and Research Hospital, Ankara, Türkiye

**Introduction**

TAVI is a relatively new procedure, where an aortic valve stent is placed with a catheter technique. Aortic stenosis patients, with severe co-morbidities are candidates for TAVI. Anesthetic management of TAVI procedure is challenging due to existing serious co-morbidities and hemodynamic lability depending procedure. In this study we aimed to compare general anesthesia (TAVI-G) and sedation (TAVI-S) technique for efficacy and safety in TAVI patients.

**Methods**

After obtaining IRB approval, 34 consecutive transfemoral CoreValve TAVI patients under sedation are enrolled to the study prospectively and 15 general anesthesia patient data analyzed retrospectively. In TAVI-S group light sedation with midazolam and fentanyl boluses, in TAVI-G group fentanyl, propofol, rocuronium induction and sevoflurane maintenance are used. Apart from standard monitoring invasive arterial blood pressure and for TAVI-S cerebral oxymetry, for TAVI-G central venous line were applied. AKI incidence, operation duration, length of ICU and hospital stay, complications compared.

**Results**

The mean age was  $77.6 \pm 5.5$ ,  $72.3 \pm 11.4$  ( $p < 0.05$ ); mean procedure time was  $63.6 \pm 2$  min,  $172.5 \pm 66.5$  ( $p: 0.00$ ); mean ICU duration time  $\pm$ SD was  $4.8 \pm 2.8$ ,  $4.1 \pm 2.2$  day ( $p > 0.05$ ), mean length of stay  $\pm$ SD was  $7.2 \pm 6.3$ ,  $8.1 \pm 6.6$  day ( $p > 0.05$ ), AKI incidence %11.8, %30.7 ( $p < 0.05$ ) respectively for TAVI-S and TAVI-G. In TAVI-S mean fentanyl dose was  $87.5 \pm 41.6$  mcg and midazolam dose was  $1.8 \pm 1.2$  mg. Two patients required bag-valve mask ventilation for short duration, none of them intubated in TAVI-S group.

**Discussion**

TAVI can be managed using sedation or general anesthesia. In our center we used general anesthesia initially then switched to light sedation technique, in general moderate sedation or general anesthesia is preferred lately. There is still lack of consensus about the anesthesia technique for TAVI procedure. The results of this study show that light sedation can be a safety technique for TAVI.

**PP-027****USING GENERAL ANESTHESIA PLUS MUSCLE RELAXANT IN A PATIENT WITH SPINAL MUSCULAR ATROPHY TYPE III: A CASE REPORT**

Gül Meral Kocabeyoğlu, Gökçen Emmez, Fatmanur Duruk Erkent, Hasan Kutluk Pampal  
Gazi University Faculty of Medicine Department of Anesthesiology and Reanimation

**Introduction-Aim**

Spinal muscular atrophy (SMA), a disease caused by a defect in survival motor neuron-1 gene, is a rare genetic disorder characterized by degeneration of spinal cord motor neurons resulting in hypotonia and muscle weakness. Anaesthetic management is often difficult due to muscle weakness and hypersensitivity to neuromuscular blocking agents. Also patients with SMA are prone to develop both hypo/hyperglycemia. Herein we report our anaesthetic management in a patient with SMA type III who had rhinoplasty under general anaesthesia.

**Case**

A 17-year-old boy (height 1.66m; weight 67kg) with SMA type III was scheduled for rhinoplasty. History revealed a sibling diagnosed with the same disease. He had a previous uneventful local anaesthetic experience for adeno-tonsillectomy. Physical examination revealed normal respiratory and swallowing functions. His laboratory, ECG and radiological findings were unremarkable except increased lung markings on X-ray. The patient was taken to the operating room without premedication and standard monitoring also train of four (TOF) monitoring was used. Anaesthesia was induced with remifentanyl and propofol. Endotracheal intubation was performed with videolaryngoscope after administration of rocuronium (10mg). Anaesthesia was maintained with intravenous remifentanyl/propofol and 40% oxygen balanced with air. The hemodynamic parameters and temperature were stable during three and half-hour surgery. Tramadol was used for postoperative analgesia. The TOF count was 4 and sugammadex (200mg) was given for reversal of neuromuscular blockade. Extubation was uneventful after observing a TOF value of 0.9 and the patient was transferred to PACU. The patient was transferred to ward with Aldrete score of 10 and discharged 2 days after the surgery without any complication.

**Discussion**

The use of nondepolarising neuromuscular blockers in SMA patients is controversial. The patients may be either sensitive to these agents. Besides, TOF monitoring may not always be reliable in patients with SMA. However, safety use and reversal of rocuronium with sugammadex has been reported. We believe that using low dose rocuronium and sugammadex for reversal may be used with TOF monitoring without any complication.



**PP-028****TITLE: ANTIMICROBIAL PROPHYLAXIS IN SURGERY - GUIDELINES FOR PERIOPERATIVE AND PERIOPERATIVE PROPHYLAXIS OF THE ANATOMICAL AREAS**

\*M.Haznadar, \*\* N.Koluder, \*\*\*E.Avdic

\*Department of Anesthesiology with reanimatology and JIT,  
Cantonal Hospital "Dr. Safet Mujić" Mostar

\*\* University Clinical Center in Sarajevo, Department of Infectious diseases

\*\*\* Department of Microbiology and Parasitology

**Introduction**

Infections operating sites, in surgical patients, represent the most common nosocomial infections and make up 38% of all hospital infections. The risk of infection depends on the anatomy of the surgical procedure, but also of the patient and the features of the surgical procedure. Antimicrobial prophylaxis aims are to reduce microbial contamination at the site of surgery and to inhibit the growth of contaminating bacteria operational sites. Ideal for antimicrobial agent that prevents infection, prevention of infection related morbidity and mortality, reduce the length and cost of treatment, no undesired effects, no consequences on the microbial flora of patients and hospitals. Antimicrobial agents used in surgery should be active against bacteria that is likely to cause clinically significant infection, be given in the appropriate dose at a time that ensures adequate serum and tissue concentration, confident and applied for the shortest effective period to minimize the undesirable effects, the development of resistance and costs. Long-term pre and postoperative use of antibiotics is unnecessary. Uncontrolled use of antibiotics and ignorance of the basic principles in their application results in a number of undesirable consequences. The decision on the application of antimicrobial drug brings the attending surgeon, based on an assessment of risk factors of postoperative infection for each patient depending on the type of surgery, duration of surgery, the patient's condition and comorbidity.

The **objectives** of the guide for surgical prophylaxis are: reduce the incidence of infections of surgical wounds, reduce the consumption of antibiotics used in surgical prophylaxis, introduced into routine clinical practice antimicrobial drug that has proven effective with minimal side effects. The guidelines are intended for clean-contaminated and clean surgical operations with the installation of prosthetic materials. Definitions strength strength of evidence and level of recommendation in the guide have been taken from US AGENCY for Health Care Policy and Research. Provides guidelines for perioperative and perioperative prophylaxis in anatomic areas, possibly pathogenic infection, as well as alternative to antibiotics for patients allergic to  $\beta$ -lactams. Presented the recommendations are the most frequently used antibiotics in surgical prophylaxis. Cefazolin is the most common drug of choice for prophylaxis of infection with proven activities, security, spectrum of activity on the most common causes, the preferred length of Facts and low cost. Although cross-allergic reactions between penicillins, cephalosporins, and carbapenems are uncommon, cephalosporins and carbapenems should not be used for prophylaxis in patients with documented or suspected allergy to penicillin. The optimal time for administration of preoperative dose is 30-60 minutes before surgical incision. However, some antimicrobials, such as Fluoroquinolones and vancomycin, require the administration of more than one to two hours prior to the surgical incision. Single standard dose of antibiotics is largely

sufficient. If the operation takes longer than three hours, and if there has been a loss of blood 1,5l and more necessary is intraoperatively redoziranje. The chosen antibiotic must be active in the most common pathogens. The predominant organisms that cause wound infection are skin flora, including *S. aureus* and coagulase-negative staphylococci. In procedures involving the abdomen, heart, kidney and liver predominant organisms at the specified skin flora are gram-negative bacilli and enterococci. Surgical antibiotic prophylaxis can also change individual and hospital bacterial flora, leading to changes in the level of colonization and growth of bacterial resistance.

### **Conclusion**

A sample of an antimicrobial medicament is administered at the surgical prophylaxis depends on the microbiological monitoring of bacterial strains and the prevalence of antibiotic resistance in a particular hospital setting. Accordingly, the antibiotic is selected for the prophylaxis must cover the expected pathogens taking into account the resistance of the folder.

**Keywords:** antimicrobial prophylaxis, antibiotic, infection, resistance

**PP-029****CASE REPORT: EARLY POSTOPERATIVE COMPLICATIONS  
RELATED TO MASSIVE VENTRAL HERNIA REPAIR**

Fatima Ilijazagić-Halilović, Jasmina Smajić

University Clinical Centre Tuzla, Clinic for Anesthesia and resuscitation

**Introduction**

Abdominal wall reconstruction in ventral hernia repair can be associated with postoperative intra-abdominal hypertension (IAH), respiratory dysfunction and other complication. Development of IAH decreases chest wall compliance and functional residual capacity, shifts end-expiratory position of the diaphragm, and leads to development of atelectases.

**Aim**

To determine the influence of intra-abdominal pressure (IAP) increase on respiratory function after surgical repair of ventral hernia.

**Case Presentation**

Fifty-eight year old male patient was admitted to (Intensive Care Unit) ICU after repair of large ventral hernia. Patient has been unstable intraoperatively. Without attempt to awaken the patient from anesthesia he was admitted to ICU. On admittance his SpO<sub>2</sub> was 75%, arterial tension 114/80 mmHg and heart rate 111/min, auscultatory findings included inspiratory crackles, and acid-base status of capillary blood showed acidosis. Chest x-ray showed bilateral infiltrates with fields of atelectases and bilateral elevation of diaphragm. Patient was mechanically ventilated from the beginning of ICU treatment, using intermittent positive pressure ventilation (IPPV) mode. Next day patient was on IPPV, SpO<sub>2</sub> 89%, tachycardic, normotensive, abdomen was distended and no bowel sounds were heard on auscultation. CT scan of abdomen and thorax was preformed (thorax-bilaterally milky glass infiltration characteristic for Acute Respiratory Distress Syndrome (ARDS), abdomen-smaller quantity of free fluid, adhesions of intestines). In the following days hemodynamic instability, ARDS together with abdominal distension and signs of bowel dysfunction persists. On the seventh day of ICU treatment mode of MV was changed to Synchronized Intermittent Mandatory Ventilation and later on to Assisted Spontaneous Breathing, percutaneous tracheotomy was also preformed. Gradual weaning from the respirator was continued and patient was disconnected from respirator on seventeenth day of ICU staying. Hemodynamic and respiratory functions gradually improved together with normalization of gastrointestinal tract function.

**Discussion**

The increase in IAP during surgical repair of ventral hernia and the early postoperative period is accompanied by deterioration of CO<sub>2</sub> elimination followed by a decrease in arterial oxygenation. The rise in IAP during abdominal surgery can be explained by the stretch of abdominal wall following hernia repair. Elevated IAP may cause widespread organ dysfunction.

**Conclusion**

The surgical repair of ventral hernia is accompanied by a rise IAP and can lead to cardio vascular and respiratory complications.

**Key Words:** Ventral hernia, intra-abdominal hypertension, postoperative complications.

## PP-030

### ACUTE ABDOMEN AS A CONSEQUENCE OF A RUPTURED ABDOMINAL AORTIC ANEURYSM

Ilijas Aslani\*, Amela Zahirović\*\*, Amra Duraković\*\*\*

\*Clinic of Anesthesiology, Clinical Centre University of Sarajevo, Bolnička \*\*5, 7\*000 Sarajevo, Bosnia and Herzegovina,

\*\* Public Hospital Travnik, Kalibunar bb, 7\*\*\*\*70 Travnik , Bosnia and Herzegovina,

\*\*\* Cantonal Hospital „Dr Irfan Ljubijankić “, Darivalaca krvi 67, 77000 Bihać, Bosnia and Herzegovina

#### Introduction

Acute abdomen is a condition caused by acute disease of or injury to the internal organs. It usually requires an emergency surgical approach. Causes of emergency could be an inflammatory process such as appendicitis, cholecystitis, obstructive process (icterus, choledocholithiasis), perforation of internal organs (ulcus ventriculi), trauma (rupture of liver, spleen), rupture of abdominal aortic aneurysm.

#### Materials and methods

The current knowledge of abdominal aortic aneurysm as a cause of acute abdomen, with review on an anesthetic and surgical approach is provided from pertinent literature and a clinical experience. That means an emergence recognize of rupture, enormous blood loss and fast team approach.

#### Results

Patients with a rupture, whose condition was fastly recognized and which were directed urgently to a clinic for vascular diseases had a better chance to survive and mostly survived and released from hospital with a respiratory and cardiovascular stability . Unfortunately, in our terms there are still so many patients who die on their way to clinic or the patients with unrecognized ruptured.

#### Discussion and conclusion

Recent reports shows that an incidence and mortality of ruptured abdominal aortic aneurysm is increasing. But with a good diagnostic tests such as clinical exam, laboratory findings and their correction, ultrasound screening and CT diagnosis, fast surgical approach and what is the most important prevention of comorbidity we have a chance to decrease a rate and mortality of ruptured abdominal aortic aneurysm.

**Keywords:** Acute abdomen, abdominal aortic aneurysm rupture, team approach

**PP-031****NUTRITION AND STOMACH CANCER**Ediba Čelić – Spužić

Clinical Centre and University of Sarajevo, Clinic for Anaesthesia and Reanimation  
Sarajevo, Bosnia and Herzegovina

**Introduction:** Nutrition planning regarding patients with stomach cancer presents a specific kind of challenge. Although the number of patients with diagnosed stomach cancer in the last sixty years has been steadily declining, worldwide it is considered fourth most common cause of cancer and second leading cause of death related to cancer.

**Problem definition:** It is common for these patients to experience problems in regard of food ingestion and digestion. These problems may be caused by:

- partial or complete removal of stomach
- removal or incapacitation of glands, cells and nerves regarding food digestion
- removal or incapacitation of ring muscles in control of food transition into the stomach (lower esophageal sphincter) and passage through the stomach (pyloric sphincter)
- side effects of chemotherapy or other treatments
- loss of appetite regarding cancer itself
- stomach discharge is different, so the patient is oblivious of its state

**Goal**

Accurate representation of current guidelines regarding diet of patients with stomach cancer, including patients which had undergone operational procedure.

**Discussion**

Regarding patients with stomach cancer scheduled for surgery, preoperational nutritional status directly influences postoperative prognosis.

Preoperative sustenance enriched with nutrients will increase immunological status of the patient and simultaneously reduce the possibility of complications.

Early enteral nutrition after the surgery is a necessity because it improves early postoperative status, simultaneously affecting course and the outcome of the disease.

One of the bigger issues for patients with stomach cancer and gastrectomy is lack of vitamin and mineral intake, from which vitamin D, B12, iron, calcium and folic acid hold significant importance and require adequate compensation.

To avoid malnutrition of the patients undergoing surgical procedure, and if the circumstances allow it, nasogastric tube (temporary or permanent) is inserted for enteral nutrition.

Depending on the range of the surgery (e.g. total or partial gastrectomy), surgeon sets gastrostoma or jejunostoma. This reduces the capacity of digestive system, but it adapts enteral preparations for that change.

In malnourished patients with progressive stomach cancer, in short term (especially in domestic conditions), parenteral nutrition improves quality of life, nutritive status and

functional physical status. Complete parenteral diet in domestic conditions and nutrition through central vein catheters represents the only form of nutrition for patients going through advanced stages of cancer, conditions where oral and enteral nutrition are not possible.

**Conclusion**

Early evaluation of nutritive patient status and early inclusion of nutritive support represent most important tendencies in treatment of the patients with stomach cancer, both those that underwent surgical procedure and patients with progressed stage of disease.

**PP-032****COMPLICATED INTRA-ABDOMINAL INFECTION – DIAGNOSIS AND MANAGEMENT:  
CASE REPORT**

Senita Beharić, Elvedina Smajić, Jasmina Katica  
Klinički centar Univerziteta Sarajevo (KCUS)  
Klinika za anesteziju i reanimaciju (KAR), Bolnička 25

**Introduction**

Despite advances in diagnosis, surgery, and antimicrobial therapy, mortality rates associated with complicated intra-abdominal infections remain exceedingly high.

We present the case of 62-old male patient, who was hospitalized at the ICU of Clinic of Anesthesiology, Resuscitation and Intensive Care of Clinical Center of University in Sarajevo from 28.12.2016 to 13.01.2017.

**Background**

Patient was admitted at the Clinic for Infectious Diseases on December 26th, 2016 with clinical signs of hemorrhagic enterocolitis - urgent laboratory and microbiologic findings, X-ray and ECG were done, and protocol therapy administrated. Patient health condition worsened and perforation of colon suspected, he was immediately transferred to ICU. Preoperatively, he was conscious, dispnoic, hypotensive, tachyarrhythmic, cahectic, his lower legs were swollen; in lab. findings low number of platelets and increased values of coagulation parameteres were registered. Abdominal surgeon performed: Colectomia totalis cum ileostomia. Postoperatively patient was mechanically ventilated (analgo-sedation administrated). In the evening of 2nd postoperative day respiratory status worsened – ARDS; he was hemodynamically unstable despite continued inotropes and vasopressors. Echocardiography: slightly reduced kinetics, EF 45%; ECG: ventricular premature beats. Ischemic changes of both feet were noticed within the septic condition. Chest CT-scan: pleural effusion bilaterally. Further significant decrease of platelets and increase in the value of bilirubin and coagulation parameters, D-dimer – suspected DIC. Abdominal CT scan: thrombosis of celiac trunk and multiple infarctions of the spleen - suspected thrombosis of artery lienalis. In order to remove cytokines intermittent haemofiltrations were performed, although diuresis was sufficient. Antibiotics were administered in agreement with infectologist on the basis of microbiological findings (blood culture: *Acinetobacter Baumanii*, *Proteus mirabilis*; wound smear: *Escherichia coli* - ESBL).

**Results**

Despite complex intensive treatment, patient health condition worsened further, and Exitus letalis was on January 13th.

**Discussion and conclusion**

Intra-abdominal infection is the second most common cause of infectious mortality in ICU. This disease classification encompasses a variety of processes that affect several different organs. The requirement for intervention in most cases and the controversies surrounding the choice and nature of the procedure performed add another layer of complexity to the management of these patients.

**Keywords:** Key words: Complicated intra-abdominal infections, diagnosis, surgery, ICU

## PP-033

### CASE REPORT ANESTHETIC MANAGEMENT OF A PATIENT WITH 21KG HEAVY MEGACOLON

Selimović Jašarević J, Žilić L, Cipurković Nalić S  
Clinic of Anesthesiology and Resuscitation, University Clinical Center Tuzla ,  
Bosnia nad Herzegovina

#### Introduction

Megacolon, due to Hirschsprung's disease, predominantly occurs in males. Although clinically chronic megacolon can occur in any age group, inherited types usually present in young patients, and acquired types usually present in older patients.

#### Methods

We present the case of a 47-year old man who complained about the lack of defecation, which was possible only by manual extraction and high temperature in a past few days. Later on, he reported that he drank more fluids than usual.

#### Results

Thoracic and abdominal CT scans show the huge, dilated rectum, sigmoid and descended colon which fulfill nearly whole pelvis, medial and right part of the abdomen, and reaches to the level of the bifurcation of the trachea, lifting the right hemidiaphragm with compression of the surrounding structures. Clinical findings do not correlate completely with this finding – the patient is slightly dyspnoic and tachycardic. The SpO<sub>2</sub> before the operation was 97%. PCV mode was used. The patient was hemodynamically stable throughout the operation. After surgery, the massive polyuria was noticed. Patient had two more surgeries – evacuation of intraabdominal abscess and the stoma closure when, for unknown reasons, the difficult intubation was reported.

#### Conclusion

The subtotal colectomy was performed and manually was extracted 21 kg of faeces. Given the size of megacolon and its compressive effect, we expected more complications and hemodynamic instability.

**Key words:** Hirschsprung's disease; Megacolon; Diaphragmatic elevation; Compression of thoracic and abdominal organs



**PP-034****CRITICALLY POISONED PATIENTS IN THE INTENSIVE CARE UNIT**

Daniela Chaparoska<sup>\*</sup>, Natalija Baneva<sup>\*\*</sup> and Suzana Nikolovska<sup>\*\*\*</sup>  
University Clinic of Toxicology<sup>\*</sup>, University Clinic of Neurology<sup>\*\*</sup>, University Clinic of  
Dermatology<sup>\*\*\*</sup>, Medical Faculty, University Sts Cyril and Methodius, Skopje, Macedonia

**Abstract**

The aim of this study was to establish concise guidelines for the initial management of the acutely poisoned patient in the Emergency Centre. The American Academy of Clinical Toxicology and the European Association of Poisons Centres and Clinical Toxicologists are the international leaders in the field of toxicology and the guidelines in their position papers were generally followed.

Acutely poisoned patients are commonly encountered in Emergency Centres. Acute poisoning (accidental or intentional) requires accurate assessment and prompt therapy. The necessity to prevent cross contamination during the initial evaluation should be emphasized. Early identification of the involved toxin/s is crucial and the majority will be identified by a thorough history and physical examination. An ABC-approach should be followed ensuring a protected airway, adequate ventilation and hemodynamic stability. Supportive and symptomatic care remains the cornerstone of treatment. A stepwise approach may be followed to decrease the bioavailability of toxins. Indications, contra-indications, risks and dosage regimens are describe for decontamination procedures including both termination of topical exposures and decreasing exposure to ingested toxins. Furthermore, procedures to increase the elimination of toxins and a short section covering specific toxins and their antidotes are also included. Conclusion: Knowledge of the indications and limitations of current interventions for poisonings and overdoses is important for care of the critically ill poisoned patients.

**Keywords:** Adult intensive care, drug intake, poisoning



ARUD  
2017

Anesthesiology and Reanimation Specialists' Society Congress  
**BALKAN STATES ANESTHESIA DAYS - IV**

# Abdominal Anesthesia and Intensive Care

17-20 May 2017

Sarajevo, Bosnia and Herzegovina

Hotel Hills Sarajevo Congress & Termal Spa Resort

[www.arud2017.org](http://www.arud2017.org)

