

UDC 57:61

CODEN PDBIAD

ISSN 0031-5362

# PERIODICUM BIOLOGORUM

Fulltext, citation and similar papers at [core.ac.uk](http://core.ac.uk)

---

**FINAL PROGRAMME  
AND  
ABSTRACT BOOK**



Period biol, Vol 115, Suppl 1

P 1-46, Zagreb, June, 2013

four issues yearly

# PERIODICUM BIOLOGORUM

An Interdisciplinary International Journal of the Societas Scientiarum Naturalium Croatica established 1885

## Published by

Croatian Society for Natural Sciences  
Ruđer Bošković Institute  
LASERplus

## Past Editors

Spiridion Brusina	1886–1892	Ferdo Koch	1918–1920
Antun Heinz	1893–1895	Krunoslav Babić	1921–1922
Spiridion Brusina	1896–1899	Fran Šuklje	1923–1925
Antun Heinz	1900–1901	Boris Zarnik	1926
Oton Kučera	1902–1909	Fran Šuklje	1927–1938
Jovan Hadži	1910	Ivan Erlich	1947–1953
Dragutin Hirtz		Stjepan Horvatić	
Antun Heinz	1911–1914	Teodor Varičak	1954–1974
Fran Tućan	1916–1917	Vlatko Silobrčić	1975–1994
Fran Bubanović	1915		

## Editor-in-Chief

Branko Vitale

## Associate Editors

Andrea Ambriović Ristov	Sonja Levanat
Krunoslav Capak	Pero Lučin
Irena Colić Barić	Krešimir Pavelić
Maja Jokić	Sabina Rabatić
Marijan Klarica	Ivan Sabolić
Marijana Krsnik Rasol	Nenad Smodlaka
Sven Kurbel	Dražen Vikić-Topić
Hrvoje Lepeduš	

## Language editor

Nikola Habuzin

## Web administrator

Tomislav Lipić

## Secretary

Sanja Hržica

## Editorial Office

Periodicum biologorum, Hrvatsko prirodoslovno društvo  
Frankopanska 1/I, P.O. Box 258, 10001 Zagreb, Hrvatska – Croatia  
Tel/Fax: 385 (0)1 48 31 224, Tel. (0)1 46 80 240  
E-mail: [periodicum-biologorum@zg.t-com.hr](mailto:periodicum-biologorum@zg.t-com.hr)  
<http://biologorum.irb.hr>

# PERIODICUM BIOLOGORUM



**5<sup>th</sup> INTERNATIONAL SYMPOSIUM  
ON REGIONAL ANAESTHESIA AND PAIN THERAPY  
5<sup>th</sup> Croatian Congress of Regional Anaesthesia and  
Analgesia**

**European Society of Regional Anaesthesia  
Croatian Society of Regional Anaesthesia and Analgesia  
Croatian Medical Association**

**10 YEARS ANNIVERSARY JUBILEE**

**2003–2013**

Hotel WESTIN, Zagreb, Croatia  
June 14 – June 15, 2013



**5<sup>th</sup> INTERNATIONAL SYMPOSIUM ON REGIONAL  
ANAESTHESIA AND PAIN THERAPY**

**5th Croatian Congress of Regional Anaesthesia  
and Analgesia**

**European Society of Regional Anaesthesia (ESRA)  
Croatian Society of Regional Anaesthesia and Analgesia -Croatian Medical  
Association (CSRAA-CroMA)**

Hotel Westin, Zagreb, Croatia  
June 14 – June 15, 2013

**10 YEARS ANNIVERSARY JUBILEE**



Under the Auspices of

**DEPARTMENT OF MEDICAL SCIENCES  
CROATIAN ACADEMY OF SCIENCES AND ARTS**

**Organizers:**

Croatian Society of Regional Anaesthesia and Analgesia -Croatian Medical Association (CSRAA-CroMA)  
European Society of Regional Anaesthesia & Pain Therapy (ESRA)

**Coorganizers:**

Ministry of Science, Education and Sports of the Republic of Croatia  
Ministry of Health and Social Care of the Republic of Croatia  
University of Zagreb School of Medicine  
University Josip Juraj Strossmayer Osijek School of Medicine  
University Hospital "Sveti Duh", Zagreb

**Organizing committee:**

**Presidents:** K. Šakić (Croatia), S. Gligorijevic (Switzerland)

**Vicepresidents:** B. Tripković (Zagreb), N. Elezović (Split)

**Secretary:** J. Špiček Macan (Zagreb), D. Bandić Pavlović (Zagreb), I. Tudorić Đeno (Zagreb)

**Members:** D. Bartolek (Zagreb), G. Brozović (Zagreb), S. Golubović (Rijeka), D. Gulam (Osijek),  
I. Husedžinović (Zagreb), Z. Hrgović (Zagreb), L. Kalagac Fabris (Pula), J. Kopic (Slavonski Brod),  
D. Kopic (Split), R. Krobot (Varaždin), S. Kvolik (Osijek), S. Ljubičić (Dubrovnik), I. Matić (Slavonski Brod),  
B. Mazul Sunko (Zagreb), M. Miletić-Barković (Lovran), S. Mihaljević (Zagreb), V. Nesek Adam (Zagreb),  
M. Perić (Zagreb), M. Rakarić Poznanović (Zagreb), P. Štapan (Koprivnica), Š. Šakić (Zagreb),  
T. Šimurina (Zadar), I. Šklebar (Zagreb), D. Tonković (Zagreb), V. Vegar Brozović (Zagreb), J. Žaja  
(Šibenik), J. Žunić (Karlovac), Ž. Župan (Rijeka)

**Scientific committee:**

A. Borgeat (Switzerland), I. Drenjančević (Croatia), S. Gligorijevic (Switzerland), V. Golubović (Croatia),  
V. Novak Janković (Slovenia), K. Šakić (Croatia), Marc Van De Velde (Belgium)

**Editors of the issue of *Periodicum biologorum* dedicated to the Symposium (2013; 115, suppl. 1):**

Guest Editor K. Šakić (Croatia); B. Vitale (Croatia),

**Invited speakers:**

- 1. Marc Van De Velde** - Professor of Anesthesiology  
University Hospitals Leuven,  
Katholieke Universiteit Leuven, Belgium  
E-mail: Marc.VandeVelde@uz.kuleuven.ac.be  
**President of European  
Society of Regional anaesthesia & Pain Therapy**
- 2. Prof. Alain Borgeat, MD**  
Department of Anesthesiology, Balgrist University Hospital,  
Zurich, Switzerland  
E-mail: alain.borgeat@balgrist.ch
- 3. Prof. Slobodan Gligorijevic, MD**  
Dept of Anaesthesiology & Intensive Medicine  
Clinic Hirslanden, Zürich  
Switzerland  
E-mail: slobodan.g@bluewin.ch
- 4. Prof. Gert-Jan Van Geffen**  
Dept of Anaesthesiology & Intensive Medicine  
University Hospital Nijmegen  
Netherlands

5. **Sanja Huterer, MD**  
Dept of Anaesthesiology & Intensive Medicine  
Herz-Jesu Krankenhaus, Vienna, Austria  
E-mail: Sanja.huterer@gmail.com
6. **Prof. Vesna Novak Jankovič, MD, PhD**  
Department of Anesthesiology, Reanimatology and Intensive Care  
University hospital Centar Ljubljana  
Ljubljana, Slovenia  
E-mail: vnjankovic@hotmail.com
7. **Assoc. prof. Ismet Suljević, MD, PhD**  
Clinical Department of Anaesthesiology and Intensive Therapy,  
University Medical Centre Sarajevo  
Bosnia and Herzegovina  
E-mail: ismetsul@bih.net.ba

#### Speakers of Croatia

8. **Prof. Katarina Šakić, MD, PhD, DEAA**  
Polyclinic Bagatin for maxillofacial, general and plastic surgery Zagreb  
University J.J. Strossmayer of Osijek, University of Zagreb School of Medicine  
Department of Anaesthesiology, Reanimatology and Intensive Medicine  
Zagreb, Croatia  
E-mail: ksakic@mef.hr
9. **Prof. Ines Drenjančević-Perić, MD, PhD**  
Dept of Physiology and Immunology  
Vice Dean for Science  
School of Medicine University Josip Juraj Strossmayer Osijek  
Osijek, Croatia
10. **Prof. Vesna Golubović, MD, PhD, Professor**  
University Hospital Centar Rijeka  
Department of Anaesthesiology, Reanimatology and Intensive Medicine  
Rijeka, Croatia  
E-mail: vesna.golubovic@ri.htnet.hr
11. **Prof. Vanja Bašić Kes, MD, PhD**  
Department of neurology  
University Hospital Centar „Sestre Milosrdnice“  
Zagreb, Croatia  
E-mail: vanjakes@net.hr
12. **Prof. Dubravko Habek, MD, PhD**  
University Hospital Sveti Duh Zagreb  
Department of Gynecology and Obstetrics  
Zagreb, Croatia  
E-mail: dhabek@kbsd.hr
13. **Prof. Dinko Tonković, MD, PhD**  
University Hospital „Sveti Duh“ Zagreb  
Department of Anaesthesiology, Reanimatology and Intensive Medicine  
Zagreb, Croatia  
E-mail: dtonkovic@mef.hr
14. **Assist. Prof. Višnja Neseć Adam, MD, PhD**  
University Hospital „Sveti Duh“ Zagreb  
Department of Anaesthesiology, Reanimatology and Intensive Medicine  
Zagreb, Croatia  
E-mail: vnadam@kbsd.hr

- 15. Assist. Prof. Gordana Brozović, MD, PhD**  
University Hospital Center „Sestre Milosrdnice“ Zagreb  
Department of Anaesthesiology, Reanimatology and Intensive Medicine  
Zagreb, Croatia  
E-mail: gbrozovic@kbsd.hr
- 16. Assist. Prof. Branko Tripković, MD, PhD**  
University Hospital Centar Zagreb  
Department of Orthopaedic Surgery  
Division of Anaesthesiology and Intensive Medicine  
Zagreb, Croatia  
E-mail: branko.tripkovic@inet.hr
- 17. Daniela Bandić, MD, PhD**  
University Hospital Centar Zagreb  
Department of Anaesthesiology, Reanimatology and Intensive Medicine  
Zagreb, Croatia  
E-mail: dani.bandic@gmail.com
- 18. Ivan Radoš, MD, PhD, anesthesiologist**  
Department of Anesthesiology and ICU  
Clinical Hospital Centar, Osijek  
School of Medicine, University JJ Strossmayer, Osijek  
Osijek, Croatia  
E-mail: ivan.rados@os.htnet.hr
- 19. Dubravka Bartolek, MD, PhD, anesthesiologist**  
Department of Anesthesiology and ICU  
Department Orthopaedic Surgery “Sveta Katarina“  
Zabok Bračak, Croatia  
E-mail: dubravka.bartolek@zg.t-com.hr
- 20. Lada Kalagac Fabris, MD, PhD, anesthesiologist**  
Department of Anesthesiology and ICU  
General Hospital Pula Croatia  
E-mail: lada1966@gmail.com
- 21. Neven Elezović, MD, anesthesiologist**  
Department of Anesthesiology and ICU  
Clinical Hospital Split, Croatia  
E-mail: neven.elezovic@st.t-com.hr
- 22. Ivan Šklebar, MD, PhD**  
University Hospital “Sveti Duh“ Zagreb  
Department of Anaesthesiology, Reanimatology and Intensive Medicine  
Zagreb, Croatia  
E-mail: isklebar@kbsd.hr



Dear Colleagues, Guests and Friends,

On behalf of Croatian Society of Regional Anaesthesia and Analgesia – Croatian Medical Association (CSRAA-CroMA) and European Society of Regional Anaesthesia and Pain Therapy (ESRA) it is our great pleasure and honour to welcome you to the 5<sup>th</sup> International Symposium on Regional Anaesthesia and Pain Therapy and 5<sup>th</sup> Croatian Congress of Regional Anaesthesia and Analgesia in Zagreb, Croatia, June 14–15, 2013.  
10 years Anniversary Jubilee

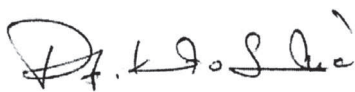
The scientific programme is designed for anaesthesiologists and other physicians interested in regional anaesthesia for surgical procedures, acute and chronic pain as well.

As in previous 10<sup>th</sup> years, the focus of the scientific programme is on state of the art presentations as well as on new insights into basic science, clinical research and therapeutic interventions. However, clinical practice holds an important position in regional anaesthesia and pain therapy and therefore workshops are important features of the Symposium. Your opinions and experience are important and we cordially invite you to actively participate in all discussions during the scientific sessions as well as the workshops.

The industrial exhibition is an opportunity for you to network and to keep up-to-date with the latest pharmacological and technological developments as a specific Ultrasound. Each company is a supporter of the Symposium and we would like to thank them all for their commitment and contribution by visiting the exhibition.

We are thankful that Zagreb, the capital of beautiful Croatia, will play host to this Symposium. It is a marvellous town with lot of heritage, culture dynamism and appeal and we sincerely hope that you will enjoy both, the educational value of the programme and the unique atmosphere of the charming city of Zagreb.

We are looking forward to greeting you personally in Zagreb.



Prof. Katarina Šakić, MD, PhD  
President CSRAA-CroMA

Slobodan Gligorijevic, MD  
President of Eastern ESRA  
Past president ESRA

## **General information**

The Symposium will be organised in a form of oral presentations, video projections, workshops and poster presentations

### **ABSTRACT SUBMISSION DEADLINE: April 24, 2013**

Presentations (apart from invited speakers) will not be allowed without paid registration fee.

Papers and abstracts will be reviewed and published in Journal "Periodicum biologorum" 2013 with ISBN indexing in SCI database (for more info see: <http://biologorum.irb.hr>)

## **Certificate**

Participation in Symposium program will be evaluated on the basis of rule of professional improving and verification of qualification for physicians by the Croatian Medical Chamber. The Participation Certificate will be handed to all participants with regulated registration fee.

## **Congress Venue**

"Hotel Westin", Kršnjavoga 1, 10 000 Zagreb, Croatia

## **Official Symposium languages**

English and Croatian (simultaneous translation will not be provided)

## **Presentation**

Oral presentation can be in Croatian or English. All presenting materials must be in English.

## **Official emblems**

All registered participants and accompanying persons will receive official Symposium emblem.

## **Social program and program for accompanying persons**

Cultural and social events are planned for the Congress participants.

- Welcome reception
- Guided city tour
- Half-day and one-day excursions

## **Organizers:**

Croatian Society of Regional Anaesthesia and Analgesia – Croatian Medical Association (CSRAA-CroMA)

University Josip Juraj Strossmayer Osijek School of Medicine

University Hospital "Sveti Duh"

Sveti Duh 64, HR-10000 Zagreb, Croatia

Phone: 00385 1 37 12 359

Fax: 00385 1 37 12 049

<http://hdraa.com.hr>

European Society of Regional Anaesthesia & Pain Therapy (ESRA)

<http://www.esraeurope.org>

**Presidents:**

Prof. Katarina Šakić, MD, PhD  
President of CSRAA-CroMA  
Slobodan Gligorijevic, MD  
President of Eastern ESRA  
Past president ESRA

**Congress service (registration fee and hotel)**

TANJA TRAVEL.D.O.O. Međimurska 19, 10000 Zagreb  
E-mail: tanja@ttravel.hr  
www.ttravel.hr  
tel: 00385 1 3703534

Hrvatsko društvo za regionalnu anaesteziju i analgeziju (HDRAA-HLZ)/  
Croatian Society of Regional Anaesthesia and Analgesia  
(CSRAA-CroMA), 10000 Zagreb, Šubićeva 9, Croatia  
Tel: 00385 1 3712359; Tel: 00385 1 4693302;  
Fax: 00385 1 4648120 Mob: 00385 98 318317  
E-mail: anestezija2013@kbsd.hr

**REGISTRATION FEE**

	Prior to 31 <sup>st</sup> March	After 31 <sup>st</sup> March	On site
EU PARTICIPANT ESRA MEMBER	€ 250	€ 300	€ 400
EU PARTICIPANT NON MEMBER	€ 300	€ 350	€ 400
HDRAA-HLZ member	1500 Kn	2000 Kn	2500 Kn
HDRAA-HLZ non member	2000 Kn	2300 Kn	2300 Kn
Resident/Trainee	1000Kn	1000 Kn	1000 Kn
Accompanying person	1000 Kn	1000 Kn	1000 Kn
Day registration fee	€ 200	€ 200	€ 200

**PAYMENT MODE**

**Congress service: TANJA TRAVEL D.O.O. Međimurska 19, Zagreb.**

**Kontakt osoba Tanja Hajdinović.**

**Tel. 00385 1 3703 534, 01 3703 581, E-mail: tanja@ttravel.hr**

Croatian participants pay the registration fee to the Congress service's account:  
Privredna banka Zagreb, žiro-račun: **2340009-1110523183: poziv na broj 268-408.**

Svrha uplate: ime i prezime sudionika,

5. Kongres HDRAA-HLZ.

**Foreign participants pay the registration fee to the Congress service's**

**TANJA TRAVEL D.O.O.**

**Međimurska 19, Zagreb, E-mail: tanja@ttravel.hr, reference number 268-408.**

**SWIFT: PBZGHR2X**

**IBAN: HR3123400091110523183**

Bank: Privredna banka Zagreb, Račkoga 6, 10000 Zagreb,  
Croatia. Beneficiary: Hrvatski liječnički zbor-HDRAA, Zagreb

Purpose: Full participant's name, 5. Symposium HDRAA-HLZ.

Please send your payment slip by fax: 00385 1 3703 581 or to E-mail:  
anestezija2013@kbsd.hr

The discount registration will be allowed to all members with the prove of paid membership fee.

Hotel Accommodation: Hotel Westin Zagreb, Kršnjavoga 1, rezervacije na tanja@ttravel.hr  
Deadline for hotel accommodation reservation is May 31, 2013.

## Scientific Programme

**FRIDAY, 14th June 2013**  
**17:00 HALL A**

**OPENING CEREMONY WELCOME RECEPTION**  
**HOTEL WESTIN „Opera“, 17<sup>th</sup> floor**

**Croatian Society of Regional Anesthesia and Analgesia**  
**Croatian Medical Association**  
**2003-2013 - 10<sup>th</sup> Anniversary**

**17.15 – 17.35**

Promoting Regional anesthesia throughout Europe: effective strategies to implement regional techniques in to clinical practice.

*M. Van de Velde, Leuven, Belgium*

**17.35 – 17.55**

Regional anesthesia throughout South Eastern Europe-long way to go.

*S. Gligorijevic, Zuerich, Switzerland*

**17.55 – 18.25**

Non anesthetic action of local anesthetics

*Alain Borgeat, Zuerich, Switzerland*

**18.25 – 18.55**

„10 years of Croatian Society of Regional aneesthesia and Analgesia“

*K. Šakić, Zagreb, Croatia*

**19.00 – 22.00**

**CSRAA 2013 Best Free Paper and Poster Awards**

WELCOME RECEPTION – HOTEL WESTIN „Opera“, 17<sup>th</sup> floor

**SATURDAY, 15<sup>th</sup> June 2013**

**08.00 – 10.30 HALL A**

**SYMPOSIUM I – REGIONAL ANAESTHESIA in OBSTETRICS**

*Chair: M. Van de Velde, Leuven, Belgium; K. Šakić, Zagreb, Croatia*

**18.00 – 08.45**

Regional anaesthesia in the OB patient for labor and C-section: state of the art

*Marc Van de Velde, Leuven, Belgium*

**08.45 – 09.15**

Anesthesia for the Preeclampsia patient?

*V. Golubović, Rijeka, Croatia*

**09.15 – 09.35**

Forensic in obstetrics anesthesia

*D. Habek, Zagreb Croatia*

**09.35 – 10.05**

Could the Choice of Regional anaesthesia serve as a cost management indicator within a hospital?

*K. Šakić, Zagreb, Croatia*

**10.05 – 10.30 Discussion**

**10.30 – 11.00**

**POSTER PRESENTATIONS (P1-P20) / Coffee break**

**11.00 – 13.00**

**SYMPOSIUM II – CENTRAL AND PERIPHERAL NERVE BLOCKS AND PAIN MANAGEMENT**

*Chair: S. Gligorijevic, Zuerich, Switzerland. A. Borgeat, Zuerich, Switzerland*

**11.00 – 11.20**

Regional anaesthesia for the elderly patients

*V. Novak Janković, Ljubljana, Slovenia*

**11.20 – 11.40**

Controversies in regional anaesthesia – patient on anticoagulant therapy

*B. Tripković, Zagreb, Croatia*

**11.40 – 12.00**

Role of regional anaesthesia in postoperative pain management

*S. Gligorijevic, Zuerich, Switzerland*

**12.00 – 12.20**

Neural blockade and nerve damage – changing concept

*A. Borgeat S, Zuerich/Switzerland*

**12.20 – 12.40**

Management of neurologic complication after regional anaesthesia- what to tell the patient?

*V. Bašić Kes, Zagreb, Croatia*

**12.40 – 13.00**

Discussion

**13:00 – 14:00**

**ORAL PRESENTATIONS (OP1-OP7) / Lunch**

*Chair: B. Tripković, Zagreb, Croatia, I. Suljević, Sarajevo, Bosnia-Herzegovina*

**14.00 – 16.00**

**SYMPOSIUM III – REGIONAL ANAESTHESIA FOR TRAUMA PATIENTS AND REHABILITATION**

*Chair: V. Golubović, Rijeka Croatia, V. Nesek Adam, Zagreb, Croatia*

**14.00 – 14.20**

Stress and pain in emergency and trauma patients

*V. Nesek Adam, Zagreb, Croatia*

**14.20 – 14.40**

Regional anaesthesia for trauma patient

*D. Tonković, Zagreb, Croatia*

**14.40 – 15.00**

Regional anaesthesia in multimorbid patient?

*V. Golubović, Rijeka, Croatia*

**15.00 – 15.20**

Coagulation Disorder and the Regional anaesthesia and Analgetic

*G. Brozović, Zagreb, Croatia*

**15.20 – 15.40**

Basics of ultrasound for regional anaesthesia

*Gert-Jan Van Geffen, Nijmegen/ NL*

**15.40 – 16.00**

Discussion

**16.00 – 16.30**

**POSTER PRESENTATIONS (P21-P35) / Coffee break**

**16.30 – 17.30**

**SYMPOSIUM IV – HOT TOPICS IN REGIONAL ANAESTHESIA AND PAIN MEDICINE IN CROATIA -Last years top publications**

*Chair: V.Novak Janković, Ljubljana, Slovenia, D.Tonković, Zagreb, Croatia*

**16.20 – 16.40**

Research in regional anaesthesia and analgesia

*D.Tonković, Zagreb, Croatia*

**16.40 – 16.50**

Transforaminal vs. Interlaminar Steroid Injections for Radiculopathy; prospective randomized study

*I. Radoš, Osijek, Croatia*

**16.50 – 17.00**

Do we need cephalic spread of spinal anaesthesia for Caesarean section?

An different approach to CSE-EVE for reducing hypotension

*L. Kalagac Fabris, Pula, Croatia*

**17.00 – 17.10**

Effect of spinal and general anaesthesia on serum concentration of pro-inflammatory and anti-inflammatory cytokines

*M. Žura, Zagreb, Croatia*

**17.10 – 17.20**

Interactions between cellular and humoral immunity in postoperative epidural/intravenous analgesia after colorectal cancer resection.

*S. Golubović, Rijeka, Croatia*

**17.20 – 17.30**

Discussion

**Hall A**

**W01 WORKSHOP**

**17.30 – 18.15**

Nerve location for peripheral nerve blocks: ultrasound and nerve stimulation upper extremity blocks brachial plexus – proximal approaches: interscalene, infraclavicular – distal approaches: nerve blocks at elbow and wrist level

*Demonstrators/speakers: G.Jan Van Geffen, Nijmegen/NL; B.Tripković, Croatia*

**Hall B**

**W02 WORKSHOP**

**17.30 – 18.15**

Nerve location for peripheral nerve blocks:ultrasound and nerve stimulation. Lower extremity blocks.

Proximal approaches: psoas compartment, femoral and sciatic nerve blocks.

Distal nerve blocks: sciatic and saphenous nerve block at the knee and ankle level.

*Demonstrators/speakers: S. Gligorijevic, Switzerland; I. Skok, Croatia*

**Hall C**

**W03 WORKSHOP**

**17.30 – 18.15**

Nerve location for peripheral nerve blocks: ultrasound and nerve stimulation

Paravertebral, sympathetic, and other blocks

*Demonstrators/speakers: S. Huterer, Austria; I. Radoš, Croatia*

**Hall D**

**W04 WORKSHOP**

**17.30 – 18.15**

Nerve location for peripheral nerve blocks: ultrasound and nerve stimulation upper extremity blocks

Brachial plexus – Proximal approaches: interscalene, infraclavicular

Distal approaches: nerve blocks at elbow and wrist level

*Demonstrators/speakers: A. Borgeat, Switzerland; K. Oremuš, Croatia*

**Hall A**

**W05 WORKSHOP**

**18.15 – 19.00**

Nerve location for peripheral nerve blocks: ultrasound and nerve stimulation upper extremity blocks

Brachial plexus – Proximal approaches: interscalene, infraclavicular

Distal approaches: nerve blocks at elbow and wrist level

*Demonstrators/speakers: G. Jan Van Geffen, Nijmegen N; I. Skok, Croatia*

**Hall B**

**W06 WORKSHOP**

**18.15 – 19.00**

Nerve location for peripheral nerve blocks: ultrasound and nerve stimulation.

Lower extremity blocks

Proximal approaches: psoas compartment, femoral and sciatic nerve blocks.

Distal nerve blocks: sciatic and saphenous nerve block at the knee and ankle level.

*Demonstrators/speakers: S. Gligorijevic, Switzerland; B. Tripković, Croatia*

**Hall C**

**W07 WORKSHOP**

**18.15 – 19.00**

Nerve location for peripheral nerve blocks: ultrasound and nerve stimulation

Paravertebral, sympathetic, and other blocks

*Demonstrators/speakers: S. Huterer, Austria; I. Radoš, Croatia*

**Hall D**

**W08 WORKSHOP**

**18.15 – 19.00**

Nerve location for peripheral nerve blocks: ultrasound and nerve stimulation.

Lower extremity blocks

Proximal approaches: psoas compartment, femoral and sciatic nerve blocks.

Distal nerve blocks: sciatic and saphenous nerve block at the knee and ankle level.

*Demonstrators/speakers: A. Borgeat, Switzerland; K. Oremuš, Croatia*

**19.00**

**CLOSING CEREMONY “Opera” 17<sup>th</sup> floor**

**SATURDAY, 15<sup>th</sup> June 2013**

13:00 – 14:00

ORAL PRESENTATIONS (OP1-OP7)  
*Chair: B. Tripković , Zagreb, Croatia, I.Suljević, Sarajevo, Bosnia-Herzegovina*

**13.00-13.08**

**OP1. Intermittent spinal anesthesia- a viable alternative in hybrid vascular procedures?**  
IVANA TUDORIĆ ĐENO, ANA BRIŠKI, IVONA DRAGIĆ, DAVORKA ŽIDAK,  
JASMINKA PERŠEC, INO HUSEDŽINOVIĆ

**13.08-13.16**

**OP2. Perforation of the dura mater as a possible complication of peridural anesthesia and analgesia, and how to avoid it?**  
ISMET SULJEVIĆ, ISMANA ŠURKOVIĆ, MAIDA SULJEVIĆ

**13.16-13.24**

**OP3. Epidural analgesia in patient with surgically repaired Tetralogy Fallot during two labors and deliveries**  
DRAGICA KOPIĆ, NEVEN ELEZOVIĆ, ANA LIJIĆ, DAMIR ROJE, MARKO VULIĆ, NENAD KARANOVIĆ,

**13.24-13.32**

**OP4. Regional anesthesia for patient with restless legs syndrome: case report**  
IRA SKOK, MLADEN MIŠKULIN, GORAN VRGOČ, GORDANA ŽIDAK

**13.32-13.40**

**OP5. Orofacial pain caused by trigeminal neuralgia and/or temporomandibular joint disorder**  
TOMISLAV BADEL, IVANA SAVIĆ PAVIČIN, VANJA BAŠIĆ KES, IRIS ZAVOREO, DIJANA ZADRAVEC, JOSIPA KERN

**13.40-14.48**

**OP6. Medical Ethics in pain and palliative medicine**  
MORANA BRKLJAČIĆ, KATARINA ŠAKIĆ, LIVIJA ŠAKIĆ

**13.48-14.56**

**OP7 . The correlation between patient safety culture and regional anesthesia development**  
IVAN ŠKLEBAR, DUBRAVKO HABEK, IVANA JURKOVIĆ, KATA ŠAKIĆ



SATURDAY, 15<sup>th</sup> June 2013

10.30 – 11.00	I. POSTER PRESENTATIONS (P1-P7) <i>Chair: D. Kopic, Split, Croatia, I. Šklebar, Zagreb, Croatia</i> REGIONAL ANAESTHESIA IN OBSTETRICS
---------------	--

- P1** **Cesarean section under spinal anesthesia in General Hospital of Dubrovnik; A decade after**  
SREČKO LJUBIČIĆ, Z. NIŽIĆ, A. VUKOVIĆ, N. CAR, NEVEN ELEZOVIĆ, T. LJUBIČIĆ
- P2** **Adverse events in spinal anesthesia for caesarean section**  
KRISTINA KOTORAC, KATRINA ŠAKIĆ ZDRAVČEVIĆ, GORDANA BROZOVIĆ
- P3** **Case report: Peripheral nerve blocks for bones fractures in high pregnancy–interscalene brachial plexus blockade and femoro-popliteal blockade.**  
KALAGAC FABRIS LADA, LIVIJA ŠAKIĆ, KATARINA ŠAKIĆ ZDRAVČEVIĆ
- P4** **Blood patch frequency as a quality indicator in obstetric regional anesthesia**  
IVAN ŠKLEBAR, LIVIJA ŠAKIĆ, MILKA VUKELIĆ ANĐIĆ, DINKO TONKOVIĆ
- P5** **Anesthetic management of patients with pregnancy associated thrombotic thrombocytopenic purpura-hemolytic uremic syndrome, finally treated with plasmapheresis**  
DANIELA PUPAČIĆ, MATE PERKOVIĆ, DRAGICA KOPIĆ, SREČKO LJUBIČIĆ
- P6** **The Pathophysiology of Thrombophilia in Cancer Patients**  
DEANA ŠTURM, GORDANA BROZOVIĆ, DINKO BAGATIN, KATARINA ZDRAVČEVIĆ ŠAKIĆ, LJILJA ŠTEFANČIĆ
- P7** **Clinical education and quality improvement methodologies in advancing obsteric anesthesia practices: Student graduate project**  
IVA FERČEK, KATA ŠAKIĆ, LIVIJA ŠAKIĆ, IVAN ŠKLEBAR

10.30 – 11.00	II. POSTER PRESENTATIONS (P8-P14) <i>Chair: D. Oberhofer, Zagreb, Croatia, D. Bandić Pavlović, Zagreb, Croatia</i> CENTRAL AND PHERIPHERAL NERVE BLOCKS
---------------	---

- P8** **Comparison of general and spinal anesthesia in patients undergoing open ventral hernia repair**  
RENATA KROBOT, JADRANKA PREMUŽIĆ
- P9** **Comparison of 22G vs 25G needle for ultrasound guided popliteal nerve block distal to sciatic bifurcation: Randomized Prospective Study**  
MATIJA JURJEVIĆ, IVO MATIĆ, IVAN MIRKOVIĆ, JASMINKA KOPIĆ, IVANA PAJIĆ-PENAVIĆ, HRVOJE PALENKIĆ
- P10** **The use of an ultrasound-gudied popliteal block for hallux valgus surgery in a patient with myasthenia gravis**  
GORDANA KRISTEK, IVANA HARŠANJI DRENJANČEVIĆ, SLAVICA KVOLIK, DANIJELA GULAM, TOMISLAV RUŽMAN
- P11** **Comparison of regional and general anesthesia for major shoulder surgery: Prospective Study**  
IVAN MIRKOVIĆ, IVO MATIĆ, MATIJA JURJEVIĆ, JASMINKA KOPIĆ, HRVOJE PITLOVIĆ

- P12 Spinal anesthesia for laparoscopic peritoneal dialysis catheter implantation: A pilot study**  
IVA BAČAK KOČMAN, NIKOLINA BAŠIĆ JUKIĆ, ELEONORA GOLUŽA, VILKA BEKAVAC MIŠAK,  
ANDREA PERŠIN BERAKOVIĆ, MARIJA TOPALOVIĆ GRKOVIĆ, NIKOLA KNEŽEVIĆ, ŽELJKO  
KAŠTELAN, IVICA KOČMAN, MLADEN PERIĆ
- P13 Epidural vs intravenous analgesia after major abdominal surgery: Our experiences**  
IVO MATIĆ, KATARINA ŠAKIĆ ZDRAVČEVIĆ, MATIJA JURJEVIĆ, JASMINKA KOPIĆ, IVANA PAJIĆ-  
PENA VIĆ
- P14 Reducing the incidence of adverse events in anesthesia practice**  
MATIJA BELAVIĆ, MIRJANA LONČARIĆ-KATUŠIN, JOSIP ŽUNIĆ

<b>10.30 – 11.00</b>	<b>III. POSTER PRESENTATIONS (P15-P20)</b> <i>Chair: J. Peršec, Zagreb, Croatia, T. Šimurina, Zagreb, Croatia</i> <b>CENTRAL AND PHERIPHERAL NERVE BLOCKS</b>
----------------------	---

- P15 Different clinical diagnosis in two cases and treatment of the TURP syndrome after spinal anesthesia**  
JOSIP KOVAČ, ANA PERKOVIĆ, BLANKA ŠORE, ALEKSANDRA GVOZDENOVIĆ, MAJA HUZZAK,  
BRANKA MALDINI
- P16 Comparison of perioperative adverse effects of bilateral and unilateral spinal anesthesia**  
LUKA DJULABIĆ, VIŠNJA NESEK ADAM, KATARINA ŠAKIĆ
- P17 Paravertebral blockade as indication, not as anesthesia choice: Two case reports**  
JASMINKA PERŠEC, MIROSLAV ŽUPČIĆ, ANĐELKO KORUŠIĆ, IVANA TUDORIĆ ĐENO, INO  
HUŠEŽINOVIĆ
- P18 Sudden cardiorespiratory arrest following spinal anesthesia: Case report**  
SINIŠA ŠOŠTARIĆ, KREŠIMIR OREMUŠ
- P19 Transient paraplegia after esophagectomy in a patient with thoracic epidural analgesia: Case report**  
NINA SULEN, BARBARA PETANI, IVAN BAČIĆ, TATJANA ŠIMURINA
- P20 Incidence and clinical significance of post-dural puncture headache in young orthopedic patients and parturients**  
DAGMAR OBERHOFER, ALEKSANDRA JOKIĆ, IRA SKOK, JADRANKA SKURIĆ, MILKA VUKELIĆ, IVAN  
ŠKLEBAR, DINKO TONKOVIĆ

16.00 – 16.30	IV. POSTER PRESENTATIONS (P21-P26) <b>Chair: D. Bartolek Hamp, Zagreb, Croatia, L. Kalagac Fabris, Pula, Croatia</b> REGIONAL ANAESTHESIA FOR TRAUMA PATIENTS AND REHABILITATION
---------------	--

- P21 Door-to-analgesia time for long bone fracture victims**  
DAMJAN MARIN, VIŠNJA NESEK ADAM, ANA MARKIĆ, ŽARKO RAŠIĆ, TOMISLAV MATEJIĆ
- P22 Low-dose chirocaine with fentanyl prevents hypotension after spinal anesthesia in elderly patients undergoing hip fracture surgery**  
ELVIRA GRIZELJ STOJČIĆ, VIŠNJA NESEK ADAM, VIVIANA MRŠIĆ, MARTINA MATOLIĆ, LIVIJA ŠAKIĆ, DINKO TONKOVIĆ
- P23 Combined peripheral blocks for upper and lower extremities in polytrauma patient: Case report**  
DAVORKA ŽIDAK, MARCEL ŽIDAK, MIROSLAV ŽUPČIĆ, ANĐELKO KORUŠIĆ, IVANA TUDORIĆ-ĐENO, SANDRA GRAF-ŽUPČIĆ
- P24 Evaluation of general and regional anesthesia procedures in an Emergency department in University hospital "Sveti Duh"**  
JELENA VOJNIĆ, VIŠNJA NESEK ADAM, ALEKSANDRA SMILJANIĆ, VIVIANA MRŠIĆ, ELVIRA GRIZELJ STOJČIĆ, DARINKA TUNJIĆ PEJAK, TOMISLAV MATEJIĆ
- P25 The hemodynamic effect of intermediate cervical plexus block compared to general anesthesia in high risk patients with carotid endarterectomy**  
DANIELA BANDIĆ PAVLOVIĆ, DINKO TONKOVIĆ, SANJA SAKAN, ŽELJKA MARTINOVIĆ
- P26 Anesthesia management for children with eye injuries**  
MARTINA MATOLIĆ, VIŠNJA NESEK ADAM, MLADEN BUŠIĆ

16.00 – 16.30	V. POSTER PRESENTATIONS (P27-P35) <b>Chair: I. Radoš, Osijek, Croatia, N. Elezović, Split, Croatia</b> PAIN MANAGEMENT
---------------	--

- P27 Invasive technique in treating chronic pain: Lumbar sympathetic block in treatment of complex regional pain syndrome of lower extremities**  
ANDREJ RADIĆ, EDUARD ROD, KARLO HOURA, DARKO PEROVIĆ, DAMIR HUDETZ, DUBRAVKA BARTOLEK
- P 28 Lumbar Facet Joint Injections and Medial Branch Blocks: Review**  
IVAN RADOŠ, NEVEN ELEZOVIĆ
- P29 "Blind" interlaminar epidural steroid injection in lumbar spinal stenosis; effective and safe technique in elderly patient: short communication**  
NEVEN ELEZOVIĆ, MLADEN CAREV, SANDA STOJANOVIĆ STIPIĆ, IVAN RADOŠ, SREĆKO LJUBIČIĆ, DRAGICA KOPIĆ
- P30. Ultrasound guided barbotage and local injections for rotator cuff calcific tendinitis treatment**  
EDUARD ROD, DAMIR HUDETZ, ANDREJ RADIĆ, DUBRAVKA BARTOLEK HAMP, ALAN IVKOVIĆ
- P31. Effectiveness of bolus of levobupivacain by wound catheter at the end of the operation is still unknown**  
KATIJA ČULAV, LJILJANA ŠTEFANČIĆ, GORDANA BROZOVIĆ, BRANKA MALDINI

- P32. Is the ultrasound guide "single shot" femoral nerve block good analgesia following total knee replacement surgery?**  
SENKA BARANOVIĆ, BRANKA MALDINI, MILAN MILOŠEVIĆ
- P33. Pheripheral nerve block or intravenosu – PCA analgesia for early physical rehabilitation in "Fast-track" orthoepadic surgury: What is optimal?**  
DUBRAVKA BARTOLEK, MLADEN RAKIĆ, EDUARD ROD, ANDREJ RADIĆ, DARJA GRANEC, DARKO PEROVIĆ, KARLO HOURA
- P34. Regional anaesthesia and chronic renal disease**  
MARIJANA ŽURA, KATARINA ŠAKIĆ
- P35. Continous wound infusion versus epidural postoperative analgesia after liver resection in carcinoma patients**  
LJILJA ŠTEFANČIĆ, GORDANA BROZOVIĆ, DEANA ŠTURM, BRANKA MALDINI, KATA ŠAKIĆ

## OP1. INTERMITTENT SPINAL ANESTHESIA- A VIABLE ALTERNATIVE IN HYBRID VASCULAR PROCEDURES?

IVANA TUDORIĆ ĐENO, ANA BRIŠKI, IVONA DRAGIĆ, DAVORKA ŽIDAK, JASMINKA PERŠEC, INO HUSEDŽINOVIĆ

University of Zagreb, Dubrava University Hospital, Clinical Department of Anesthesiology, Reanimatology and Intensive Care Medicine, Zagreb, Croatia  
I. Tudorić- Đeno: (e-mail: ivanatd@yahoo.com)

**Background and purpose:** The choice of anesthetic technique and hemodynamic monitoring during hybrid procedures for peripheral revascularization is greatly affected by patient comorbidities, duration of surgery and the assessment of the risks and benefits of a certain anesthetic technique. The reduction in mortality by one third with the use of neuraxial anesthesia (NA) technique compared to general anesthesia, not dependent on surgery subspecialty, provides basis for the application of the NA technique in all procedures performed below the level of the umbilicus. The aim of this paper is to present the intraoperative conditions during SS SAB compared to intermittent SAB with spinal catheter placement (ISAB).

**Material and methods:** During the period between May 1, 2008 to December 31, 2011, we monitored the quality of intraoperative conditions, the absence of pain and unpleasant sensations in the surgical field during hybrid peripheral revascularization procedures of the lower extremities. In the ISAB group a bolus dose of local anesthetic solution of 1.6 mcg levobupivacaine in 3.3% and 16 mcg fentanyl glucose solution was administered. In the SS SAB group a bolus dose of 15 mg 0,5% Chirocaine was administered. Block was considered adequate if the height of the sensory block was at Th10 level. The intensity of the motor block was determined at the beginning and at the end of the operation.

**Results:** Of all the patients who underwent hybrid peripheral revascularization procedure, the analysis included 21 patients. During this study we observed unplanned prolongation of the surgery, and thus the occurrence of inadequate intraoperative analgesia N 6/13 in the SS SAB. At the start of the procedure motor block was more intense in the SS SAB group, and at the end of the operation in a small number of patients in a SS SAB group there was still a milder degree of motor block present, while in the ISAB group a complete motor recovery was observed. Both groups of patients had VAS over 5 as early as 2 hours after surgery and required non-steroidal antirheumatic drugs, and 6 hours after surgery VAS was higher than 7 and patients were given Tramadol 100 mg iv.

**Conclusion:** Whenever the duration of the surgical technique allows it, the technique of choice is SS SAB, but with prolonged surgery and elderly patients with significant cardiovascular and respiratory comorbidities one should consider the benefits offered by intermittent or continuous spinal anesthesia.

## OP2. PERFORATION OF THE DURA MATER AS A POSSIBLE COMPLICATION OF PERIDURAL ANESTHESIA AND ANALGESIA, AND HOW TO AVOID IT?

SULJEVIĆ ISMET, ŠURKOVIĆ ISMANA, SULJEVIĆ MAIDA

Clinical department of Anesthesiology and Intensive Care Medicine, University Hospital Center Sarajevo, Sarajevo, BiH

**Background:** The study try to show that the safest technique of placing peridural needle in peridural space, and to thereby avoid perforation of dura mater.

**Materials and methods:** In a prospective study of 150 patients of the Clinic of Anesthesiology and Resuscitation Clinical Center University of Sarajevo, was applied peridural anesthesia or analgesia in order to undertake various surgical procedures. Patients of both sexes, and 96 males and 54 females, aged 20-80 years old was included in the

study. Patients were divided into 3 groups. The group G1, was patients who had applied technique of placing peridural needle with a loss of resistance using a syringe with 20 mL of saline. The group G2, was patients who had applied technique hanging drops and the negative pressure in the peridural space. In the third group G3, was patients who had applied technique hanging drops and loss of resistance with saline infusion whose system connected to a peridural needle. In all three groups, there were 50 patients of each.

**Results and Conclusion:** In group G1, we had 4 perforations dura mater. The group G2, we had 2 perforations dura mater, while the third group G3 we had not perforated the dura mater. In our experience combined technique with hanging drops and loss of resistance with saline infusion is the most appropriate way to access the peridural space. This certainly includes the previously acquired skills and solid practical experience and meticulous attention anesthesiologist at each manipulation.

### **OP3. EPIDURAL ANALGESIA IN PATIENT WITH SURGICALLY REPAIRED TETRALOGY BALLOT DURING TWO LABORS AND DELIVERIES**

**DRAGICA KOPIĆ<sup>1</sup>, NEVEN ELEZOVIĆ<sup>1</sup>, ANA LIJIĆ<sup>1</sup>, DAMIR ROJE<sup>2</sup>, MARKO VULIĆ<sup>2</sup>, NENAD KARANOVIĆ<sup>1</sup>**

<sup>1</sup> Department of Anesthesiology, Resuscitation and Intensive Care University Hospital Center Split, Croatia

<sup>2</sup> Department of Gynecology and Women Health University Hospital Center Split, Croatia

#### **Summary:**

We describe the anesthetic management of a patient with surgically repaired Tetralogy Fallot (TOF) during two labors and deliveries. TOF is the most common congenital heart disease, but pregnancy in patients with surgically repaired illness usually has favorable outcome. Every subsequent pregnancy has a risk of persistent cardiac changes and the use of epidural analgesia should be carefully conducted.

### **OP4. REGIONAL ANESTHESIA FOR PATIENT WITH RESTLESS LEGS SYNDROME : CASE REPORT**

**IRA SKOK, MLADEN MIŠKULIN, GORAN VRGOČ, GORDANA ŽIDAK**

Clinical hospital " Sveti duh"  
Ira Skok: (ira.skok@gmail.com)

**Background and purpose:** Restless legs syndrome (RLS) or Ekborn syndrome is a common, usually unrecognized neurological disorder with sensory and motor symptoms. Those patients have urge to move, associated with legs paresthesia and dysesthesia and voluntary and involuntary leg movements. That usually occurs at rest, in the evening and at night and is worsened by immobilization, withdrawal of dopaminergic agents, sleep deprivation and blood loss. Over the years, it was understood that regional anesthesia, might worsen or even cause RLS. We tried to choose the best anesthetic technique for such patient, taking into consideration patient's personal history and anamnestic details about previous general anesthesia and the type of surgery.

**Case report:** A 43-yr-old woman, 162 cm high, 56 kg weight, who suffers from familial, idiopathic RLS underwent revision operative treatment because of continued pain in the right hip region since the primary implant was unstable. She experienced general anesthesia three times. Every time in preoperative settings and also during the wakening from general anesthesia, she had an acute exacerbation of RLS symptoms. We decided to use spinal anesthesia with sedation which allows her to be awake and conscious.

**Conclusion:** It is very important to diagnose such patients before the procedure, to take detailed anamnesis and then determine the most appropriate anesthetic method. If the regional anesthesia is the chosen strategy, it will be probably necessary to use parenteral opioids to prevent the symptoms of RLS. We suggest using regional anesthesia in combination with mild sedation whenever it is possible.

## OP5. OROFACIAL PAIN CAUSED BY TRIGEMINAL NEURALGIA AND/OR TEMPOROMANDIBULAR JOINT DISORDER

TOMISLAV BADEL<sup>1</sup>, IVANA SAVIĆ PAVIČIN<sup>2</sup>, VANJA BAŠIĆ KES<sup>3</sup>, IRIS ZAVOREO<sup>3</sup>,  
DIJANA ZADRAVEC<sup>4</sup>, JOSIPA KERN<sup>5</sup>

<sup>1</sup> Department of Removable Prosthodontics, School of Dental Medicine, University of Zagreb, Zagreb, Croatia

<sup>2</sup> Department of Dental Anthropology, School of Dental Medicine, University of Zagreb, Zagreb, Croatia

<sup>3</sup> Department of Neurology, Clinical Hospital Centre "Sisters of Charity", University of Zagreb, Zagreb, Croatia

<sup>4</sup> Department of Diagnostic and Interventional Radiology, Clinical Hospital Centre "Sisters of Charity", University of Zagreb, Zagreb, Croatia

<sup>5</sup> Department of Medical Statistics, Epidemiology and Medical Informatics, School of Public Health "Andrija Štampar", School of Medicine, University of Zagreb, Zagreb, Croatia

Tomislav Badel: (badel@sfzg.hr)

**Background and purpose:** The purpose was to evaluate accurate differentiating between temporomandibular joint (TMJ) disorder and trigeminal neuralgia (TN) in the sample of patients from a subspecialist dental practice.

**Patients and methods:** Patients (n=239, mean age 39.3 years, 83.3% female) were examined for clinical symptoms and signs of orofacial pain of non-dental origin. The study included 12 female patients (group G-1; mean age 60.3 years) with determined co-morbidity of TMJ disorder and TN, and 17 patients (group G-2; mean age 53.8 years, 64.7% female) with only TN confirmed and the TMJ disorder ruled out. TMJ diagnosis by means of magnetic resonance imaging (MRI) was confirmed. Pain intensity was rated on a visual-analogue scale (VAS with range 0-10) and maximal mouth opening capacity (mm) measured by gauge.

**Results:** TMJ pain on the VAS scale for G-1 patients amounted to 6.91. TN related pain symptoms on the VAS scale for G-1 patients amounted to 9.0±1.6 and for G-2 patients 8.1±2.7. There was a statistically significant difference in the intensity of TMJ and TN related pain (p=0.0074) within the G-1 patients group. Pain in the TMJ area (p=0.0012), noise in the TMJs (p=0.0345) as well as ear pain (p<0.001) were more frequent in G-1 patients with TMJ disorder. Maximal mouth opening was statistically significant (p=0.0037) between G-1 (38.9±9.2 mm) and G-2 patients (48.9±5.2 mm).

**Conclusions:** A thorough clinical evaluation of symptoms as well as MRI as the gold standard for TMJ diagnostics also includes neurological examination in cases of uncommon orofacial pain conditions.

## OP6. MEDICAL ETHICS IN PAIN AND PALLIATIVE MEDICINE

MORANA BRKLJAČIĆ<sup>1</sup>, KATARINA ŠAKIĆ<sup>2</sup>, LIVIJA ŠAKIĆ<sup>3</sup>

<sup>1</sup> Medical Clinic „Sveti Rok M.D.“ Zagreb; University of Zagreb, School of Medicine, Medical Ethics

<sup>2</sup> University of Josip Juraj Strossmayer Osijek, School of Medicine

<sup>3</sup> University Hospital Sveti Duh, Department of Anesthesiology, Reanimatology and Intensive Medicine, Zagreb

Morana Brkljačić: (morana\_brkljacic@yahoo.co.uk)

**Background and purpose:** Palliative Medicine/Care is an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual. Coordinated program of palliative and supportive care responds to the needs of dying patients insuring alternative to aggressive, curative-oriented care. Palliative care does not justify, nor participates in any process that aims to speed up or prolong the patient's death. On the contrary, all aspects of care are focused on creating comfort, respect for life and optimizing patient's control and autonomy.

**Conclusion:** Rationales for clinical decision making include both medical and ethical criteria. Ethics can also provide models to address systematically and discuss practical cases in order to facilitate clinical decision-making.

## OP7. THE CORRELATION BETWEEN PATIENT SAFETY CULTURE AND REGIONAL ANESTHESIA DEVELOPMENT

IVAN ŠKLEBAR<sup>1,3</sup>, DUBRAVKO HABEK<sup>2,3</sup>, IVANA JURKOVIĆ<sup>3</sup>, KATA ŠAKIĆ<sup>4</sup>

<sup>1</sup> Department of Anaesthesiology, Reanimatology and Intensive Care, University Hospital "Sveti Duh", Zagreb, Croatia

<sup>2</sup> Department of Obstetrics and Gynecology, University Hospital "Sveti Duh", Zagreb, Croatia

<sup>3</sup> Study of Nursing, Technical College Bjelovar, Croatia

<sup>4</sup> School of Medicine, University of Osijek, Croatia

**Background and purpose:** Through the development of security systems, improvement of knowledge and skills, and cooperation with other professions anesthesiologists have become leaders in improving patient safety and creators of a positive culture of patient safety among health professionals in the developing countries. Taking the significant progress made in regional anesthesia in Croatia as an indicator of the aforementioned role that anesthesiologists play within the health care system of transitional societies such as Croatian, research was carried out with the purpose of detecting differences in patient safety culture among anesthesiology, surgical and non-surgical staff in a sample of Croatian hospitals.

**Materials and methods:** The research covered 560 health professionals in three general hospitals in Croatia who anonymously and voluntarily filled in the Croatian version of the Hospital Survey on Patient Safety Culture (HSOPSC). One-way analysis of variance and multiple post hoc test according to Bonferroni were carried out in order to test statistical differences in 12 dimensions of patient safety culture between surgical, non-surgical and anesthesiology staff.

**Results:** Statistically significant differences between the three groups of staff were found in 9 out of 12 HSOPSC dimensions, which was distributed to differences between anesthesiology and non-surgical staff in 7 dimensions, anesthesiology and surgical staff in 2 dimensions, and surgical versus non-surgical staff in 3 dimensions.

**Conclusions:** Our research proved the hypothesis that anesthesiologists are the profession that is the most aware of and devoted to patient safety problems, spreading their positive influence through patient safety culture to all anesthesiology staff as well as to those with whom they predominantly collaborate.



## POSTER PRESENTATIONS

### P1. CESAREAN SECTION UNDER SPINAL ANESTHESIA IN GENERAL HOSPITAL OF DUBROVNIK; A DECADE AFTER

SREČKO LJUBIČIĆ<sup>1</sup>, ZDRAVKO NIŽIĆ<sup>1</sup>, ANITA VUKOVIĆ<sup>1</sup>, NIKO CAR<sup>1</sup>, NEVEN ELEZOVIĆ<sup>2</sup>, TOMISLAV LJUBIČIĆ<sup>3</sup>

<sup>1</sup> General Hospital of Dubrovnik, Department of Anesthesiology, Resuscitation and Intensive Care

<sup>2</sup> Split University Hospital, Department of Anesthesiology and Intensive Care

<sup>3</sup> General Hospital of Dubrovnik, MD, intern

Srećko Ljubičić: (sreckol@bolnica-du.hr)

**Background and purpose:** Anesthetics approach to Caesarean section has considerably changed during last decades so that most anesthesiologists recommend regional - spinal anesthesia whenever possible, and general anaesthesia only when absolutely necessary. Advances of regional – spinal anesthesia to general anesthesia are: greater safety of mother and child, consciousness of mother during birth, better postoperative analgesia and earlier mobilization of mother. Now, we report the results of performing spinal anesthesia for Caesarean section in General hospital of Dubrovnik after a decade of experience and offset from the first analysis of this issue. In particular, we would like to compare the spinal anesthesia for emergency Caesarean delivery compared to the elective operations and review our earlier results.

**Materials and methods:** This is a retrospective study in which we use data from medical records and the results obtained from the telephone survey. Our study included all mothers who had Caesarean section under spinal anesthesia during the calendar year 2012. in General Hospital of Dubrovnik both in regular operating program and as emergency operation. The subjects were divided into two groups, the test Group H - emergency and control Group P – planned, elective operations. We have analyzed and compared the objective and subjective indicators of quality of spinal anesthesia for scheduled and urgent Caesarean delivery parameters of our groups and the necessity to administer colloids and vasopressors due to hypotension induced by spinal anesthesia and the need for the addition of analgesics and / or sedatives for unsatisfactory subarachnoid block. Also, we compared the results of a telephone survey, which are indicators of subjective assessments of spinal anesthesia by our patients who had caesarean section under spinal anesthesia.

**Results and conclusion:** According to the medical records, in General hospital of Dubrovnik in year 2012. 1094 births were carried out. Of this number, 212 births (19.38%) were carried out by Caesarean section. Caesarean section under general anesthesia had 59 patients (27.83%), of which 42 were urgent, and only 17 women had scheduled operation. Most Caesarean sections, 152 of them (71.69%) of 212, were performed under spinal anesthesia. All these interviewed mothers made our sample, which we divided in the Test group H and the Control group P. In Group H there were 85 (56%) of respondents who had an emergency Caesarean section, and in Group P, 67 (44%) of respondents who had planned Caesarean section under spinal anesthesia. These results indicate that spinal anesthesia has become the method of choice in our hospital and is performed in almost three-quarters (71.69%) of patients who went under Caesarean section. It has also become the method of choice in an emergency Caesarean section and in such cases is performed two times more frequently than the general anesthesia. Results of a telephone survey which included two thirds of respondents of both groups did not differ between groups. One in ten respondents had postpuncture headache, while the other side-effects were rare. Urgent Caesarean section performed under spinal anesthesia is confirmed as safe and reliable method of anesthesia with recommendation to follow pre and intraoperative volume optimization protocol and application of vasopressors. So we recommend spinal anesthesia as the method of choice, not just an alternative to general anesthesia for the large number of emergency Caesarean section.

## P2. ADVERSE EVENTS IN SPINAL ANESTHESIA FOR CAESAREAN SECTION

KRISTINA KOTORAC<sup>1</sup>, KATA ŠAKIĆ<sup>1,2</sup>, GORDANA BROZOVIĆ<sup>2</sup>

<sup>1</sup> University of Zagreb, School of Medicine, students graduate project

<sup>2</sup> University of Zagreb, School of medicine, Dept. of Anaesthesiology, Reanimatology and Intensive Medicine, Obstetric and Gynecological Clinic University Hospital „Sveti Duh“, Zagreb, Croatia.  
Katarina Šakić: (ksakic@mef.hr)

**Background and purpose:** Adverse events of spinal anesthesia are hypotension and postpuncture headache. Hypotension resulting effects of anesthetics on the sympathetic nervous system, thus blocking the sympathetic nervous system and leads to a reduction in peripheral resistance, increased venous pools and reduced blood flow to the heart thereby reducing stroke volume, resulting in pressure drop. Postpuncture headache is the result of rupture dura, there is a drip of CSF and lowering intracranial pressure. The research compares hypotension in spinal and general anesthesia, and the frequency of the splitting postpuncture headaches that are treated blood patch.

**Material and methods:** For this survey, data were analyzed retrospectively from medical records of women who gave birth at a hospital in "Holy Spirit" in the period from 01.01.2011. to 30.06.2011 .. Patients were divided into three groups. Group 1 (n = 58) were women with a caesarean section performed under spinal anesthesia with levobupivacaine. Group 2 (n = 118) were women who underwent spinal anesthesia with bupivacaine, and group 3 (n = 58) were women with a caesarean section was performed under general anesthesia. The work is a separate highest systolic and diastolic and systolic and lowest diastolic pressure. The values of pressure, we calculated the highest and lowest MAP (mean arterial pressure) and the difference of MAP, the frequency of giving ephedrine and from medical records were recorded many times made blood patch.

**Results:** After statistical analysis of the data we obtained that the difference between the highest and lowest MAP similar for all three forms of anesthesia and was not statistically significant. During spinal anesthesia with bupivacaine in 44.1% of cases intervened to ephedrine, while 18.9% for levobupivacaine, and anesthesia ephedrine was not given. The frequency of blood patch was 4.54% in the first 6 months 2011.

**Conclusion:** It is not proven to be more pronounced hypotension in spinal anesthesia with bupivacaine than with levobupivacaine spinal anesthesia and the difference was not confirmed in a more pronounced hypotension in spinal cord compared to general anesthesia. It was confirmed that ephedrine often used with bupivacaine compared to levobupivacaine.

## P3. CASE REPORT: PERIPHERAL NERVE BLOCKS FOR BONES FRACTURES IN HIGH PREGNANCY - INTERSCALENE BRACHIAL PLEXUS BLOCKADE AND FEMORO-POPLITEAL BLOCKADE

LADA KALAGAC FABRIS<sup>1</sup>, LIVIJA ŠAKIĆ<sup>2</sup>, KATARINA ŠAKIĆ ZDRAVČEVIĆ<sup>2</sup>

<sup>1</sup> Opća Bolnica Pula, Pula, Croatia

<sup>2</sup> Klinička Bolnica "Sveti Duh", Zagreb, Croatia\*  
Lada Kalagac Fabris: (lada1966@gmail.com)

**Background and purpose:** Three primigravide, in 32 and 34 week of gestation had trauma experience in house environment. One had distal fracture of humerus with radial compression, the other two had open fracture of the ankle. All of them had gestational diabetes and hypertension, and at the admission time they were with the full stomach. Cardiopulmonary, laboratory examinations and cardiotocography were normal. The nature of trauma didn't allow us to posticipate the surgery.

**Materials and methods:** We use neurostimulator and 0.5%levobupivacaine for the nerves blockade in supine position with the left lateral tilt.

For the upper arm we perform the interscalene brachial plexus block. After the needle pierce the interscalen groove the women complain about baby kicking because we induce motor response of the phrenicus nerve. We redirected the needle, obtain the motor response of the arm and forearm with the stimulating current of 0.4 mA and after negative aspiration we injected 25 mL of levobupivacaine. For the ankle we perform the popliteal block by the lithotomy approach, after obtaining rhythmic dorsiflexion of the foot with the stimulating current of 0.4 mA 20mL of levobupivacaine was injected. Additionally, the needle was inserted at the level of the femoral crease for femoral nerve block, and after patella twitch at 0.2-0.5 mA current 20 mL of levobupivacaine was injected. A tourniquet was applied above the knee. Twenty-five minute after the block the surgery proceeded uneventfully. There was no need for supplemental intravenous analgesia, but for sedation we use 2 mg of midazolam i.v.

**Results:** The intraoperative and postoperative course was uneventful, and the pregnancy was concluded with normal vaginal childbirth.

**Conclusions:** These three cases support the safe use of nerve blocks during pregnancy for trauma emergency.

## **P4. BLOOD PATCH FREQUENCY AS A QUALITY INDICATOR IN OBSTETRIC REGIONAL ANESTHESIA**

**IVAN ŠKLEBAR, LIVIJA ŠAKIĆ, MILKA VUKELIĆ ANĐIĆ, DINKO TONKOVIĆ**

Department of Anaesthesiology, Reanimatology and Intensive Care, University Hospital Sveti Duh, Zagreb, Croatia  
Livija Šakić: (mitzilivila@yahoo.co.uk )

**Background and aims:** Post-dural-puncture headache (PDPH) is the most common complication of neuroaxial obstetric anesthesia/analgesia with the incidence ranging from 2-20% after spinal anesthesia up to 80% after unintentional dural puncture in case of epidurals for labor. The aim of the study is to analyze frequency and trends in the occurrence of severe PDPH which is estimated by the frequency of blood patch placement.

**Materials and methods:** Retrospective analysis of all blood patches performed on the gynecology department during 2012th has been done and the frequency was compared with the period from 2009/2010. We analyzed the timing of blood patch placement after delivery and its impact on hospitalization and breastfeeding.

**Results:** During 2012<sup>th</sup> 17 parturient were treated with blood patch for severe PDPH caused by spinal anesthesia in 11 cases, and by unintended dural puncture with a Tuohy needle in 6 cases. Compared to 2009/10 period, when 5.7% of women received regional anesthesia for Cesarean delivery were treated with blood patch, the frequency was reduced to 2.2% during 2012<sup>th</sup>. The incidence of severe PDPH after accidental dural puncture was 0.59%. The majority of blood patches were placed on the 2<sup>nd</sup> and 3<sup>rd</sup> day postpartum. In most cases discharge was delayed one day, and headache has negatively affected the length and frequency of breastfeeding.

**Conclusion:** The frequency of PDPH treated with blood patch after Cesarean section in neuraxial anesthesia decreased significantly in 2012th compared to the 2009/10 period, and the incidence of severe headache after accidental dural puncture is lower than other researches described. It could be related to more extensive use of fine-gauge needles as well as to earlier start of conservative therapy. Introduction of atraumatic needles and establishment of written algorithm of conservative therapy for PDPH could lead to additional improvement.

## **P5. ANESTHETIC MANAGEMENT OF PATIENTS WITH PREGNANCY ASSOCIATED THROMBOTIC THROMBOCYTOPENIC PURPURA-HEMOLYTIC UREMIC SYNDROME, FINALLY TREATED WITH PLASMAPHERESIS**

**DANIELA PUPAČIĆ<sup>1</sup>, MATE PERKOVIĆ<sup>1</sup> DRAGICA KOPIĆ<sup>1</sup> SREČKO LJUBIČIĆ<sup>2</sup>**

<sup>1</sup> Department of Anesthesiology, Resuscitation and Intensive Care University Hospital Center Split, Croatia

<sup>2</sup> Anesthesiology and Intensive Care, General Hospital Dubrovnik, Dubrovnik, Croatia  
Dragica Kopic: (kkopicsgsb@gmail.com)

**Background and purpose:** Thrombotic thrombocytopenic purpura-hemolytic uremic syndrome TTP/HUS preclampsia, eclampsia, HELLP syndrome may present at any time during pregnancy but mostly in the last trimester and at the time of delivery. It is clinically important to distinguish these entities because anesthetic and overall treatment is different.

**Materials and methods:** The first case 29-year-old primigravida was admitted to the hospital in 29<sup>th</sup> week of pregnancy due to high blood pressure, extreme hyponatremia and thrombocytopenia. Two days after admission, laboratory tests and baby status have worsened and urgent cesarean section (CS) was performed under general anesthesia. She was treated conservatively as HELLP syndrome until the 6<sup>th</sup> day when plasmapheresis started. The second case a 22-year-old primigravida was hospitalized because of preeclampsia seven days prior term. Labor was induced on 40+3/7 week of pregnancy. Coagulation tests were within normal limits. Epidural catheter for labor analgesia was placed at level L3/4 in the first attempt. Due to arrest of the labor pregnancy was terminated with CS. After surgery, extreme worsening in lab test was registered. The second day after delivery plasmapheresis started.

**Results:** Each of parturients were treated with five plasmapheresis and supportive therapy. They were discharge from the hospital after improvement of overall clinical condition. Epidural catheter was drawn out without complications on the 7<sup>th</sup> day after CS in second parturient when platelet count increased to 135,000/ml.

**Conclusion:** Timely diagnosis is important for anesthetic management of vaginal and instrumental labour of patients with TTP/HUS. Early plasmapheresis treatment is very important for the outcome because mortality in untreated patients is very high.

## **P6. THE PATHOPHYSIOLOGY OF THROMBOPHILIA IN CANCER PATIENTS**

**DEANA ŠTURM<sup>1</sup>, GORDANA BROZOVIĆ<sup>2</sup>, DINKO BAGATIN<sup>3</sup>, KATARINA ZDRAVČEVIĆ ŠAKIĆ<sup>3</sup>  
LJILJA ŠTEFANČIĆ<sup>2</sup>**

<sup>1</sup> Department of Transfusion Medicine and Coagulation in Oncology Patients, University Hospital for Tumors, Department of Transfusion Medicine, Sestre milosrdnice University Hospital Center, Zagreb, Croatia

<sup>2</sup> Department of Anesthesiology and Intensive Care, University Hospital for Tumors, Department of Anesthesiology and Intensive Care, Sestre milosrdnice University Hospital Center, Zagreb, Croatia

<sup>3</sup> Polyclinic Bagatin for maxillofacial, general and plastic surgery, School of Medicine, Josip Juraj Strossmayer University, Osijek, Croatia

Deana Šturm: (deana.sturm@kbcsm.hr)

Cancer patients are at increased risk of developing venous thromboembolism (VTE). Studies have shown that the risk is up to 6 times greater in patients with cancer. Tumor cell alters both host immunocompetent cells and activation of coagulation through a series of activations and secretions. Radiotherapy and chemotherapy cause endothelial damage, which in turn leads to the release and elevated levels of coagulation proteins.

## P7. CLINICAL EDUCATION AND QUALITY IMPROVEMENT METHODOLOGIES IN ADVANCING OBSTETRIC ANESTHESIA PRACTICES: A STUDENTS GRADUATE PROJECT

IVA FERČEK<sup>1</sup>, KATA ŠAKIĆ<sup>1,2</sup>, LIVIJA ŠAKIĆ<sup>2</sup>, IVAN ŠKLEBAR<sup>2</sup> DINKO TONKOVIĆ<sup>1,2</sup>

<sup>1</sup> University of Zagreb, School of Medicine,

<sup>2</sup> Department of Anaesthesiology, Reanimatology and Intensive Care, University Hospital Sveti Duh, Zagreb, Croatia  
Katarina Šakić: (ksakic@mef.hr)

**Background and purpose:** An integrated program of clinical education and improvement methods regarding the safe use of regional anesthesia for obstetrics would result in improved and sustained practice change in hospital.

**Material and methods:** During 2012, rates of regional anesthesia for 3133 labor were 596 (19,02%) cesarean delivery in Obstetric and Gynecological Clinic University Hospital „Sveti Duh“, Zagreb, Croatia. There were multifaceted educational activities and quality improvement activities at intervention sites, including protocol development, social marketing, and supply chain logistics. Hospital evaluated the program via a questionnaire.

**Results:** The use of anesthesia for cesarean delivery was 387/596 in spinal and 115/596 in epidural anesthesia, total 502/596 (84,2%) patients in regional anaesthesia. 94/596 patients were in general anesthesia with decreased significantly ( $P<0.001$ ). The use of epidural analgesia for labor were 1013/3133 (39,92%) and increased significantly ( $P<0.001$ ). 152/596 (25%) cesarean delivery were urged. Over the course of the program, medication and supply availability improved. Program evaluations were uniformly positive.

**Conclusion:** A structured program of education and quality improvement led to an increase in the use of regional anesthesia for vaginal and cesarean deliveries. Achievements were sustained during periods of economic and political turmoil.

## P8. COMPARISON OF GENERAL AND SPINAL ANAESTHESIA IN PATIENTS UNDERGOING OPEN VENTRAL HERNIA REPAIR

RENATA KROBOT, JADRANKA PREMUŽIĆ

Department of Anaesthesiology and Intensive Care, General Hospital Varaždin, Varaždin, Croatia  
Renata Krobot: (renata.krobot@vz.t-com.hr)

**Background and purpose:** Ventral hernioplasty is a common intervention that can be performed under general or regional anaesthesia. We compared TIVA and spinal anaesthesia in patients undergoing elective open ventral hernia repair.

**Materials and methods:** Forty ASA I-II adults received either TIVA with propofol, midazolam, fentanyl and rocuronium (group GA, n=20) or spinal anaesthesia (L3-L4) with hyperbaric bupivacaine 0.5% 10mg+sufentanil 10 µg (group SPA, n=20). Hemodynamic data, pain scores, time to first analgesic and side-effects were recorded.

**Results and conclusions:** Ventral hernia was umbilical in 6, supraumbilical in 6 and infraumbilical in 8 group GA and in 7, 6 and 7 group SPA patients, respectively,  $P>0.05$ . Maximum decrease of systolic arterial pressure (SAP) was  $10\pm 6$  in GA and  $21\pm 6\%$  in SPA group,  $P<0.05$  and of HR  $11\pm 5$  and  $17\pm 7\%$ ,  $P>0.05$ , respectively. Pain scores at 0, 2, 4 and 8 h after surgery were 4 (2-6), 5 (2-7), 5 (1-6) and 4 (2-6) in GA and 0, 0, 0 (0-2) and 1 (0-3) in SPA group, respectively,  $P<0.05$ . Pain scores at 12 and 24 h were 4 (1-5) and 3 (0-4) in GA and 2 (0-4) and 1 (0-3) in SPA group, respectively,  $P>0.05$ . Time to first analgesic was  $28\pm 10$  in GA and  $580\pm 138$  min in SPA group,  $P<0.001$ . Postoperative nausea and vomiting (PONV) had 7 (35%) group GA and 1 (5%) group SPA patients,

P<0.05. General anaesthesia resulted in more stable hemodynamic profile but spinal anaesthesia provided better postoperative pain control and less PONV in patients undergoing open ventral hernia repair.

## **P9. COMPARISON OF 22G VS 25G NEEDLE FOR ULTRASOUND GUIDED POPLITEAL NERVE BLOCK DISTAL TO SCIATIC BIFURCATION, RANDOMIZED PROSPECTIVE STUDY**

**MATIJA JURJEVIĆ<sup>1</sup>, IVO MATIĆ<sup>1</sup>, IVAN MIRKOVIĆ<sup>1</sup>, JASMINKA KOPIĆ<sup>1</sup>, IVANA PAJIĆ-PENAVIĆ<sup>2</sup>, HRVOJE PALENKIĆ<sup>3</sup>**

<sup>1</sup> Department of Anaesthesiology and Intensive Care, Dr. Josip Benčević General Hospital, Slavonski Brod, Croatia

<sup>2</sup> Department of Otorhinolaryngology and Cervicofacial Surgery, Dr. Josip Benčević General Hospital, Slavonski Brod, Croatia

<sup>3</sup> Department of Surgery, Dr. Josip Benčević General Hospital, Slavonski Brod, Croatia

Ivo Matić: (ivo.matic@bolnicasb.hr)

**Background and purpose:** The goal of the study was to evaluate whether 25G spinal needles can successfully be applied for ultrasound guided popliteal nerve block distal to sciatic bifurcation compared to standard 22G needles.

**Patients and methods:** A prospective, randomized study was conducted during 8 months. 50 patients were included in the study, randomized to either 22G or 25G group. Ultrasound guided popliteal nerve block distal to sciatic bifurcation was performed using 20 mL 0,5% levobupivacaine. The parameters recorded were ease of needle handle evaluated by the performing anesthesiologist, block success rates, need for intra-operative sedation, incidence of conversion to general anesthesia, incidence of side-effects and general patient satisfaction.

**Results and conclusion:** The success rates were similar in both groups (22G vs 25G : 92% vs 96%, p=0,55), as were need for intra-operative sedation (22G vs 25G : 12% vs 12%) and conversion to general anesthesia (8% vs 4%, p=0,637). 25G spinal needles can be applied with equal success to standard 22G needles for ultrasound guided popliteal nerve block distal to sciatic bifurcation.

## **P10. THE USE OF AN ULTRASOUND-GUIDED POPLITEAL BLOCK FOR HALLUX VALGUS SURGERY IN A PATIENT WITH MYASTHENIA GRAVIS**

**GORDANA KRISTEK, IVANA HARŠANJI DRENJANČEVIĆ, SLAVICA KVOLIK, DANIJELA GULAM, TOMISLAV RUŽMAN**

University Hospital Center Osijek, Croatia

Ivana Harašnji Drenjančević: (ivanahd@vip.hr)

**Background and purpose:** Myasthenia gravis (MG) is an autoimmune disease which affects neuromuscular transmission, causing muscle fatigue and weakness. The myasthenic patients are always a challenge to the anesthesiologist, because they demonstrate various responses to the neuromuscular blocking agents. The post-operative risk of respiratory failure has always been a matter of concern. There is a lack of controlled studies in these patients, concerning anesthetic management under regional anesthesia. Some case reports suggest precaution in using neuroaxial anesthesia techniques and tourniquet because of possible exacerbation of myasthenia gravis.

**Case report:** We report a successful use of the ultrasound guided popliteal block for elective foot surgery in a 46-year old woman with MG, showing that regional anesthesia techniques, by avoiding the use of neuromuscular blocking agents, provide safer care for these patients.

**Results and conclusion:** At 24h postoperative interview, both patients were very satisfied with the anesthesiologist treatment, and no complications occurred.



## P11. COMPARISON OF REGIONAL AND GENERAL ANESTHESIA FOR MAJOR SHOULDER SURGERY, PROSPECTIVE STUDY

IVAN MIRKOVIĆ, IVO MATIĆ, MATIJA JURJEVIĆ, JASMINKA KOPIĆ, HRVOJE PITLOVIĆ

General hospital "Dr. Josip Benčević" Slavonski Brod  
Ivo Matić: (ivo.matic@bolnicasb.hr)

**Background and purpose:** Major shoulder surgery is often associated with severe postoperative pain. Our previous experience with local infiltration anesthesia and postoperative intravenous analgesia did not satisfy either patients or us. The interscalene brachial plexus block is ideal anesthetic and analgesic method for shoulder, clavicle and proximal upper extremity surgical procedures.

**Materials and methods:** The study included consecutive patients scheduled for shoulder surgery (rotator cuff repair or shoulder arthroplasty) in the last 2 years. In the interscalene block group patients were sedated before application of the ultrasound guided interscalene block. After the block was performed, patients were anesthetized, relaxed and intubated and artificially ventilated. Light general anesthesia was maintained with inhalation anesthetic and muscle relaxant, and fentanyl added as needed. Patients who were operated in our institution before implementation of the method, those with a contraindication and those who refused blockade presented the control group. For them the general anesthesia was performed as usual. In both groups intraoperative and postoperative analgesic consumption, visual analog scale (VAS) at 6, 12 and 24 hours postoperatively, incidence of complications and patients' satisfaction was measured and recorded.

**Results:** Both intraoperative and postoperative analgesic consumption and VAS scores were reduced and patients' satisfaction increased in the interscalene block group. Success rate was 97%, and we noticed 1 minor complication that resolved spontaneously within 24 hours.

**Conclusion:** Single shot interscalene brachial plexus block is a very efficient method of anesthesia and postoperative analgesia for painful procedures in the shoulder area.

## P12. SPINAL ANESTHESIA FOR LAPAROSCOPIC PERITONEAL DIALYSIS CATHETER IMPLANTATION: A PILOT STUDY

IVA BAČAK KOČMAN<sup>1</sup>, NIKOLINA BAŠIĆ JUKIĆ<sup>2</sup>, ELEONORA GOLUŽA<sup>1</sup>, VILKA BEKAVAC MIŠAK<sup>1</sup>, ANDREA PERŠIN BERAKOVIĆ<sup>1</sup>, MARIJA TOPALOVIĆ GRKOVIĆ<sup>1</sup>, NIKOLA KNEŽEVIĆ<sup>3</sup>, ŽELJKO KAŠTELAN<sup>3</sup>, IVICA KOČMAN<sup>4</sup>, MLADEN PERIĆ<sup>1</sup>

<sup>1</sup> Department of Anesthesiology, Reanimatology and Intensive Care, University Hospital, Center Zagreb, Zagreb, Croatia

<sup>2</sup> Department of Nephrology, Arterial Hypertension and Dialysis, University Hospital Center, Zagreb, Zagreb, Croatia

<sup>3</sup> Department of Urology, University Hospital Center Zagreb, Zagreb, Croatia

<sup>4</sup> Department of Surgery, University Hospital Merkur, Zagreb, Croatia

Iva Bačak Kocman: (bacakkocman.iva@gmail.com)

**Background and purpose:** Peritoneal dialysis is an effective treatment for end stage renal disease. Laparoscopy is a preferred method for dialysis catheter implantation due to better outcomes, minimal surgical trauma, faster recovery, lower postoperative pain scores, shorter hospital stay and improved patient satisfaction. Spinal anesthesia (SA) is not a routine technique in laparoscopic surgery. It has previously been limited to patients with high risks for general anesthesia. This study aimed to indicate feasibility and safety of spinal anesthesia for laparoscopic peritoneal dialysis catheter implantation (LPDCI).

**Material and methods:** Eleven ASA II-III patients undergoing elective LPDCI received SA with 10 mg hyperbaric levobupivacaine and 20 mcg fentanyl. Intraabdominal pressure was maintained  $\leq 12$  mmHg. Sensory (pinprick) and motor (modified Bromage) block, hemodynamic data, intraoperative and postoperative side-effects were recorded. According to the visual analog scale (VAS) intraoperative, postoperative and right shoulder pain were assessed. Time to the first analgesic request was recorded.

**Results:** Sensory block reached T4 and T5 level in all patients and was adequate for surgery. Four patients experienced right shoulder pain (VAS 6-8) treated with fentanyl iv. Two patients had nausea after the initial drop of blood pressure. Surgeon reported no difficulties during procedure. In one patient due to gastric distension nasogastric tube was inserted. All patients were mobilized and had first meal 6h after the surgery. In the first 12 postoperative hours only one patient needed analgesic.

**Conclusions:** Spinal anesthesia with hyperbaric levobupivacaine and fentanyl is adequate and safe for patients with end stage renal disease undergoing elective LPDCI. This technique needs compliant patient, experienced surgeon and anesthesiologist. Further studies should confirm advantages, safety and better outcomes of spinal anesthesia for laparoscopic peritoneal dialysis catheter implantation.

## P13. EPIDURAL VS INTRAVENOUS ANALGESIA AFTER MAJOR ABDOMINAL SURGERY; OUR EXPERIENCES

IVO MATIĆ<sup>1</sup>, KATARINA ŠAKIĆ-ZDRAVČEVIĆ<sup>2</sup>, MATIJA JURJEVIĆ<sup>1</sup>, IVAN MIRKOVIĆ<sup>1</sup>,  
JASMINKA KOPIĆ<sup>1</sup>, IVANA PAJIĆ-PENAVIĆ<sup>1</sup>

<sup>1</sup> General Hospital, Slavonski Brod

<sup>2</sup> University Hospital Sveti Duh, Zagreb

Ivo Matić: (ivo.matic@bolnicasb.hr)

**Background and purpose:** Patient undergoing major abdominal surgery experience postoperative pain. The aim of this study was to compare the effect of epidural and intravenous analgesia.

**Patients and methods:** A prospective study was performed during 12 months. The study enrolled 199 patients following major abdominal surgery. One group of 77 patients received epidural analgesia (0,5% levobupivacainum + 0,1 mg Fentanyl + 0,1 mg Epinephrinhydrochlorid ad 50 mL 0,9% NaCl). The other group of 122 patients received analgesia intravenously (Pethidinhydrochlorid or Tramadolom or Morphini hydrochloridum). Age, gender, ASA physical status and analgetics consumption were noted. Pain was evaluated with the Visual analogue scale (VAS) immediately after the operation, after 4, 12, 24 and 48 hours. We noted patients satisfactions of analgesia, time to peristaltics, nausea, vomiting, complication rate and number of Intensive Care Unit (ICU) days.

**Results:** Statistical significant advantages epidural analgesia are: less consumption intravenous opioids ( $p < 0,05$ ), less VAS score (3:6), less time to peristaltics (16:34 hours) and more patients satisfaction of analgesia (1:3).

**Conclusions:** Epidural analgesia is effective analgesics metod with low complications rate and high patients satisfaction and therefore recommended in patients undergoing major abdominal surgery

## P14. REDUCING THE INCIDENCE OF ADVERSE EVENTS IN ANESTHESIA PRACTICE

MATIJA BELAVIĆ<sup>1</sup>, MIRJANA LONČARIĆ-KATUŠIN<sup>1</sup>, JOSIP ŽUNIĆ<sup>1,2</sup>

<sup>1</sup> Department of anesthesiology, intensive care and pain medicine, Karlovac General Hospital, Karlovac, Croatia

<sup>2</sup> Karlovac University of Applied Sciences, Karlovac, Croatia

Matija Belavić: (mbelavic1@gmail.com)

**Background and purpose:** adverse event during anesthesia is defined as an event that may result in the development of complications and is caused by human error, failure of the apparatus, the selected anesthetic techniques and individual reaction of the patient. Timely detection of adverse events prevents complications and their analysis through the register of the same to the adoption of preventive and remedial measures.

**Materials and methods:** The Department of Anesthesiology in General Hospital Karlovac, in accordance with the accreditation standards of the Republic of Croatia monitors adverse events during anesthesia, the waking up period and the stay on the ward during the first 24 hours, and the type of anesthesia techniques applied.



**Results:** During the 2012, a total of 4244 anesthesia with a 1.25% complications was done. We have been monitoring the number of anesthesia since 2011. when the percentage of complications was 5.4%. This is the basis to conclude that there is a tendency to reduce the number of complications. Anesthesia was classified as general and regional. The use of ultrasound contributes to safety of regional anesthesia, especially nerve conduction anesthesia of extremities and thus reducing the volume of local anesthetic administered and its toxicity.

The incidence of complications of regional anesthesia among all regional anesthetics done during the 2012 was 0,31%.

**Conclusion:** Keeping the register of complications during anesthesia has led to increased awareness of the need to record them and analyze the causes and consequences of complications at the department meetings. There is a trend of increased use of regional anesthesia techniques as indicated.

## **P15. DIFFERENT CLINICAL DIAGNOSIS IN TWO CASES AND TREATMENT OF THE TURP SYNDROME AFTER SPINAL ANESTHESIA**

**JOSIP KOVAČ, ANA PERKOVIĆ, BLANKA ŠORE, ALEKSANDRA GVOZDENOVIĆ, MAJA HUZZAK, BRANKA MALDINI**

Department of Anesthesiology, Resuscitation and Intensive Medicine, Sestre milosrdnice University Hospital Center, Zagreb, Croatia

Josip Kovač: (josip.kovac2@zg.z-com.hr)

**Background and purpose:** During a transurethral resection of prostate a constant irrigation with a fluid is applied. The fluid can be absorbed into the venous sinuses of the prostate and further into the blood stream, causing a variety of symptoms due to increased intravascular volume and dilution known as TURP syndrome. We report two patients from our Clinic Department of Anesthesiology and Intensive Care Medicine which developed TURP syndrome after spinal anesthesia with very different symptoms and severity of blood haemolysis.

**Case series:** The first patient was a 71 year-old man that was admitted to our hospital to perform a transurethral resection of benign hypertrophy of the prostate under spinal anaesthesia. After 40 minutes of surgery, the patient has developed hypertension. TURP syndrome was suspected, the procedure discontinued and patient was admitted to ICU. Laboratory tests performed in the ICU showed prolonged haemolysis, which lasted more than 24 hours. However, the patient recovered completely and was again subjected to the TUR surgery under spinal anaesthesia, without complications. The second patient was a 56 year-old man who was also admitted due to prostatic hypertrophy and scheduled to perform a transurethral resection of the prostate under spinal anaesthesia. The procedure went well, without any signs developing during the procedure, and the patient was transferred to post-operative care unit. Approximately 2 hours after the procedure, the patient developed signs that were interpreted as epileptic seizures. Blood samples drawn at that moment were hemolytic and the diagnosis of TURP syndrome was established. Patient received appropriate treatment. Blood samples that were drawn two hours after the initial one showed no more signs of hemolysis.

**Conclusions:** Although both patients were diagnosed with the same disease, the symptoms they developed after spinal anesthesia were very different and in discrepancy with the degree and duration of blood haemolysis.

## P16. COMPARISON OF PERIOPERATIVE ADVERSE EFFECTS OF BILATERAL AND UNILATERAL SPINAL ANESTHESIA

LUKA DJULABIĆ, VIŠNJA NESEK ADAM, KATARINA ŠAKIĆ

University Department of Anesthesiology, Resuscitation and Intensive Care, Clinical Hospital "Sveti Duh", Croatia  
Luka Djulabić: (luka.djulabic@gmail.com)

**Background and Purpose:** Adverse effects associated with the use of standard spinal anesthesia were the reason to continue research on various spinal techniques. The use of unilateral spinal anesthesia may reduce sympathetic block and avoid the undesired effects. The aim of this study was to compare the incidence of adverse effects in unilateral and conventional bilateral spinal anesthesia.

**Patients and Methods:** A survey was conducted among 52 ASA I and ASA II patients scheduled for surgery in spinal anesthesia. They were randomly assigned to two groups. Group US (n=26) patients received unilateral spinal anesthesia with hyperbaric spinal solution (0.5% levobupivacaine 5 mg, fentanyl 50 µg, and 1 mL of 10% glucose). Group BS (n=26) patients received bilateral spinal anesthesia with 3 ml isobaric 0.5% levobupivacaine (15 mg). Hemodynamic data and perioperative adverse effects such as headache, nausea, vomiting, voiding difficulties, and pruritus were recorded.

**Results:** There were no significant differences between two groups with respect to age, BMI, and ASA physical status. Compared to bilateral spinal anesthesia, patients receiving unilateral spinal anesthesia recovered leg mobility and muscle strength faster ( $2.9 \pm 1.1$ h vs.  $4.2 \pm 1.4$ h,  $p < 0.001$ ), were able to get out of the bed sooner ( $9.9 \pm 7.2$ h vs.  $19.8 \pm 6.9$ h,  $p < 0.001$ ) and had greater satisfaction score at discharge (20 vs. 13,  $p = 0.044$ ). Frequency of voiding difficulties (2 vs. 9,  $p = 0.017$ ) registered lower values in US group.

**Conclusion:** Unilateral spinal anesthesia reduces the incidence of voiding difficulties and is associated with an earlier recovery and higher postoperative patient satisfaction than bilateral spinal anesthesia

## P17. PARAVERTEBRAL BLOCKADE AS INDICATION, NOT AS ANESTHESIA CHOICE: TWO CASE REPORTS

JASMINKA PERŠEC, MIROSLAV ŽUPČIĆ, ANĐELKO KORUŠIĆ, IVANA TUDORIĆ-ĐENO,  
INO HUŠEŽINOVIĆ

Clinical Department of Anesthesiology, Reanimatology and Intensive Care Medicine, University Hospital Dubrava, Zagreb, Croatia  
Jasminka Peršec: (jpersec@xnet.hr)

**Background and purpose:** We have represented two case reports of patients ASA IV status scheduled for surgery due to malignant process. They were contraindicated for general anesthesia, so we decided to perform paravertebral blockade.

**Case series:** Case 1. A 84-yr-old female patient was scheduled for operation because of malignant process in the left axilla region. She was ASA IV patient with suspected malignant process in the lung, bilateral tumor of suprarenal glandes, hypothyreosis, and chronic renal insufficiency. Chest X-ray showed decompensated heart. Case 2. 69-yr-old male patient was scheduled for operation of malignant melanoma on the back. He was ASA IV with implanted cardiac electrostimulator, liver cirrhosis, obstructive lung disease. Chest X-ray showed decompensated heart. Paravertebral space was identified with ultrasound using 8 Hz linear transducer probe. Additionally, needle position was confirmed with neurostimulation. When muscle contraction persisted at 0.4 mA, anesthetic was applied in levels of Th 1, Th2, and Th3 (5 mL per level); in first case mixture of 7.5 mL 0.5% levobupivacaine [Chirocaine<sup>®</sup>, Abbott Laboratories] and 7.5 mL 2% lidocaine [Lidocaine<sup>®</sup>, Belupo], and in second case 15 mL 0.5% levobupivacaine. Results. Sensory blockade occurred after 15 min. in first case, and 20 min. in the second case. Operation course went without complication. In the first case, sensory blockade lasted for 4,5 h after block was administered, which is 3h after surgery, and 12 h after blockade or 10 h after surgery in the second case.

## P18. SUDDEN CARDIORESPIRATORY ARREST FOLLOWING SPINAL ANESTHESIA

**SINIŠA ŠOŠTARIĆ, KREŠIMIR OREMUŠ**

Akromion - Special Hospital for Orthopedic Surgery, Krapinske Toplice, Croatia  
Siniša Šoštarić: (sinisa.sostaric@akromion.hr)

**Summary:** We report a case of a sudden cardiorespiratory arrest following spinal anesthesia in a 64 years old female patient who was scheduled for total hip replacement. 25 minutes after uncomplicated subarachnoid block performed in a sitting position at L<sub>2</sub>-L<sub>3</sub> interspace, and 15 minutes after positioning the patient in left lateral decubital position, she suddenly becomes unresponsive and apneic with p-wave asystole. She was promptly turned supine and managed by advanced life support measures which included immediate tracheal intubation, ventilation with 100% oxygen, external cardiac chest compressions and intravenous administration of atropine and ephedrine. After less than one minute of CPR patient's heart rhythm and blood pressure were normalised. As she was hemodynamically fully stable, the operation was started and completed under general anesthesia. Awakening, extubation and early recovery were uneventful. No signs of neurologic deficits or cognitive dysfunction were observed.

## P19. TRANSIENT PARAPLEGIA AFTER ESOPHAGECTOMY IN A PATIENT WITH THORACIC EPIDURAL ANALGESIA

**NINA SULEN, BARBARA PETANI, IVAN BAČIĆ, TATJANA ŠIMURINA**

General Hospital Zadar, Croatia  
Nina Sulen: (nina.sulen@zd.t-com.hr)

**Summary:** Paraplegia is a rare but devastating complication in esophageal surgery. Epidural analgesia is considered essential in perioperative management of patients with esophageal cancer but carries a risk of causing neurologic deficit. We present a case of sudden postoperative paraplegia and numbness of lower extremities followed shortly after with hypotension and loss of consciousness in a 47-year old patient who underwent total esophagectomy and esophagogastroplasty with thoracic epidural analgesia. Paraplegia was short-lived and resolved with hemodynamic stabilization. We discuss possible causes of neurologic deficit in this patient and emphasise the importance of maintaining spinal cord perfusion pressure by avoiding perioperative hypotension.

## P20. INCIDENCE AND CLINICAL SIGNIFICANCE OF POST-DURAL PUNCTURE HEADACHE IN YOUNG ORTHOPEDIC PATIENTS AND PARTURIENTS

**DAGMAR OBERHOFER, ALEKSANDRA JOKIĆ, IRA ŠKOK, JADRANKA SKURIĆ,  
MILKA VUKELIĆ, IVAN ŠKLEBAR, DINKO TONKOVIĆ**

Department of Anaesthesiology, Reanimatology and Intensive Care, University Hospital "Sv. Duh", Zagreb, Croatia

**Background and aims:** Post-dural puncture headache (PDPH) is a complication of spinal anesthesia, influenced mostly by patient's age, spinal needle size and design and, possibly, female gender. The purpose of this prospective observational study was to compare the frequency and clinical significance of PDPH in two patient groups at high risk for the development of PDPH, namely young parturients and orthopedic patients, using 26 and 27-G Quincke needles.

**Patients and methods:** The study included 56 parturients undergoing Caesarean section and 59 orthopedic patients undergoing arthroscopic knee surgery, who received standard spinal anesthesia using 26-G or 27-G Quincke needles. All patients were less than 40 years of age. The patients were visited on postoperative days 1, 2, and 4 or contacted by telephone and evaluated for the presence, characteristics and severity of headache, backache and other

possible complications. Only posture dependent headache was regarded as PDPH with severity graded as mild, moderate and severe. Patient satisfaction was assessed by their willingness to have spinal anesthesia in the future.

**Results:** Orthopedic patients were predominantly male (81.4%) and significantly younger than parturients (27.8±5.5 vs. 33.7±4.7 years, P<0.0001). Both groups had similar use of 26- and 27-G needles, one attempt success rate at dural puncture, and high quality of spinal block. The incidence of PDPH in parturients was 14.3% and in orthopedic patients 13.6%, which was not significantly different. Also, the severity of PDPH was similar, with mild headache in 4/8 PDPH patients in each group. The rate was similar with 26- and 27-G needles. No patient required an epidural blood patch. Both orthopedic patients and parturients expressed high satisfaction rate with spinal anesthesia (96.6% and 94.6%, respectively).

**Conclusion:** The rate of PDPH was similar in young orthopedic patients and parturients but higher than in the literature. Low rate of severe headache, no need for epidural blood patch, and high patient satisfaction with spinal anesthesia, make 26- and 27-G Quincke needles an acceptable technique where pencil point needles are not available.

## P21. DOOR-TO-ANALGESIA TIME FOR LONG BONE FRACTURE VICTIMS

DAMJAN MARIN, VIŠNJA NESEK ADAM, ANA MARKIĆ, ŽARKO RAŠIĆ, TOMISLAV MATEJIĆ

University Hospital "Sveti Duh", Zagreb, Croatia  
Damjan Marin: (damjanmarin77@yahoo.com)

**Background and purpose:** Treating pain is one of the foremost tasks of the medical profession. Yet, studies show that waiting times for analgesia in painful conditions can sometimes be substantial. The purpose of this study is to note current practice in our institution and find areas of possible improvement.

**Materials and methods:** During a period of one month we have monitored analgesia administration to patients presenting to the surgical ED within 24h after sustaining isolated long bone fractures. Time of admission, time of analgesia administration, type and route of pain medication were noted for a total of 21 patients. Patients were also asked to complete a short questionnaire including a VAS score.

**Results:** We found that the median time to analgesia administration was 34 minutes. Analgesia was prescribed by surgeons 90% of the time, with subcutaneous tramadol being the favored choice of medication, yielding a reduction in VAS scores from an average of 7+/- 2,15 to 5 +/- 2,20.

**Conclusions:** While our time to analgesia can be considered reasonable in comparison to data from similar institutions, there seems to be an inadequate effectiveness of therapy as evidenced by VAS scores. We suggest some possibilities for improvement in this area.

## P22. LOW-DOSE CHIROCAINE WITH FENTANYL PREVENTS HYPOTENSION AFTER SPINAL ANESTHESIA IN ELDERLY PATIENTS UNDERGOING HIP FRACTURE SURGERY

ELVIRA GRIZELJ STOJČIĆ, VIŠNJA NESEK ADAM, VIVIANA MRŠIĆ, MARTINA MATOLIĆ, LIVIJA ŠAKIĆ

University Department of Anesthesiology, Resuscitation and Intensive Care, University Hospital "Sveti Duh", Zagreb, Croatia  
Elvira Grizelj Stojčić: (elvirastojcic@gmail.com)

**Background and purpose:** Hip fractures are a leading cause of hospitalization in elderly patients. Age and concurrent diseases make these patients at high risk for perioperative complications. Hypotension is the most common hemodynamic complication of spinal anesthesia. We hypothesized that a reduced dose of chirocaine could provide effective spinal anesthesia and postoperative analgesia.

**Materials and methods:** We evaluated the effect of low-dose chirocaine plus fentanyl administered intrathecally in elderly patients (aged 75 or more) undergoing *hip* fracture surgery. Patients were randomly assigned to one of two groups. Group LC received chirocaine 7.5 mg with 25 µg fentanyl and sterile water to a total of 2.5 mL and Group SC received 0,5% chirocaine of 12.5 mg. Hemodynamic changes during the operation, assessment of the motor and sensory block and first analgesic for a pain score were noted.

**Results:** All patients had satisfactory level of surgical anaesthesia. Patients who received low-dose chirocaine plus fentanyl had greater hemodynamic stability compared with patients who received only chirocaine. The time until the first request of analgesics did not differ between the two groups.

**Conclusion:** This study concluded that low dose, chirocaine 7.5 mg with 25 µg fentanyl provide adequate anaesthesia for surgical repair of hip fracture with stable haemodynamics.

## **P23. COMBINED PERIPHERAL BLOCKS FOR UPPER AND LOWER EXTREMITIES IN POLYTRAUMA PATIENT- CASE REPORT**

**DAVORKA ŽIDAK<sup>1</sup>, MARCEL ŽIDAK<sup>1</sup>, MIROSLAV ŽUPČIĆ<sup>1</sup>, ANĐELKO KORUŠIĆ<sup>1</sup>,  
IVANA TUDORIĆ-ĐENO<sup>1</sup>, SANDRA GRAF-ŽUPČIĆ<sup>2</sup>**

<sup>1</sup> Dubrava University Hospital, Croatia

<sup>2</sup> "Sveti Duh" University Hospital, Croatia

Davorka Židak: (davorka.zidak@kdb.hr)

**Background and purpose:** Ultrasound – guided peripheral nerve blocks are becoming a preferred technique in a variety of surgical procedures. In this case we combined peripheral blocks for upper and lower extremities in polytrauma patient.

**Patients and methods:** Twenty year old girl GCS 15, RR 100/60 mm Hg, HR 75/min, SpO<sub>2</sub> 98%, TT 58 kg, was admitted to the hospital. Diagnoses at admission: subarachnoid hemorrhage, apical pneumothorax, fracture of the right humerus and right tibia. Extremity fractures required immediate surgery. We decided to apply regional anesthesia techniques. Ultrasound linear probe of 12 MHz and neurostimulator were used. LA was applied in the case of a positive muscular response to 0.4 mA. 15 mL of 0.5% levobupivacaine and 5 mL of 1% lidocaine was applied for interscalene block, 8 mL 1% lidocaine for superficial cervical block, 7.5 mL 0.5% levobupivacaine + 7.5 mL 0.9% NaCl, for femoral and popliteal block. Pinprick test was made after 10 min. Operating procedure lasted 160 min. Light sedation was performed. No need for additional opiates. Block reversed after 17 hours.

**Conclusion:** Neurological assessment and monitoring of respiratory function during first 24 h have been an important part of treating this patient. It was enabled choosing RA technique. Total amount of 150 mg levobupivacaine and 80 mg lidocaine didn't exceed recommended range and were sufficient for double block. Ultrasound guided RA allows greater precision and application of lower doses of LA, consequently multiple blocks become safe and acceptable method for emergency patients.

## **P24. EVALUATION OF GENERAL AND REGIONAL ANESTHESIA PROCEDURES IN AN EMERGENCY DEPARTMENT IN UNIVERSITY HOSPITAL "SV. DUH"**

**JELENA VOJNIĆ<sup>1</sup>, VIŠNJA NESEK ADAM<sup>1</sup>, ALEKSANDRA SMILJANIĆ<sup>1</sup>, VIVIANA MRŠIĆ<sup>1</sup>,  
ELVIRA GRIZELJ STOJČIĆ<sup>1</sup>, DARINKA TUNJIĆ PEJAK<sup>1</sup>, TOMISLAV MATEJIĆ<sup>2</sup>**

<sup>1</sup> University Department of Anesthesiology, Resuscitation and Intensive Care, University Hospital "Sveti Duh", Zagreb, Croatia

<sup>2</sup> University Department of Surgery, University Hospital "Sveti Duh", Zagreb, Croatia

Jelena Vojnić : (jelenavojnic@hotmail.com)

**Background and purpose:** Regional anesthesia has become an increasingly preferred technique for the treatment of acutely injured patient because of its safety and effective postoperative pain management. The

purpose of this study was to evaluate the frequency of regional anesthesia in patients undergoing limb traumatic surgery performed in emergency department.

**Materials and methods:** We conducted a retrospective study of all patients who underwent operation for limb injury in emergency surgical department of University hospital "Sveti Duh". Anesthetic technique (regional anesthesia RA versus general anesthesia GA) regarding limb trauma surgery have been study between June 2012 and March 2013.

**Results and conclusion:** Over a 9-months periods, 128 patients underwent trauma limb surgery in emergency department. Sixty eight patients underwent the operation in general anesthesia and 60 patients in regional anesthesia. Regional anesthesia represents 46% of the anesthetic procedures. Ankle, ulnar, femoral and femoropopliteal block were rarely used. The results of our study show that despite known benefits RA over GA, regional anesthetic techniques have been underutilized in trauma patients.

## **P25. THE HEMODYNAMIC EFFECT OF INTERMEDIATE CERVICAL PLEXUS BLOCK COMPARED TO GENERAL ANESTHESIA IN HIGH RISK PATIENTS WITH CAROTID ENDARTERECTOMY**

**DANIELA BANDIĆ PAVLOVIĆ<sup>1</sup>, DINKO TONKOVIĆ<sup>2</sup>, SANJA SAKAN<sup>1</sup>, ŽELJKA MARTINOVIĆ<sup>3</sup>**

<sup>1</sup> Department of Anesthesiology, Reanimatology and Intensive Care, Clinical Hospital Center „Zagreb“, Kišpatićeva 12 Zagreb, Croatia

<sup>2</sup> Department of Anesthesiology, Reanimatology and Intensive Care, University Hospital „Sveti Duh“, Ulica Sveti Duh 64, Zagreb, Croatia

<sup>3</sup> Department of Anesthesiology, Reanimatology and Intensive Care, University Hospital „Sisters of charity“, Vinogradska cesta 29, Zagreb, Croatia

Daniela Bandić: (dbandic@zg.t-com.hr)

**Background and purpose:** Preventive open carotid surgery is a mainstay treatment for stenosis of internal carotid artery. Anesthesia management is crucial in these patients with many comorbidities. Both, general or regional anesthesia are the correct choice. The purpose of our trial was to compare the hemodynamic stability of intermediate cervical plexus block relative to general anesthesia in ASA III and ASA IV patients.

**Materials and methods:** Prospective study, approved by ethics committee, was conducted in the University hospital Zagreb from 2006 till 2010. Eighty nine high risk patients with carotid endarterectomy were enrolled. Thirty five patients were performed in the intermediate cervical block and fifty four in general anesthesia. From medical records, following data were collected- age, sex, ASA status. Mean arterial pressure was calculated. The change of mean arterial pressure during the operation for more than 20% was considered as hemodynamic instability. Postoperative hospital stay was recorded.

**Results:** Significantly higher hemodynamic stability is found in the group of patients with intermediate cervical block (chi-square test = 27,763,  $p < 0,01$ ). The median intensive care unit stay was 2,47 days for general anesthesia group, compared to one day for intermediate cervical group.

**Conclusion:** General anesthesia and intermediate cervical block provide effective anesthesia condition for carotid endarterectomy. According to the results of our trial, intermediate cervical block compared to general anesthesia is more hemodynamic stable, associated with shorter hospital stay.



## P26. ANESTHESIA MANAGEMENT FOR CHILDREN WITH EYE INJURIES

MARTINA MATOLIĆ<sup>1</sup>, VIŠNJA NESEK ADAM<sup>1</sup>, MLADEN BUŠIĆ<sup>2</sup>

<sup>1</sup> University Department of Anesthesiology, Resuscitation and Intensive Care, Clinical Hospital "Sveti Duh", Zagreb

<sup>2</sup> University Department of Ophthalmology, Clinical Hospital "Sveti Duh", Sveti Duh 64, Zagreb

Martina Matolić: (martina.matolic@zg.t-com.hr)

**Summary:** Eye injuries in childhood are very common and an important cause of ocular morbidity. They are a leading cause of non-congenital unilateral blindness in children. The anesthesia management of children with eye injuries requires particular skills and is a challenge for all anesthesiologists. The anesthesia management must prove safety for the child, but also must not endanger eye injury any further. In the polytraumatized child, trauma principles must always be applied. Life-threatening problems should be managed before sight-threatening problems. General anesthesia is a choice for majority of children with an eye injury. Maintenance of anesthesia will depend on patient factors, local facilities and surgeon preferences. Extubation is better to be performed in deep anesthesia, breathing spontaneously, lying on the side to avoid coughing and straining as this increase the risk of ocular hemorrhage. Multimodal approach and combination therapy (e.g. dexamethason and ondasteron) will minimize PONV in children. Satisfactory postoperative analgesia is important to have a non-crying and calm child to avoid rise in IOP and postoperative hemorrhage.

## P27. INVASIVE TECHNIQUE IN TREATING CHRONIC PAIN: LUMBAR SYMPATHETIC BLOCK IN TREATMENT OF COMPLEX REGIONAL PAIN SYNDROME OF LOWER EXTREMITIES

ANDREJ RADIĆ, EDUARD ROD, KARLO HOURA, DARKO PEROVIĆ, DAMIR HUDETZ,  
DUBRAVKA BARTOLEK

St. Catherine Specialty Hospital, Croatia

Andrej Radić: (andrej.radic@svkatarina.hr)

**Background and purpose:** Certain number of patients suffers from persistent pain and vasomotor changes (swelling, edema, temperature and colour changes) after major or even minor lower extremity injury. In such cases, acute posttraumatic and chronic neuropathic pain conditions are maintained through nociceptive impulses of the sympathetic nervous system. The diagnosis of Complex Regional Pain Syndrome (CRPS) often is not listed in patients' medical history and consequently, these patients are not properly treated. Nevertheless, there are not many treatment options besides analgesics and prolonged physical therapy. Purpose of this paper is to show, not so common yet successful method of treating CRPS of lower extremities.

**Materials and methods:** Lumbar sympathetic block can provide significant pain relief in Type 1 (reflex sympathetic dystrophy) as well as in Type 2 (causalgia) by blocking efferent impulses responsible for vascular tone and afferent nociceptive impulses toward the spinal cord. Before therapeutic procedure, minimally invasive diagnostic procedure is done. Short-acting local anaesthetic is administered through a spinal needle under fluoroscopic control, and thus blocking lumbar sympathetic chain. In the case of positive test, minimally invasive therapeutic procedure is performed-neurolysis with phenol or ethyl alcohol. Radiofrequency lesioning of lumbar sympathetic chain is also possible.

**Results and conclusion:** In the case of successful pain relief we confirm that pain was sympathetically maintained while in opposite case where pain persists we confirm that pain was sympathetically independent. Besides pain relief, efficacy of lumbar sympathetic block can be verified with surface temperature monitoring, sympatogalvanic reflex and sweat test. Signs of successful sympathetic blockade in the lower extremities include vasodilatation and temperature rise at least 1 °C with complete stop of sweating.

## P28. LUMBAR FACET JOINT INJECTIONS AND MEDIAL BRANCH BLOCKS

IVAN RADOŠ<sup>1</sup>, NEVEN ELEZOVIĆ<sup>2</sup>

<sup>1</sup> Clinic of Anaesthesiology and Intensive Care, Pain Unit, University Hospital Osijek, J. Huttlera 4, 31000 Osijek, Croatia

<sup>2</sup> Department of Anaesthesiology and Intensive Care, University Hospital Split, Šoltanska 1, 21000 Split, Croatia  
Ivan Radoš: (ivan.rados@os.t-com.hr)

**Summary:** Lumbar zygapophyseal joints have been considered a significant source of chronic low back. The zygapophyseal (facet) joints are true synovial joints, which connect adjacent vertebrae posteriorly. The medial branch of the posterior primary ramus is responsible for joint sensation. Symptoms of facet arthropathy include: hip and buttock pain, cramping lower extremity pain, usually not lower than the knee, low back stiffness, especially in the morning, pain commonly aggravated by prolonged sitting or standing. Signs of lumbar facet arthropathy are: paraspinal tenderness, worse over the affected joint, pain with movements that stresses the joints, i.e., hyperextension, lateral rotation and side bending, hip, buttock, or back pain on straight leg raising, absence of signs of nerve root irritation. Lumbar facet joint injection are performed for therapeutic and diagnostic reason. Most studies have found that facet injection provide temporary relief. The current recommendations suggest the primary role of facet injection (intra-articular or medial branch block) to be diagnostic. These procedures may facilitate the diagnosis of facet syndrome and help predict if patient would benefit from more permanent measures, such as facet rhizotomy.

## P29. "BLIND" INTERLAMINAR EPIDURAL STEROID INJECTIONS IN LUMBAR SPINAL STENOSIS; EFFECTIVE AND SAFE TECHNIQUE IN ELDERLY PATIENTS: SHORT COMMUNICATION

NEVEN ELEZOVIĆ<sup>1</sup>, MLADEN CAREV<sup>1</sup>, SANDA STOJANOVIĆ STIPIĆ<sup>1</sup>, IVAN RADOŠ<sup>2</sup>,  
SREĆKO LJUBIČIĆ<sup>3</sup>, DRAGICA KOPIĆ<sup>1</sup>

<sup>1</sup> Department of Anesthesiology and Intensive Care, University Hospital Split, Split

<sup>2</sup> Department of Anesthesiology and Intensive Care, University Hospital Osijek, Osijek, Croatia

<sup>3</sup> Department of Anesthesiology and Intensive Care, General Hospital Dubrovnik, Dubrovnik, Croatia  
Mladen Carev (mladen.carev1@gmail.com)

**Background and purpose:** Blind interlaminar epidural steroid injection (BESI) is one of the treatment modalities for lumbar spinal stenosis (LSS). There are a growing number of elderly patients with LSS. The optimal timing and outcome of BESIs in this population are not well defined, which is the aim of this study.

**Patients and methods:** Thirty patients aged 67±1.5 yrs, with diagnosis of LSS and refractory pain were recruited during year 2010 and followed up for 12 months. "Blind" epidural in corresponding interspace was performed with 18G Tuohy needle, using loss of resistance. The epidural mixture (10 mls) consisted of 80 mg of triamcinolone acetone and 40 mg of lidocaine. Each patient received in total 3 BESIs every 3 weeks (BESI1, BESI2, BESI3). The pain was evaluated with visual analogue scale (VAS) before first BESI (VAS0) and after each treatment (VAS1, VAS2, VAS3). Subjective quality of performing the same physical activity (PA) was evaluated with simple 3-points scale (0 = no change, 1 = slight improvement, 2 = significant improvement).

**Results:** BESI resulted in significant reduction of VAS (VAS0 8.1±0.3, VAS1 5.8±0.2, VAS2 4.9±0.2, VAS3 4.4±0.3; F=87.57, P< 0.001) - all pair-wise comparisons were significantly different in post-hoc analysis (P<0.001), except VAS2 vs VAS3 having borderline significance (P=0.06). Subjective quality of physical activity significantly improved regarding baseline conditions (BESI1 PA score: 0=1/30, 1=7/30, 2=22/30 patients; BESI2 PA score: 0=1/30, 1=5/30, 2=24/30 patients; BESI 3 PA score: 0=4/30, 1=6/30, 2=20/30 patients;  $\chi^2=3.7$ , p=0.45). The average duration of successful BESI treatment was 6.3±0.8 months (range 1-12). There were no reported complications.



**Conclusions:** Blind interlaminar epidural steroid injections (in total 3 injections every 3 weeks) resulted in significant reduction of pain and improvement of physical activity in elderly patients with LSS. It could be regarded as effective and safe procedure in this population.

### **P30. ULTRASOUND GUIDED BARBOTAGE AND LOCAL INJECTIONS FOR ROTATOR CUFF CALCIFIC TENDINITIS TREATMENT**

**EDUARD ROD<sup>1</sup>, DAMIR HUDEZ<sup>1,2</sup>, ANDREJ RADIĆ<sup>1</sup>, DUBRAVKA BARTOLEK HAMP<sup>1</sup>, ALAN IVKOVIĆ<sup>1,2</sup>**

<sup>1</sup> St. Catherine Specialty Hospital, Bracak 8, Zabok, Croatia

<sup>2</sup> University hospital „Sveti Duh“, Sveti Duh 64, Zagreb, Croatia  
Eduard Rod: (eduardrod1508@gmail.com)

**Background and purpose:** Calcific tendinitis in rotator cuff is relatively common disorder caused by the deposition of hydroxyapatite mostly in the critical zone of the supraspinatus tendon. When calcium builds up in the tendon, it can cause an increase of pressure in the tendon, as well causing a chemical irritation. This leads to pain. The pain can be extremely intense. Breaking up the calcific deposits by repeatedly puncturing them with a needle and aspirating the calcific material is a commonly advised treatment. Injection of a local anesthetic and corticosteroid in that area provides more prolonged analgesia. Ultrasound is an ideal method for guiding such interventional musculoskeletal procedure. Explaining technique of ultrasound guided barbotage and local injection to facilitate the implementation of these procedures in the treatment of acute shoulder pain caused by calcific tendinitis in rotator cuff.

**Materials (Patients) and methods:** Clinical review on ultrasound guided barbotage and injection of local anesthetic and corticosteroid for rotator cuff calcific tendinitis treatment.

**Results:** The procedure is successful in 60-70% of patients. If they do not respond to such treatment, patients may need surgery.

**Conclusions:** Ultrasound guided barbotage and local injections for rotator cuff calcific tendinitis treatment have numerous advantages. These are successful, precise, non-ionizing and outpatient procedures.

### **P31. EFFECTIVENESS OF BOLUS OF LEVOBUPIVACAINE BY WOUND CATHETER AT THE END OF THE OPERATION IS STILL UNKNOWN**

**KATIJA ČULAV, LJILJANA ŠTEFANČIĆ, GORDANA BROZOVIĆ, BRANKA MALDINI**

Department of Anesthesiology and Intensive Care, University Hospital Sestre milosrdnice, Zagreb, Croatia  
Katija Čulav: (kculav@gmail.com)

**Background and purpose:** Continuous wound infusion with local anaesthetics is an effective method in multimodal postoperative pain therapy after colorectal surgery. The aim of this study was to evaluate the efficiency of bolus of levobupivacaine by wound catheter at the end of the operation.

**Materials and methods:** Thirty patients undergoing colorectal surgery were divided in two equal groups. To all patients at the end of the operation wound catheter were placed suprafascial. All were treated by the same protocol, which includes: preclosure MoHCl bolus, continuous infusion of 0.25% levobupivacaine through wound catheter-flow rates of 7 mL/h, intravenous diclofenac 75 mg every 12 h for 48 h and patient-controlled analgesia with intravenous morphine. Group A received bolus - 10 mL 0.25% levobupivacaine through wound catheter while group B did not receive bolus. Patients had catheters for 48 h, during which time we monitored the morphine consumption and adequacy of analgesia with VAS scores.

**Results:** Comparison of pain control (VAS) and consumption of MoHCl between the two groups of patients, showed no statistically significant differences between the two groups.

**Conclusion:** Based on the obtained results it can be concluded that the use of bolus of 0,25% levobupivacaine have no significant impact on the control of postoperativ pain. As this is a small sample, we will continue to monitor the patients to a more significant sample, and thus get more representative results.

## **P32. IS THE ULTRASOUND GUIDE "SINGLE SHOT" FEMORAL NERVE BLOCK GOOD ANALGESIA FOLLOWING TOTAL KNEE REPLACEMENT SURGERY?**

**SENKA BARANOVIĆ<sup>1</sup>, BRANKA MALDINI<sup>1</sup>, MILAN MILOŠEVIĆ<sup>2</sup>**

<sup>1</sup> Department for Anaesthesiology and Intensive Care, University Hospital Center „Sestre Milosrdnice“, Zagreb, Croatia

<sup>2</sup> Department of Environmental and Occupational Health, “Andrija Štampar” School of Public Health, University of Zagreb, School of Medicine, Zagreb, Croatia

Senka Baranović: (senka.baranovic1@zg.t-com.hr)

**Background and aims:** Femoral nerve block (FB) is a common technique of analgesia for postoperative pain control after total knee arthroplasty. The aim of this study is compare the effects of two different types of femoral analgesia in development of postoperative pain, need for rescue analgesic, and strength of the quadriceps femoris muscle in early postoperative time.

**Materials and methods:** 60 patients were included in this prospective, randomized study. They were randomized into two groups, SSFNB (single shot femoral nerve block) and CFNB (continuous femoral nerve block). FB in group SSFNB was performed with ultrasound, whilst FB in group CFNB was performed with nerve stimulator. The VAS score was assessed every two hours at rest and in motion. We measured needs for rescue analgesic (morphin through PCA) and strength of the quadriceps muscle at 12 and 24 hours after operation.

**Results:** There was no statistically significant differences between groups regarding demographic characteristics and ASA status. CFNB group had lower VAS score as well as lower rescue analgesics use, but it is not statistically significant. There were no statistically significant differences in postoperative complications between groups. Strength of the quadriceps femoris muscle performed by manual muscle test was statistically significant higher in SSFNB group ( $P < 0.05$ ) 24 hours after operation, but 12 hours after operation there were not statistically significant differences between groups.

**Conclusion:** SSFNB is good analgesia for first 24 hours after total knee replacement surgery with minor loss of muscle strength of quadriceps muscle in early postoperatively period.

## **P33. PERIPHERAL NERVE BLOCK- OR INTRAVENOUS-PCA ANALGESIA FOR EARLY PHYSICAL REHABILITATION IN "FAST-TRACK" ORTHOPAEDIC SURGERY: WHAT IS OPTIMAL?**

**DUBRAVKA BARTOLEK, MLADEN RAKIĆ, EDUARD ROD, ANDREJ RADIĆ, DARJA GRANEC, DARKO PEROVIĆ, KARLO HOURA**

„St. Catherine“ Orthopaedics, Surgery, Neurology and Physical Medicine and Rehabilitation Specialty Hospital, Croatia  
Dubravka Bartolek: (dubravka.bartolekhamp@inet.hr)

**Background and purpose:** „Fast-track“ orthopaedic surgery characterized early physical rehabilitation (FR). Quality patient mobilization depends on pain therapy success and motor function preservation. Continuous regional (PNB) and intravenous (IV) patient-control-analgesia (PCA) built current base of acute pain management. Aim was to determine more effective postoperative PCA-analgesia (IV-PCA vs. PNB-PCA) for early FR in „fast-track“ surgery.

**Materials (Patients) and methods:** Prospective, observer-blinded study included 29 adults (31-51 age; bought gender; ASA I/II) scheduled for knee ligament reconstruction, total knee replacement or hallux valgus osteotomy in spinal anaesthesia. Intravenous (Group-IV-PCA; fentanyl  $0,07 \mu\text{g kg}^{-1}\text{h}^{-1}$ ) (N=10) or regional (Group-PNB-PCA: femoral/tibial block, 0.125% levibupivacaine, 8-12 mL  $\text{h}^{-1}$ )(N=19) PCA-analgesia (Group-IV-PCA: fentanyl, 0,05mg/30min/x8max; Group-PNB-PCA: 0.125% levibupivacaine, 8ml/30min/x8max) was established after surgery. Pain score (VAS rest/moving) was assessed during the 24-hours after surgery and accepted as satisfactory by  $\leq 2/3$ . Paracetamol 1 g was added intravenously if VAS was  $\geq 3/4$ . Early FR starts six hours after surgery. Data was analysed by <http://statpages.org>.

**Results:** Regional- and intravenous-PCA analgesia provided equally effective analgesia during first 24-hours after surgery (VAS in moving  $\leq 3$ ). Early FR was possible 6-hours after surgery in 89% of Group-PNB-PCA (20% of Group-IV-PCA) (P=0,0001) due to significantly lower VAS  $0,7\pm 0,2$  (Group-IV-PCA  $3,0\pm 0,2$ )(P<0,0004). Residual motor block, presented in two patient (11%) with PNB-PCA, disabled the onset of FR. Additional analgesic dose was need in 40% of Group-IV-PCA compare to 11% of PNB-PCA(P<0,0001).

**Conclusions:** Peripheral nerve block PCA-analgesia allows more successful pain-free early FR for orthopaedics „fast-track“ surgery, in circumstances of adjustment anaesthetic dose to preserve motor functions

## **P34. REGIONAL ANAESTHESIA AND CHRONIC RENAL DISEASE**

**MARIJANA ŽURA<sup>1</sup>, KATARINA ŠAKIĆ<sup>2</sup>**

<sup>1</sup> Department of Anaesthesiology, Reanimatology and Intensive Medicine, University Hospital Center, Zagreb, Croatia

<sup>2</sup> Department of Anaesthesiology, Reanimatology and Intensive Medicine, University Hospital "Sv. Duh", Zagreb, Croatia  
Marijana Žura: (marijana\_grljusic@yahoo.com)

**Summary:** Chronic kidney disease (CKD) has become increasingly prevalent in our aging patient population, especially because glomerular filtration rate (GFR) and renal reserve decline progressively as we grow older. The most common causes of CKD are diabetes mellitus, hypertension and glomerulonephritis. The aim of this article is to present different regional techniques whose meaning is observed in the group of patient treated for chronic kidney disease. He also made reference to the possible complications and specificity that we have to pay attention when performing regional anesthesia

## **P35. CONTINUOUS WOUND INFUSION VERSUS EPIDURAL POSTOPERATIVE ANALGESIA AFTER LIVER RESECTION IN CARCINOMA PATIENTS**

**LJILJA ŠTEFANČIĆ<sup>1</sup>, GORDANA BROZOVIĆ<sup>1</sup>, DEANA ŠTURM<sup>2</sup>, BRANKA MALDINI<sup>1</sup>, KATA ŠAKIĆ<sup>3</sup>**

<sup>1</sup> Department of Anesthesiology, Resuscitation and Intensive Medicine, Sestre milosrdnice University Hospital Center, Zagreb, Croatia

<sup>2</sup> Department of Transfusion Medicine, Sestre milosrdnice University Hospital Center, Zagreb, Croatia

<sup>3</sup> School of Medicine, University J. J. Strossmayer Osijek

**Background:** Continuous wound infiltration (CW) and epidural thoracic analgesia (ETA) are analgesic techniques commonly used in the multimodal management of postoperative pain after open abdominal surgery. The aim of this study was to evaluate the effectiveness in pain reduce and postoperative recovery of these techniques in patients scheduled for liver resection.

**Methods:** The retrospective study included 29 patients, with liver resection performed due to metastases of colon carcinoma. The patients were divided into two groups depending on type of postoperative analgesia. Wound catheter group ( WC) included patients that had received analgesia through multiorifice wound catheter placed below the fascia and thoracic epidural group (TEA) included that had received local anaesthetic through a epidural catheter. Both analgesic regimes were continued for 48 hours postoperatively. All patients received a standard postoperative pain management protocol, including patient-controlled analgesic (PCA) morphine and intravenous diclofenac every 12h. Outcomes measured over 48 h after operation were Numerical Rating Score (NRS) et rest and coughing, morphine consumption, and side-effects (PONV) and time to bowel function recovery.

**Results and conclusion:**No significant difference in morphine consumption was observed between groups ( $p=0,395$ ). Pain managment efficacy was satisfactory ( $NRS<4$ ) in both groups and we did not find significant differences in Numerical rating skale (NRS) between groups ( $p=0,128$ ). We did not observed statistically significant diffeerce in incidence of postoperative nausea and vomiting (PONV).Time to recover the bowel function was significantly reduced in WC Group  $85,93\pm 21,02$  h and in TEA Group  $107,64\pm 20,02$  h ( $p=0,008$ ). We conclude that wound catheter infusion in liver surgery is simple, safe and even more effective alternative to epidural analgesia in multimodal protocol for postoperative analgesia after liver resection.

## AUTHOR INDEX

		Karanović Nenad	OP3
Bačak Kocman Iva	P12		
Bačić Ivan	P19	Kaštelan Željko	P12
Badel Tomislav	OP5	Kern Josipa	OP5
Bagatin Dinko	P6	Knežević Nikola	P12
Bandić Daniela	P25	Kocman Ivica	P12
Baranović Senka	P32	Kopić Jasminka	P9, P13, P11
Bartolek Dubravka	P27, P30, P33	Kopic Dragica	OP3, P5
Bašić Jukić Nikolina	P12	Korušić Anđelko	P17, P23
Bašić Kes Vanja	OP5	Kotorac Kristina	P2
Bekavac Mišak Vilka	P12	Kovač Josip	P15
Belavić Matija	P14	Kristek Gordana	P10
Briški Ana	OP1	Krobot Renata	P8
Brkljačić Morana	OP6	Kvolik Slavica	P10
Brozović Gordana	P2, P6, P31	Lijić Ana	OP3
Bušić Mladen	P26	Lončarić Katushin Mirjana	P14
Car N	P1	Ljubicić Srećko	P1, P5, P29
Carev Mladen	P29	Ljubičić T	P1
Ćulav Katija	P31	Maldini Branka	P15, P31, P32
Dragić Ivona	OP1	Marin Damjan	P21
Djulabić Luka	P16	Markić Ana	P21
Elezović Neven	OP3, P1, P28, P29	Martinović Željka	P25
Ferček Iva	P6, P7	Matejić Tomislav	P21, P24
Goluža Eleonora	P12	Matić Ivo	P9, P11, P13
Graf-Župčić Sandra	P23	Matolić Martina	P22, P26
Granec Darja	P33	Milošević Milan	P32
Grizelj Stojčić Elvira	P22, P24	Mirković Ivan	P9, P11
Gulam Danijela	P10	Miškulin Mladen	OP4
Gvozdenović Aleksandra	P15	Mršić Viviana	P22, P24
Habek Dubravko	OP7	Nesek Adam Višnja	P16, P21, P22, P24, P26
Haršanji Drenjančević Ivana	P10	Nižić Z	P1
Houra Karlo	P27, P33	Oberhofer Dagmar	P20
Hudetz Damir	P27, P30	Oremuš Krešimir	P18
Husedžinović Ino	OP1, P17	Pajić-Penavić Ivana	P9, P13
Huzjak Maja	P15	Palenkić Hrvoje	P9
Ivković Alan	P30	Perić Mladen	P12
Jokić Aleksandra	P20	Perković Ana	P15
Jurjević Matija	P9, P11, P13	Perković Mate	P5
Jurković Ivana	OP7	Perović Darko	P27, P33
Kalagac Fabris Lada	P3	Peršec Jasminka	OP1, P17

Peršin Beraković Andrea	P12	Šoštarčić Siniša	P18
Petani Barbara	P19	Štefančić Ljiljana	P6, P31,
Pitlović Hrvoje	P11	Šturm Deana	P6
Premužić Jadranka	P8	Šurković Ismania	OP2
Pupacic Daniela	P5	Stojanovic Stipic Sanda	P29
Radić Andrej	P27, P30, P33	Sulen Nina	P19
Radoš Ivan	P28, P29	Tonković Dinko	P4, P7, P20, P22, P25
Rakić Mladen	P33	Topalović Grković Marija	P12
Rašić Žarko	P21	Tudorić Đeno Ivana	OP1, P17, P23
Renata Krobot	P8	Tunjić Pejak Darinka	P24
Rod Eduard	P27, P30, P33	Vojnić Jelena	P24
Roje Damir	OP3	Vrgoč Goran	OP4
Ružman Tomislav	P10	Vukelić Anđić Milka	P4
Sakan Sanja	P25	Vukelić Milka	P20
Šakić Livija	OP6, P4, P7, P22, P23	Vulić Marko	OP3
Šakić Zdravčević Katarina	OP6, OP7, P2, P3, P6, P7, P13, P16, P34	Vuković A.	P1
Šimurina Tatjana	P19	Zadavec Dijana	OP5
Šklebar Ivan	OP7, P4, P7, P20	Zavoreo Iris	OP5
Savić Pavičin Ivana	OP5	Žunić Josip	P14
Skok Ira	OP4, P20	Žura Marijana	P34
Skurić Jadranka	P20	Židak Davorka	OP1, P23
Smiljanić Aleksandra	P24	Židak Gordana	OP4
Suljević Ismet	OP2	Židak Marcel	P23
Suljević Maida	OP2	Župčić Miroslav	P17, P23
Šore Blanka	P15	Žura Marijana	P34



“This patient is in a critical condition.  
We need comprehensive monitoring and  
ICU-quality ventilation.”

Julia, 42, anaesthesiologist

**At your side in the operating room: Dräger.**

The operating room is not only the heart of the surgical patient process. Despite its cost- and labour-intensity it represents an important source of the hospital's income. The operating team works hand in hand through a variety of parallel processes. They rely on an increasing number of medical devices and instruments. At Dräger we have been developing and refining our technology for more than a century, with a special focus on the perioperative environment. You can look to us for custom solutions – from induction to surgery and on to recovery.

**LEARN MORE ABOUT OUR SOLUTIONS: [WWW.DRAEGER.COM/OR](http://WWW.DRAEGER.COM/OR)**

