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**FINAL PROGRAMME
AND
ABSTRACT BOOK**



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PERIODICUM BIOLOGORUM

**4th INTERNATIONAL SYMPOSIUM ON REGIONAL
ANAESTHESIA AND PAIN THERAPY**

**4th Croatian Congress of Regional
Anaesthesia and Analgesia**

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

Hotel WESTIN, Zagreb, Croatia

June 16 – June 18, 2011



ECMEC

European Accreditation Council for Continuing Medical Education

Certificate

4th International Symposium on Regional Anaesthesia and Pain Therapy

Zagreb, Croatia (16.–18.06.2011)

»The 'Croatian Society of Regional Anaesthesia and Analgesia- Croatian Medical Association; European Society of Regional Anaesthesia and Pain Therapy' (or) '4th International Symposium on Regional Anaesthesia and Pain Therapy' is accredited by the European Accreditation Council for Continuing Medical Education (EACCME) to provide the following CME activity for medical specialists. The EACCME is an institution of the European Union of Medical Specialists (UEMS), www.uems.net.«

»The '4th International Symposium on Regional Anaesthesia and Pain Therapy' is designated for a maximum of (or 'for up to') 12 hours of European external CME credits. Each medical specialist should claim only those hours of credit that he/she actually spent in the educational activity.«

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4th INTERNATIONAL SYMPOSIUM ON REGIONAL ANAESTHESIA AND PAIN THERAPY

4th 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 16 – June 18, 2011

Organizers

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

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Ministry of Science, Education and Sports of the Republic of Croatia
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University of Zagreb School of Medicine
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Invited speakers:

A. Borgeat (Switzerland), B. Fischer (United Kingdom), S. Gligorijevic (Switzerland), S. Huterer (Austria), V. Novak Jankovič (Slovenia), Z. Milan (United Kingdom), N. Vintar (Slovenia)

Invited speakers from Croatia:

D. Bartolek (Zagreb), G. Brozović (Zagreb), R. Dobrila Dintinjana (Rijeka), I. Drenjančević (Osijek), V. Frković (Rijeka), V. Golubović (Rijeka), M. Judaš (Zagreb), L. Kalagac (Pula), D. Kopic (Split), B. Maldini (Zagreb), S. Marić (Zagreb), B. Mazul Sunko (Zagreb), V. Nesek Adam (Zagreb), I. Radoš (Osijek), D. Sapunar (Split), K. Šakić (Zagreb), B. Tripković (Zagreb), I. Tudorić Đeno (Zagreb)

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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 4th International Symposium on Regional Anaesthesia and Pain Therapy and 4th Croatian Congress of Regional Anaesthesia and Analgesia in Zagreb, Croatia, June 16–18, 2011.

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 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. 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

S. Gligorijević, MD
President of Eastern ESRA
Past president ESRA

GENERAL INFO

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

ABSTRACT SUBMISSION DEADLINE: April 20, 2011

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

Congress Venue

»Hotel Westin«, Kršnjavoga 1, 10000 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 registrated 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
- Galla Dinner
- Guided city tour
- Half-day and one-day excursions

Organizers:

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

University Hospital »Sveti Duh«

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European Society of Regional Anaesthesia & Pain Therapy (ESRA)

<http://www.esraeurope.org>

Presidents:

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President of CSRAA-CroMA

Slobodan Gligorijevic, MD

President of Eastern ESRA

Past president ESRA

Congress servis:

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(CSRAA-CroMA)

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SCIENTIFIC PROGRAMME

Thursday, 16th June 2011

- HALL A REFRESHER COURSES**
12.00-19.10 Chair: *I. Drenjančević*, Osijek, Croatia; *V. Novak Jančkovič*, Ljubljana, Slovenia
- 12.00-12.40 NEUROBIOLOGY OF PAIN
M. Judaš Zagreb, Croatia
- 12.40-13.20 SYMPATHETIC ACTIVITY, BLOOD PRESSURE AND HEART RATE VARIABILITY-WHAT IS LINK?
I. Drenjančević-Perić Osijek, Croatia
- 13.20-14.00 TOXICITY OF LOCAL ANAESTHETICS
V. Neseke Adam, Zagreb, Croatia
- 14.00-14.40 THROMBOEMBOLIC PROHYLAXIS IN PREGNANT PATIENT-SPECIFIC RISKS
G. Brozović, Zagreb, Croatia
- 14.40-15.20 INFECTIOUS COMPLICATIONS OF REGIONAL ANAESTHESIA
V. Novak Jančkovič, Ljubljana, Slovenia
- 15.20-16.00 RECENT ADVANCES IN CANCER PAIN MANAGEMENT
V. Golubović, Rijeka, Croatia
- 16.00-16.30** Coffee break/**POSTER PRESENTATIONS (P1-P6)**
Chair: *V. Golubović*, Rijeka, Croatia, *G. Brozović*, Zagreb, Croatia
- 16.30-17.10 EPIDURAL ANALGESIA – PROTOCOL FOR TREATMENT
B. Mazul Sunko, Zagreb, Croatia
- 17.10-17.50 NEW ANTICOAGULANTS AND REGIONAL ANAESTHESIA IN PATIENTS UNDERGOING ORTHOPEDIC?
B. Tripković, Zagreb, Croatia
- 17.50-18.30 REGIONAL ANAESTHESIA AND MORBIDLY OBESE PATIENT-AN UPDATE
B. Maldini, Zagreb, Croatia
- 18.30-19.10 IS THERE A PAIN RESEARCH IN CROATIA?
D. Sapunar, Split, Croatia
- 20.00-22.00** OPENING CEREMONY AND WELCOME RECEPTION – HOTEL WESTIN
»Opera«, 17th floor

Friday, 17th June 2011

- HALL B SYMPOSIUM I – NEURAXIAL BLOCKADES**
08.00-10.30 Chair: *S. Gligorijević*, Zuerich, Switzerland; *K. Šakić*, Zagreb, Croatia
- 08.30-08.30 CURRENT ISSUES IN SPINAL ANAESTHESIA
S. Gligorijević, Zuerich, Switzerland
- 08.30-08.55 POSTOPERATIVE ANALGESIA FOR THORACO-ABDOMINAL SURGERY-WHAT IS THE EVIDENCE?
B. Fischer, London, United Kingdom
- 09.00-09.30 ADJUVANTS FOR NEURAXIAL BLOCKS
N. Vintar, Ljubljana, Slovenia

- 09.30–10.00 REGIONAL ANAESTHESIA IN ORTHOPAEDIC SURGERY-COST BENEFIT RATIO
K. Šakić, Zagreb, Croatia
- 10.00–10.30 DISCUSSION
- 10.30–11.00 Coffee break/**POSTER PRESENTATIONS (P7-P12)**
Chair: *V. Novak Janković, Ljubljana, Slovenia, V. Nesež Adam, Zagreb, Croatia*
- 11.00–13.00 **SYMPOSIUM II – PERIPHERAL NERVE BLOCKS AND PAIN MANAGEMENT**
Chair: *A. Borgeat, Zuerich, Switzerland; Z. Milan, Leeds, United Kingdom*
- 11.00–11.30 PERIPHERAL NERVE BLOCKS IN PATIENTS WITH PREEXISTING NEUROLOGIC DISEASE
A. Borgeat, Zuerich; Switzerland
- 11.30–12.00 POSTOPERATIVE DELIRIUM-CAN IT BE PREVENTED WITH REGIONAL ANAESTHESIA?
S. Gligorić, Zuerich; Switzerland
- 12.00–12.30 TRANSVERSUS ABDOMINIS PLANE BLOCK-WHAT IS NEW?
Z. Milan, Leeds, United Kingdom
- 12.30–13.00 ULTRASOUND FOR PERIPHERAL NERVE BLOCKS
S. Huterer, Vienna, Austria
- 13:00–14:00 Lunch/**ORAL PRESENTATIONS (OP1-OP6)**
Chair: *B. Maldini, Zagreb, Croatia, B. Tripković, Zagreb, Croatia*
- 14.00–16.00 **SYMPOSIUM III – NEW CONCEPTS IN REGIONAL ANAESTHESIA**
Chair: *B. Fischer, London, UK; R. Dobrila Dintinjana, Rijeka, Croatia*
- 14.00–14.30 BENEFITS, RISKS AND BEST PRACTICE IN REGIONAL ANAESTHESIA
B. Fischer, London, United Kingdom
- 14.30–15.00 ANAESTHETIC TECHNIQUES AND CYTOKINE RESPONSE
K. Šakić, Zagreb, Croatia
- 15.00–15.30 EPIDURAL ANALGESIA FOR LIVER TRANSPLANTION
Z. Milan, Leeds, United Kingdom
- 15.30–16.00 DILEMMAS AND CONTROVERSIES IN PAIN TREATMENT
R. Dobrila Dintinjana, Rijeka, Croatia
- 16.00–16.30 Coffee break/**POSTER PRESENTATIONS (P13-P18)**
Chair: *B. Mazul Sunko, Zagreb, Croatia, I. Radoš, Osijek, Croatia*
- HALL A W01 WORKSHOP**
- 16.10–17.00 **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: *A. Borgeat, Switzerland; S. Gligorić, Switzerland; S. Huterer, Austria; D. Bartolek, Croatia; V. Frković, Croatia, I. Škoč, Croatia*
- HALL A W02 WORKSHOP**
- 17.10–18.00 **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. Gligorić, Switzerland; A. Borgeat, Switzerland; B. Tripković, Croatia; S. Huterer, Austria; V. Frković, Croatia; I. Radoš, Croatia*

- HALL A W03 WORKSHOP**
18.00–18.50 NERVE LOCATIONS FOR PERIPHERAL NERVE BLOCKS: ULTRASOUND AND NERVE STIMULATION
Thoracic epidural or paravertebral block after thoracotomy, cervical blocks, TAP blocks
Demonstrators/speakers: *B. Fischer, United Kingdom; V. Novak Jančkovič, Slovenia; S. Huterer, Austria; S. Marić, Croatia; V. Frković, Croatia; I. Radoš, Croatia*
- 19.00–19.30 SUGAMMADEX IN RESIDUAL PARALYSIS INDUCED BY BIER BLOCK**
D. Bartolek, Zagreb, Croatia; K. Šakić, Zagreb, Croatia
- 20.00–24.00 CONGRESS DINNER, HOTEL WESTIN »Opera« 17th floor**

Saturday, 18th June 2011

- HALL A SYMPOSIUM IV – ANAESTHESIA FOR DAY SURGERY**
08.30–10.30 Chair: N. Vintar, Ljubljana, Slovenia; V. Golubović, Rijeka, Croatia
- 08.30–09.00 ORGANISATION OF DAY SURGERY SERVICE
V. Golubović, Rijeka, Croatia
- 09.00–09.30 SPINAL ANAESTHESIA FOR AMBULATORY SURGERY
I. Tudorić Đeno, Zagreb, Croatia
- 09.30–10.00 PERIPHERAL NERVE BLOCKS FOR AMBULATORY SURGERY-ARE THEY WORTHY?
D. Bartolek, Zagreb, Croatia
- 10.00–10.30 ROLE OF ACUTE PAIN SERVICE IN POSTOPERATIVE PAIN MANAGEMENT
N. Vintar, Ljubljana, Slovenia
- 10.30–11.00 Coffee break/POSTER PRESENTATIONS (P19-P24)**
Chair: K. Šakić, Zagreb, Croatia; D. Kopic, Split, Croatia
- HALL A SYMPOSIUM V – REGIONAL ANAESTHESIA IN OBSTETRIC ANAESTHESIA**
11.00–13.30 Chair: B. Mazul Sunko, Zagreb, Croatia; D. Kopic, Split, Croatia
- 11.00–11.30 UNEXPECTEDLY HIGH SPINAL BLOCK IN OBSTETRICS
G. Brozović, Zagreb, Croatia
- 11.30–12.00 WHY MOTHER DIE, WHAT ANESTHETISTS CAN DO?
D. Kopic, Split, Croatia
- 12.00–12.30 DELIVERY UNDER EPIDURAL ANALGESIA AND EXPECTED C-SECTION MANAGEMENT -LOW DOSE SPINAL ANAESTHESIA
B. Mazul Sunko, Zagreb, Croatia
- 12.30–13.00 PERSISTENT POST PARTUM PAIN AFTER VAGINAL BIRTH AND CESAREAN SECTION
L. Kalagac, Pula, Croatia
- 13.00–13.45 Coffee break/POSTER PRESENTATIONS (P25-P33)**
Chair: D. Oberhofer, Zagreb, Croatia; S. Golubović, Rijeka, Croatia
- 14.00–15.00 CLOSING CEREMONY »Opera« 17th floor
CSRAA 2011 Best Free and Poster Awards

Sunday, 19th June 2011 – EXCURSION

ORAL PRESENTATIONS

Friday, 17th June 2011

13.00-14.00

Chair: B. Maldini, Zagreb, Croatia, B. Tripković, Zagreb, Croatia

13.00-13.10

OP1. Double catheter technique for ankle surgery

KREŠIMIR OREMUS

13.10-13.20

OP2. Ultrasound-guided paravertebral catheter placement for thoracotomy

JOSIP AŽMAN, MLADEN HORVAT, VEDRAN FRKOVIĆ, DENI BELUŠIĆ, ŽELJKO ŽUPAN

13.20-13.30

OP3. The positioning of the C-arm during invasive pain treatment

IVAN RADOŠ

13.30-13.40

OP4. Dynamics of change in coagulation parameters in carcinoma patients with epidural analgesia following liver resection

LJILJA ŠTEFANČIĆ, STELA MARIĆ, BRANKA MALDINI, MIROSLAV BANOVIĆ, GORDANA BROZOVIC, KATA ŠAKIĆ

13.40-13.50

OP5. Quality of analgesia with multi- versus two few-hole catheters in patients after colorectal surgery

STELA MARIĆ, LJILJA ŠTEFANČIĆ, LJILJANA POPOVIĆ, MIROSLAV BANOVIĆ, KATA ŠAKIĆ

13.50-14.00

OP6. Low dose spinal morphine and intravenous diclofenac for postoperative analgesia after total hip and knee arthroplasty

DAGMAR OBERHOFER, KATARINA ŠAKIĆ, VIŠNJA NESEK-ADAM, ALEKSANDRA SMILJANIĆ, ELVIRA GRIZELJ-STOJČIĆ, MILKA VUKELIĆ, VIVIANA MRŠIĆ

POSTER PRESENTATIONS

Thursday, 16th June 2011

16.00-16.30

Chair: V. Golubović, Rijeka, Croatia, G. Brozović, Zagreb, Croatia

16.00-16.05

P1. Outcomes of lumbar epidural steroid injections – a cohort study

IRINA EVANSA, EDGARS VASILEVSKIS, INDULIS VANAGS, INARA LOGINA, ALAIN BORGEAT

16.05-16.10

P2. Unilateral bupivacaine-fentanyl or bupivacaine-sufentanil spinal anesthesia for arthroscopic knee surgery

RENATA KROBOT, JADRANKA PREMUŽIĆ, PATRICIA GRBČIĆ, NENAD VUCELIĆ

16.10-16.15

P3. Validation of the Croatian pain catastrophizing scale through a study on the influence of medical education on pain catastrophizing

ANTONIJA MARIĆ, ADRIANA BANOŽIĆ, ANKICA ČOSIĆ, SUZYEN KRALJEVIĆ, DAMIR SAPUNAR, LIVIA PULJAK

16.15-16.20

P4. Peribulbar vs. Subtenon anesthesia for combined cataract and vitreous surgery

NEVENKA BOHAČEK, JOSIP RESETIĆ, IVA PETEK, ZORAN VATAVUK, ZDRAVKO MANDIĆ

16.20-16.25

P5. Lumbar interlaminar versus transforaminal steroid injections for unilateral radiculopathy

IRINA EVANSA, MICHAEL ARON, EDGARS VASILEVSKIS, IGOR PANICHIN, INDULIS VANAGS, INARA LOGINA, ALAIN BORGEAT

16.25-16.30

P6. Unilateral spinal block in ASA IV patient

DAVORKA ŽIDAK, MARCEL ŽIDAK, IVANA TUDORIĆ ĐENO, MORENA MILIĆ, IVANA PRESEČKI

Friday, 17th June 2011

10.30-11.00

Chair: V. Novak Jankovič, Ljubljana, Slovenia, V. Nesek Adam, Zagreb, Croatia

10.30-10.35

P7. A comparison of interscalene block anaesthesia and general anaesthesia in patients with proximal humerus fracture
SENKA BARANOVIĆ, IVAN BENČIĆ, DRAGAN ĐURĐEVIĆ, BRANKA MALDINI, MILAN MILOŠEVIĆ

10.35-10.40

P8. Comparison of early continuous epidural and intravenous opioid analgesia on haemodynamic changes in several pelvic fractures

DUBRAVKA BARTOLEK, KATA ŠAKIĆ-ZDRAVČEVIĆ, RENATA LETICA-BRNADIĆ

10.40-10.45

P9. The quality of axillary brachial plexus block: ultrasound guided or with nerve stimulator

ZRINKA OREŠKOVIĆ, IVANA STIPČIĆ, BRANKO TRIPKOVIĆ

10.45-10.50

P10. Ultrasound-guided interscalene block for shoulder surgery – our experience

IVAN MIRKOVIĆ, JASMINKA KOPIĆ, IVO MATIĆ, MATIJA JURJEVIĆ

10.50-10.55

P11. Popliteal vs ankle block for foot surgery-our experience in 2010

IRA SKOK, MILKA VUKELIĆ, JASNA SKOK, KATARINA ŠAKIĆ, MARKO KOVAČEVIĆ, ANTE IVKOŠIĆ

10.55-11.00

P12. Off-label use of rivaroxaban for thromboprophylaxis after pelvic osteotomy

KRESIMIR OREMUŠ

Friday, 17th June 2011

16.00-16.30

Chair: B. Mazul Sunko, Zagreb, Croatia, I. Radoš, Osijek, Croatia

16.00-16.05

P13. Is single-shot epidural analgesia more efficient than morphine patient-controlled analgesia for donor nephrectomy?

ZOKA MILAN, SANGEETA DAS, MITKO KOCAREV, VIMI RAWARI

16.05-16.10

P14. Large volume dye spread in transversus abdominis plane block via three injection sites: A cadaveric study

TALBOR D, MILAN Z, MCCONNELL P, PICKERING J

16.10-16.15

P15. Monitoring motor block for intratectal application of drug on modified bromage scale

DAVORKA ŠPIŠIĆ-TREURSIĆ, MARTINA RADMANOVIĆ-ŠKRBIĆ, LEM TREURSIĆ

16.15-16.20

P16. Comparison of continuous wound infiltration with diclofenac and 0,25% bupivacaine after hysterectomy

ALEKSANDRA JOKIĆ, BRANKA MAZUL-SUNKO, DRAGICA FRANIĆ-KASUNIĆ, MILKA VUKELIĆ-ANĐIĆ, NEDŽAD OSMANČEVIĆ, GORDANA BROZOVIĆ

16.20-16.25

P17. General versus epidural anaesthesia for radical cystectomy

MILANA JELISAVAC, DAMIR TROHA, ANA MARKIĆ, MARKO KOVAČEVIĆ, NEDŽAD OSMANČEVIĆ, TATJANA GORANOVIĆ, BRANKA MAZUL-SUNKO, KATA ŠAKIĆ

16.25-16.30

P18. Analysis of blood pressure changes in spinal and general anaesthesia in patients undergoing total hip or knee replacement

KREŠIMIR KORDIĆ, KATA ŠAKIĆ, DAGMAR OBERHOFER

Saturday, 18th June 2011

10.30-11.00

Chair: K. Šakić, Zagreb, Croatia; D. Kopic, Split, Croatia

10.30-10.35

P19. Incidence and treatment of post dural puncture headache in Clinical Hospital "Sveti Duh"- our experience

MILKA VUKELIĆ ANĐIĆ, MARKO KOVAČEVIĆ, ANA MARKIĆ, ALEKSANDRA JOKIĆ, DRAGICA FRANIĆ KASUNIĆ, GORDANA BROZOVIĆ, KATA ŠAKIĆ

10.35-10.40

P20. Epidural analgesia outcome in obese and non-obese parturients

V. ORLIĆ KARBIC, D. RUŽIĆ-GLAŽAR, M. MATANIĆ-MANESTAR, E. BEGOVIĆ-SIŠUL, V. GOLUBOVIĆ

10.40-10.45

P21. Preliminary study: Ultrasound in locating the epidural space in obstetric patients using ultrasound

GORDANA BROZOVIĆ, VLADIMIR BLAGAIĆ, KATARINA ŠAKIĆ

10.45-10.50

P22. Restricted spinal block by epidural volumen extension for Caesarean section: a different approach to CSE-EVE

LADA KALAGAC FABRIS

10.50-10.55

P23. Epidural analgesia for pain relief during labour

MARKO KOVAČEVIĆ, GORDANA BROZOVIĆ, KATARINA ŠAKIĆ ZDRAVČEVIĆ, DRAGICA FRANIĆ KASUNIĆ, MILKA VUKELIĆ, ALEKSANDRA JOKIĆ

10.55-11.00

P24. Spinal block in elective cesarean section: why is it not used in our hospital?

IVAN ŠKLEBAR, VLADIMIR BARTOŠ, DUŠKA ŠKLEBAR, JASNA MESARIĆ

Saturday, 18th June 2011

13.00-13.40

Chair: D. Oberhofer, Zagreb, Croatia; S. Golubović, Rijeka, Croatia

13.00-13.05

P25. Temporomandibular disorders – validity of clinical diagnostics compared to magnetic resonance imaging

TOMISLAV BADEL, MILJENKO MAROTTI, IVANA SAVIĆ PAVIČIN, NIKŠA DULČIĆ, DIJANA PODREŠKI, JOSIPA KERN

13.05-13.10

P26. The effect of injection speed on haemodynamic changes immediate after lidocaine/adrenaline infiltration of nasal submucosa under general anaesthesia

TATJANA GORANOVIĆ, IRENA PIRKL, DOMAGOJ PARAZAJDER, GORAN GUDELJ, BORIS ZDILAR, BRANIMIR VUČKOVIĆ, BORIS ŠIMUNJAK, KATA ŠAKIĆ

13.10-13.15

P27. Spinal vs. general anaesthesia in inguinal hernia repair: a comparison of patient satisfaction

MARKO KOVAČEVIĆ, ANA MARKIĆ, VIŠNJA NESEK ADAM, VIVIANA MRŠIĆ, MILANA JELISAVAC, IVA RANČIĆ ŽURIĆ, ANA MARIJA PAVIČIĆ

13.15-13.20

P28. Insertion of brain ventricular catheter in awake patient – a case report

MLADEN HORVAT, VEDRAN FRKOVIĆ, JOSIP AŽMAN

13.20-13.25

P29. Distribution of research on regional anaesthesia in Croatia

TATJANA GORANOVIĆ, BRANKA MAZUL-SUNKO, VIŠNJA NESEK ADAM, KATARINA ŠAKIĆ

13.25-13.30

P30. Hemodynamic variation in spinal anesthesia for varicose vein surgery

JURE SERDAR, KATA ŠAKIĆ, VIŠNJA NESEK ADAM

13.30-13.35

P31. Cost management of general and regional anaesthesia techniques in context of quality resource management at the department of orthopaedics

NIKA PAVIĆ, KATARINA ŠAKIĆ, IVONA ŠKREBLIN KIRBIŠ, RANDY RICHARDS

13.35-13.40

P32. Development of post-thoracotomy pain syndrome in patients undergoing lung surgery – comparison of thoracic paravertebral and epidural analgesia

SERGEJA KOZAR, STELA MARIĆ, VESNA NOVAK JANKOVIĆ

13.40-13.45

P33. Hemodynamic effects of epidural clonidine at patients undergoing lung surgery

MARTINA GUBINA, LUKA KOMIDAR, MIHAEL SOK, VESNA NOVAK JANKOVIĆ

ABSTRACTS



ORAL PRESENTATIONS

OP1. Double catheter technique for ankle surgery

KREŠIMIR OREMUŠ

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Background: The importance of continuously blocking the saphenous along with the sciatic nerve to prevent acute and chronic pain after major ankle surgery was recently demonstrated. The anesthetic management of a 49 year old diabetic patient admitted for subtalar arthrodesis is presented.

Method: After oral premedication with 7,5 mg midazolam ultrasound was used to identify the sciatic nerve suprapopliteally and advance a catheter through an 18 G needle (Contiplex S, BBraun Melsungen) visualized in plane. The catheter was inserted 3 cm beyond the needle tip and 20 mL 0.5% levobupivacaine injected. Using a similar technique a catheter was inserted along the saphenous nerve, visualized at a mid-femoral level beneath the sartorius muscle adjacent to the femoral artery and 10 mL 0,5% levobupivacaine injected. Surgery was performed using a below knee tourniquet without any additional anesthesia. Six hours postoperatively a continuous infusion of 0,07% levobupivacaine was started via both catheters and continued for 46 hours until hospital discharge. Paracetamol was given orally 4×1,0 g daily.

Result: No additional analgesia was needed in hospital. After discharge paracetamol was continued at 3×1,0g for a week with ketoprofen 1×150 mg. In a post-discharge phone interview the patient reported a maximum VAS score of 2.5 at mobilisation during the first postoperative month with no pain at rest.

Conclusion: Simultaneous continuous blockade of the sciatic and saphenous nerve provided excellent peri- and postoperative analgesia for major ankle surgery and resulted with low post-discharge analgesic requirements in a diabetic patient.

OP2. Ultrasound-guided paravertebral catheter placement for thoracotomy

JOSIP AMAN, MLADEN HORVAT, VEDRAN FRKOVIĆ, DENI BELUŠIĆ, ŽELJKO ŽUPAN

University Hospital Rijeka, Department of Anesthesiology and ICU, Rijeka, Croatia
(e-mail: josip_azman@yahoo.com)

Background and goal: Patients presenting for thoracotomies commonly receive an epidural catheter. In certain cases, placement of epidural catheter is not performed due to coagulopathy or anatomical issues. In these cases, paravertebral block can be successfully used. However, blind insertion of paravertebral catheter can sometimes be challenging and when inserted blindly its failure rate is 10%. The aim of our work is to present our results of using ultrasound guidance for paravertebral catheter placement.

Subjects and methods: Eleven patients (7 male and 4 female) presenting for elective thoracotomy. Patients had the median age of 53, range 35–63 years, and median weight of 77 kg. Before starting general anesthesia, 22-gauge catheter was inserted in paravertebral space through 18-gauge needle using in-plane technique. Catheter was inserted one dermatome above dermatome where surgical incision was expected. Bolus of 10 mL of 0.5% levobupivacaine (Chirocaine®) with epinephrine 1:200000 was administered through catheter immediately after catheter placement and further boluses were applied depending on length of surgery. General anesthesia was maintained with sufentanil, sevoflurane and rocuronium. Postoperative analgesia was obtained with continuous infusion of 0.125% levobupivacaine.

Results: In all cases, catheter was easily inserted after ultrasound identification of paravertebral space. Mean VAS score 12 hours after surgery was 2.5. Seven patients needed additional analgesia with paracetamol and one patient needed additional morphine infusion.

Conclusion: Ultrasound offers precise identification of paravertebral space. Direct visualization of paravertebral space and catheter placement guarantees successful paravertebral block and good analgesia

OP3. The Positioning of the C-arm During Invasive Pain Treatment

IVAN RADOŠ

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Background: Minimally invasive procedures in pain treatment are an important supplement to conservative pain treatments, to pharmacotherapy as well as to non-pharmacological procedures when these are insufficient as pain treatments.

Discussion: The level of success depends on a careful pick of patients, as well as on the skill and proficiency of the doctor performing the minimally invasive procedures. Up to this point the results of many studies on minimally invasive procedures in pain treatment have been opposed, with the epidural placement of the syringe being unsuccessful in 40% of the cases, even with an experienced anaesthesiologist performing the procedure. Not using the fluoroscope is certainly one of the reasons to such a high level of set-back. The fluoroscope, which has become a standard part of many invasive procedures, is held responsible for the greater efficiency and fewer complications during invasive procedures, all resulting in the increase of minimally invasive pain treatment procedures over all.

Conclusion: The use of fluoroscopy has revolutionized interventional pain management. These procedures include interventions for back pain such as epidural steroid injections, facet joint injection, facet nerve block and rhizotomy, sacroiliac joint injection, discography, placement of spinal cord stimulator, and the intradiscal electro-thermal coagulation procedure, and vertebroplasty.

OP4. Dynamics of change in coagulation parameters in carcinoma patients with epidural analgesia following liver resection

LJILJA ŠTEFANČIĆ¹, STELA MARIĆ¹, BRANKA MALDINI¹, MIROSLAV BANOVIĆ², GORDANA BROZOVIĆ³, KATA ŠAKIĆ³

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Background and purpose: Liver resection is associated with postoperative coagulopathy. There is a risk of occurrence fatal epidural anesthesia (EA) complications. The purpose of this study is to monitor the dynamics of change in coagulation parameters with regard to the resected mass of the liver tissue in patients with continuous thoracic epidural analgesia.

Materials and methods: The retrospective study included 57 patients, with liver resection performed due to metastases of colon carcinoma with normal preoperative coagulation status, that underwent the technique of continuous thoracic epidural analgesia (TEA) and general anesthesia. The patients were divided into two groups depending on the number of resected liver segments. The Small Resections' group (SR) included patients that had one or two liver segments removed while the Major Resection (MR) group included patients that had three or more liver segments removed. Resected liver tissue mass, prothrombin time (PT) values and platelet count were analyzed during five postoperative days (PODs).

Results and conclusions: There is a statistically significant difference of PT value ($p < 0.001$) during five days within each of the tested groups, as well as between both groups ($p < 0.001$). During all five PODs there is a negative correlation between PT values and removed liver tissue mass in both patient groups. The analysis showed that by removing liver mass larger than 165 g we can expect $PT < 0.7$. TEA application after liver resection is a technique that demands individual assessment of the expected patient postoperative coagulation status. Resected liver tissue mass can be an effective predictor of postoperative coagulopathy.

OP5. Quality of analgesia with multi- versus two few-hole catheters in patients after colorectal surgery

STELA MARIĆ¹, LJILJA ŠTEFANČIĆ¹, LJILJANA POPOVIĆ¹, MIROSLAV BANOVIĆ², KATA ŠAKIĆ³

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Background and purpose: Continuous wound infusion with local anesthetics is an effective method in multimodal postoperative pain therapy after colorectal surgery. The choice of optimal type of wound catheter, few- or multi-hole is still controversial. The aim is to evaluate the analgesic potential of these two catheter types.

Materials and methods: Forty patients undergoing colorectal surgery were randomized to intraoperative placement of two epidural catheters (Group EC) or multi-hole catheter (Group WC) in the wound above the fascia. Patients received 0.25% levobupivacaine (Group WC) with 10 mL bolus through the wound catheter followed by an infusion of 6 mL/h during 48 h, or the same protocol with equally divided levobupivacaine doses through two epidural catheters (Group EC). Simultaneously, patient-controlled analgesia provided intravenous morphine. Pain was evaluated postoperatively with 4-point verbal scale (VRS) for the first 2 h, with Visual Analogue Scale at rest (VAS r), and during coughing (VAS c) every 6 h for the first 48 h.

Results and conclusions: No significant difference in morphine consumption was observed between groups. There were no significant differences in VRS scores between the groups ($p=0,756$). VAS scores were significantly lower in Group WC in rest (rWC, $p=0,007$) and coughing (cWC, $p=0,018$) for the 6 h, 12 h, and 24 h postoperatively. In the period 30–48 h there was no difference between groups. We conclude that levobupivacaine infusion through multi-hole catheter provides better quality of postoperative analgesia compared with two epidural catheters for the first 24 h.

OP6. Low dose spinal morphine and intravenous diclofenac for postoperative analgesia after total hip and knee arthroplasty

DAGMAR OBERHOFER, KATARINA ŠAKIĆ, VIŠNJA NESEK-ADAM, ALEKSANDRA SMILJANIĆ, ELVIRA GRIZELJ-STOJČIĆ, MILKA VUKELIĆ, VIVIANA MRŠIĆ

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Background and aims: Intrathecal (IT) morphine added to a spinal anaesthesia provides effective postoperative analgesia after hip and knee arthroplasty reducing the need for systemic opioids. To reduce the risk of side effects like pruritus, nausea/vomiting, and a more serious effect of respiratory depression, low dose IT morphine (0,1–0,3 mg) has been used. The aim of this prospective, randomized, double-blind study was to assess the analgesic efficacy of 0,2 mg IT morphine combined with postoperative i.v. diclofenac in the first 24 hours after hip and knee arthroplasty, the primary outcome measure being the number of patients without any additional opioid request. Side effects and possible complications of therapy and patient satisfaction with pain management were also recorded.

Patients and methods: 40 patients were randomized to receive spinal anaesthesia with levobupivacaine and 0,2 mL normal saline (control group) or 0,2 mg IT morphine. All patients received diclofenac 75 mg i.v. one and 10 hours postoperatively. Pain was assessed by numeric rating scale at 3,6,12 and 24 hours postoperatively and morphine 2 mg i.v. was given for inadequate analgesia. The third dose of diclofenac could be given 10–12 hours after the second dose for a pain score of 3–4.

Results: IT morphine group had significantly lower postoperative pain scores at all measured time intervals and used significantly less i.v. morphine. 76,2% of patients in the IT morphine group did not require any additional i.v. morphine compared to 11,1% of the control group. This resulted in significantly higher patient satisfaction despite common occurrence of mild pruritus. Postoperative nausea/vomiting were frequent in both groups with no cases of respiratory depression.

Conclusions: Low dose IT morphine added to regular postoperative i.v. diclofenac provides excellent analgesia after hip and knee arthroplasty and allows for a protocol without additional systemic opioids.

POSTER PRESENTATIONS

P1. Outcomes of lumbar epidural steroid injections – a cohort study.

IRINA EVANSA¹, EDGARS VASILEVSKIS¹, INDULIS VANAGS¹, INARA LOGINA², ALAIN BORGEAT³

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Background and purpose: The objective of this study was to evaluate the efficacy of epidural steroid injection in patients with low back pain of different etiologies in our department from 2008 to 2010.

Materials and methods: 142 patients aged 65–87 suffering from low back pain for more 3 months were prospectively included in the study. All received lumbar interlaminar epidural Methylprednisolone 80 mg with 0,25% lignocaine and saline for a total volume of 8 mL under fluoroscopic guidance. Procedures were performed by two experienced pain specialists. Patients were interviewed by call 3 months after the third injection. During those interviews patients had to evaluate their pain level and the duration of pain free period. The level of pain was assessed by the Numeric Rating Scale (NRS).

Results: All patients received three injections with an interval of three weeks. 142 patients completed the study. Intensity of pain before the first injection using NRS was initially $7,1 \pm 1,5$. The patients were divided into 3 groups. Group One: 72 (51%) had significant pain relief of 60–90% mean (NRS of $2,1 \pm 1,2$). Group Two: 39 (27%) reported a 30% to 50% drop in pain with mean NRS of $4,2 \pm 0,9$. Group Three: 31 (22%) had no significant pain relief (NRS of $6,5 \pm 1,2$).

Conclusion: Lumbar interlaminar epidural injections can provide significant pain relief in patients with chronic low back pain. Future research is warranted, but special attention should be paid to the trial methodology to evaluate the effect of various types of epidural steroid injections (interlaminar, transforaminal and caudal).

P2. Unilateral bupivacaine-fentanyl or bupivacaine-sufentanil spinal anaesthesia for arthroscopic knee surgery

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Background and purpose: Unilateral spinal anaesthesia provides high cardiovascular stability and short ambulatory stay. Intrathecal coadministration of local anaesthetics and opioids has potent synergistic analgesic effect. We compared unilateral hyperbaric bupivacaine spinal anaesthesia with fentanyl or sufentanil in patients undergoing knee arthroscopy.

Materials and methods: 40 ASA I-II adults received unilateral spinal anaesthesia with hyperbaric bupivacaine 4mg coadministered with either fentanyl 20 µg (Group F, n=20) or sufentanil 2 µg (Group S, n=20). Sensory and motor block, hemodynamic data, side-effects and time to first analgesic were recorded.

Results: Anaesthesia was successful in all 40 patients. Upper level of sensory block onoperative leg was Th12 (Th12-Th8) in Group F and Th12 (Th11-Th9) in Group S, P=0.89. Complete motor block had 5 (25%) Group F and 3 (15%) Group S patients, P=0.69. Duration of motor block was 78 ± 15 and 77 ± 13 min in Group F and Group S, respectively, P=0.89. Maximum decrease of baseline systolic arterial pressure was 16 ± 9 in Group F and 17 ± 7% in Group S, P=0.81 and of HR 16 ± 7 and 16 ± 8%, P=0.90, respectively. Time to first analgesic was 285 ± 123 min in Group F and 355 ± 110 min in Group S, P=0.04. Pruritus had 7 (35%) Group F and 5 (25%) Group S patients, P=0.73.

Conclusions: Unilateral hyperbaric bupivacaine spinal anaesthesia with fentanyl or sufentanil resulted in similar sensory and motor block and cardiovascular stability but bupivacaine-sufentanil combination provided prolonged first analgesic time.

P3. Validation of the Croatian Pain Catastrophizing Scale through a study on the influence of medical education on pain catastrophizing

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Background and purpose: Pain catastrophizing is an important risk factor for pain and pain-related outcomes. There is no validated Croatian version of the Pain Catastrophizing Scale (PCS), the most commonly used questionnaire for assessment of pain catastrophizing. The aims of this study were to validate the Croatian version of the PCS and to study whether formal medical education has correlation with pain catastrophizing.

Participants and methods: Translation and back-translation of the original English version of the PCS to Croatian language was made. The Croatian Pain Catastrophizing Scale (Cro-PCS) was given to 521 healthy students from first and last year of medicine and economics.

Results: The Cro-PCS showed the same 3-factor structure (rumination, magnification and helplessness) as the original study. It also showed appropriate internal consistency (Cronbach alpha=0.88). When compared to students of economics, last-year medical students had significantly lower rumination score, which accounts for the largest proportion of pain catastrophizing variance.

Conclusions: The Croatian version of PCS shows appropriate psychometric properties, similar to the English original scale. Therefore, Cro-PCS could be useful for clinical practice and research in Croatian patients. We also found that medical education may be linked with reduction in pain catastrophizing, which contributes to our understanding of effectiveness of educational interventions.

P4. Peribulbar vs. Subtenon anesthesia for combined cataract and vitreous surgery

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Background and purpose: To evaluate and compare quality and safety of peribulbar (PBA) and subtenon anaesthesia (STA) in patients undergoing routine combined operations, which includes cataract and vitreous surgery.

Patients and methods: In this unicentre, prospective clinical study 60 consecutive patients, having combined operations, were randomised to receive PBA (n=30) or STA (n=30). All patients were classified in ASA groups. The operations were combined (phacoemulsification and pars plana vitrectomy) always performed by the same surgeons. We evaluated effect of PBA and STA on intensity of stress answer followed by changes in »stress-hormone« concentrations and clinical and hemodynamic status. Also, block quality parameters were observed: pain (VAS) during anaesthesia, operation and after operation; subconjunctival hemorrhage, chemosis and akinesia.

Results: There was no significant difference in duration of operational procedures and pre-, intra-, and post-operative anaesthesiological complications between PBA and STA groups. STA provides quicker onset, better akinesia and lower rate of incomplete blockage than PBA. Chemosis was significantly more frequent in STA group. Patients in STA group showed better cardiovascular stability (haemodynamic parameters and the level of »stress hormones«) compared to PBA group. Level of pain (VAS score) as well as patients and surgeons comfort were better in STA group.

Conclusion: Although there is no absolutely safe technique of regional anaesthesia in ophthalmic surgery, STA is safe and simple in expert hands. It might be preferable because of lower risk of complications than in needle blocks (PBA). Preoperative block has pre-emptive effect and is extremely useful for anticipating on postoperative pain.

P5. Lumbar interlaminar versus transforaminal steroid injections for unilateral radiculopathy

IRINA EVANSA¹, MICHAEL ARON², EDGARS VASILEVSKIS¹, IGOR PANICHIN², INDULIS VANAGS¹, INARA LOGINA³, ALAIN BORGÉAT⁴

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Background and purpose: Lumbar interlaminar and transforaminal epidural steroid injections are common procedures for the treatment of low back pain associated with radicular pain. Unilateral pain generators from degenerative disk disease are located anteriorly in the epidural space. Therefore the ventral site of the epidural spread is the logic target for placement of anti inflammatory medication. We compared the clinical effect of interlaminar and transforaminal steroid injection for the treatment of unilateral radiculopathy using low dose steroid.

Materials and methods: 32 adult patients aged 28–74 with low back pain and unilateral radiculopathy were prospectively enrolled. Patients were randomly assigned to group interlaminar (IL) or transforaminal (TF). Under fluoroscopic guidance patients received epidural Triamcinolone 40 mg, bupivacaine 5mg and 1 mL of saline for a total volume of 3 mL at the lumbar level. Patient's pain level was recorded before and 3 mo after the procedure using Numeric Rating Scale.

Results: All patients completed the study. Fifteen patients were in the IL group and 17 in the TF group. The mean period of pain before the procedure was similar in the 2 groups. The mean pain level before the treatment was similar between the 2 groups: 6.5 (95% CI, 5.77–7.15) in the IL group and 6.0 (95% CI, 5.2–6.79) in the TF group. Three months after the procedure a significant decrease of pain level was observed in the TF group 2.0 (95% CI 1.22–2.77) versus 3.2 (95% CI 2.80–3.79) in the IL group ($p < 0.01$).

Conclusion: Transforaminal epidural steroid injection with 40 mg triamcinolone is more effective than interlaminar injection in the treatment of unilateral radiculopathy.

P6. Unilateral spinal block in ASA IV patient

DAVORKA ŽIDAK, MARCEL ŽIDAK, IVANA TUDORIĆ ĐENO, MORENA MILIĆ, IVANA PRESEČKI

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Background and purpose: Conventional dose of levobupivacaine in bilateral spinal anesthesia are associated with cardiovascular instability. In this case we applied the technique of unilateral spinal block for optimization of intraoperative conditions in patients ASA IV status.

Patients and methods: Eightyfour year old woman height 163 cm, weight 78 kg, BMI 29.4, with a diagnosis of BCC exulcerata cruris dex., with Insuffitientio respiratoria globalis, COPD, Diabetes mellitus typus 2, Insuffitientio renalis chronica, Cor hypertonicum decompensatum underwent tumor excision. In lateral decubitus position, 5 mg of levobupivacaine, 25 ug fentanyl in 4% glucose solution, total volume of 2.5 mL were applied by 25 G Whitacre spi-

nal needle in the intervertebral L4-L5 space. Height of sensory block on operated side was T12 and intensity of motor block was Bromage 4 at the beginning of operation and on the nonoperated side L2 and Bromage 2. During surgery, the maximal fall of measured systolic blood pressure was 22%, and fall in pulse were 13 % of preoperative value.

Conclusion : Applying the principle of »low dose, low volume, low flow« with the use of hyperbaric solution and patient position changes during fixation of block can provide adequate intraoperative conditions and to avoid the cardiovascular side effects.

P7. A comparison of interscalene block anaesthesia and general anaesthesia in patients with proximal humerus fracture

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Background and purpose: A proximal humerus fracture is a common injury of the shoulder. The aim of this study is to compare the effects of two anaesthetic methods in patients with proximal humerus fracture in development of postoperative pain.

Materials and methods: 50 patients were included in this prospective, randomized study. They were randomized into two groups, ISBA group and GA group. Patients in ISBA group were anesthetized using interscalene block technique; whilst patients in GA group were anesthetized according to general anaesthesia protocol. The VAS score was assessed every two hours at rest and in motion. We measured time necessary to prepare anaesthesia in both groups, duration of operation, hemodynamic and respiratory stability, loss of blood during operation, price of anaesthesia, use of analgesics postoperatively and patient satisfaction.

Results: There was no statistically significant difference between groups regarding demographic characteristics and ASA status. ISBA group had statistically lower VAS score as well as lower analgesics use ($P < 0.05$). There were no statistically significant differences in intraoperative complications, although more hypotension was recorded in GA group. The loss of blood was higher in ISBA group, but this result bears no statistical significance. The time necessary to perform anaesthesia was significantly longer in ISBA group ($P < 0.05$). There is a statistically significant difference regarding patient satisfaction and price, to the advantage of ISBA ($P < 0.05$).

Conclusion: ISBA is a better method of anaesthesia than GA in patients with proximal humerus fracture, it leads to better pain relief, lesser use of analgesics, without significant complications.

P8. Comparison of early continuous epidural and intravenous opioid analgesia on haemodynamic changes in several pelvic fractures

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Background and purpose: Continuous epidural analgesia improves excellent pain control in trauma patients with multiple pelvic fractures. Residual haemodynamic instability followed by retroperitoneal hemorrhage in the first 48 hours often post-pones its application with need for parenteral use of high dose of opioids. The aim was to compare the influence of early continuous epidural and continuous intravenous opioid analgesia after first 24 hours on haemodynamic changes in patients with pelvic trauma.

Materials (Patients) and methods: Fifty trauma patients with multiple pelvic fractures were divided in two equal groups and included in prospective, randomized study. In both groups analgesia was started with sufentanil 10 µg/h during the first 24h. In Group EP continuous epidural analgesia (levobupivacain 0.125%, 5–7 mL/h) was started after 24h. In Group O continuous infusion of opioid (sufentanil 5–10 µg/h) was followed. The titration dose of analgetics in the both groups following the VAS score under 3. PICCO monitoring was established. MAP, CI, HR, SVRI, ITBVI and EVLWI was measured.

Results: Under first 24 hours in both groups were the high need for fluid replacement (EVLWI<10) (P=0.9864). SVRI was lower in O Group (800–1000) than EP Group (1100–1200)(P=0.0243) and recovered with 500–750 mL of crystalloids. ITBVI was statistically more stable in Group EP (850) to compare Group O (950–1000) (P=0.0002).

Conclusion: Early continuous epidural analgesia with 0.125% levobupivacain is safe as continuous opioid analgesia in patients with multiple pelvic fractures but without opioids complications and better haemodynamic stability.

P9. The quality of axillary brachial plexus block: ultrasound guided or with nerve stimulator

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Background and purpose: The aim of this investigation was to determine difference in the quality of axillary brachial plexus block performed by two methods (ultrasound guided and with using of nerve stimulator).

Materials and methods: In total 59 patients were included. They were divided into two groups. In first group axillary brachial plexus block were performed using ultrasound and in second group using nerve stimulator. In both groups total volume of local anesthetics was 30 mL (15 mL 0,5% Levobupivacain, 15 mL 2% Lidocain). Parameters that we compared were onset of sensor blockade, onset of motor blockade, tourniquet sensitivity, operating section sensitivity, need for additional analgesia, postoperative analgesia.

Results: Descriptive statistic was done and student t test was used to determine statistical significance. In ultrasound group average onset of sensor blockade was 1,23 minutes and onset of motor blockade was 3,17 minutes. No

patient had tourniquet sensitivity and one patient had operating section sensitivity. Two patients need additional analgesia during surgery. Average time of first postoperative need for analgesia was 14, 5 hours. In nerve stimulator group average onset of sensor blockade was 1,41 minutes and onset of motor blockade was 3,67 minutes. One patient had tourniquet sensitivity and four patients had operating section sensitivity. Five patients need additional analgesia during surgery. Average time of first postoperative need for analgesia was 11,8 hours. There was no statistical significance between two groups.

Conclusions: Both methods are equally effective in performing of axillary brachial plexus block.

P10. Ultrasound-guided interscalene block for shoulder surgery – our experience

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Background and purpose: Major shoulder surgery is often associated with severe postoperative pain. Shoulder and the arm are innervated by the brachial plexus sensory and motor fibers. The interscalene brachial plexus block is ideal for the shoulder, clavicle and proximal upper extremity operations. Our previous experience with local infiltration anesthesia and postoperative analgesics therapy did not satisfy either patients or us.

Methods: The study included consecutive patients scheduled for shoulder surgery (rotator cuff repair, shoulder arthroplasty). Blood pressure, ECG and S_pO_2 were monitored in every patient. Patients were sedated with intravenous midazolam and fentanyl before application of the ultrasound guided interscalene block. After the block was performed, patients were anesthetized, relaxed and intubated. Light general anesthesia was maintained with inhalational anesthetic and muscle relaxant, fentanyl was added as needed. Patients who were operated in our institution before implementation of the ultrasound guided interscalene block presented the control group. Intraoperative and postoperative analgesic consumption, visual analog pain score (VAS) at 6, 12 and 24 h postoperatively, incidence of intra- and postoperative complications as well as patient satisfaction were measured and recorded.

Results: These are the preliminary results of the first 10 patients who received ultrasound guided interscalene block in our institution. Both intraoperative and postoperative analgesic consumption, as well as VAS scores were significantly reduced, and patients' satisfaction was increased. So far, there were no recorded complications of the interscalene block.

Conclusion: Single-shot interscalene brachial plexus block is a very good method for postoperative analgesia after painful procedures in the shoulder area.

P11. Popliteal vs ankle block for foot surgery-our experience in 2010

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Background and purpose: Peripheral nerve blocks are well suited for a large number of surgical procedures of the foot and ankle. In our hospital we use minimal invasive ultrasound-guided single-shot popliteal as well as ankle block. We wanted to examine which block is more suitable for foot and ankle surgery.

Materials and methods: Thirty patients were scheduled for elective surgery. They were randomly assigned into two groups. First group underwent ultrasound-guided popliteal block (US-PB), while ankle block (AB) was performed for the second group. All patients were given sufentanil 5 µg iv. before performing the block. 30 mL of 0.5% levobupivacaine was used for ankle and 20 mL for popliteal block. Time needed for block performance, onset of the sensory block, intraoperative and postoperative pain (using visual analog scale), need for additional analgesia and patient satisfaction were recorded.

Results: Time needed for block performance was similar in both groups. Onset of sensory block was faster at US-PB in comparison to AB group (15 ± 1 vs. 25 ± 3 , $p < 0.001$). There were sufficient levels of anesthesia in both groups without significant differences. Postoperative analgesia was significantly higher in AB in comparison to US-PB group (18 ± 2.4 vs. 12 ± 3 , $p < 0.001$). Patients preferred US-PB.

Conclusion: Ultrasound-guided single-shot popliteal block provides sufficient anesthesia and postoperative analgesia for foot and ankle surgery using smaller volume. It has a faster onset time and patients satisfaction level is higher. Although ankle block is easy to perform, does not require special equipment and there is no motor blockade, it requires multiple punctures and higher volumes.

P12. Off-label use of rivaroxaban for thromboprophylaxis after pelvic osteotomy

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Background: Triple pelvic osteotomy is a high risk procedure for developing thromboembolic complications. Rivaroxaban (Xarelto®, Bayer Schering Pharma AG) is an oral direct factor X inhibitor licensed for thromboprophylaxis after total hip and knee arthroplasty. In clinical trials it has been more effective than enoxaparin without significantly increasing bleeding complications.

Method: A 25 year old woman with congenital hip dysplasia underwent triple pelvic osteotomy. Preoperatively a psoas compartment catheter was inserted using a neurostimulator guided catheter through needle technique (Contiplex S®, BBraun) and 25 mL 0,5% levobupivacaine injected. Surgery was performed under spinal anesthesia and continuous sedation with propofol. Six hours postoperatively continuous 0,125% levobupivacaine was started via the psoas compartment catheter. The first 10mg dose of rivaroxaban was administered at 8 hours after surgery and continued daily for 35 days.

Result: On the first postoperative day the patient complained of dull deep pain in the left hemiabdomen (operative side). Ultrasonography revealed no signs of psoas hematoma and after stool passage the discomfort subsided. The patient was mobilized and the psoas catheter removed on the morning of the fourth postoperative day 14 hours after the last and 9 hours prior to the next dose of rivaroxaban. There were no bleeding complications during the hospitalization and no clinical signs of deep venous thrombosis during the first postoperative month.

Conclusion: Rivaroxaban was safely used in a patient after pelvic osteotomy with an indwelling psoas catheter. To the authors best knowledge this is the first report of an oral direct factor X inhibitor used in such a patient.

P13. Is single-shot epidural analgesia more efficient than morphine patient-controlled analgesia for donor nephrectomy?

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Background: We compared single-shot epidural analgesia (20 mL levobupivacaine 0.125% and 3 mg diamorphine) and morphine patient-controlled analgesia (PCA) for post-operative pain following donor nephrectomy.

Methods: We retrospectively evaluated 12 patients who received single-shot epidural analgesia (SSE group) before anesthesia induction and 14 patients who received morphine PCA (PCA group) for post-operative pain following donor nephrectomy. Post-operative pain scores were recorded 0, 1, 12, 24, and 48 h after nephrectomy using a 0–3 numerical scale. Data regarding morphine consumption, additional analgesia, nausea, time to oral intake, mobilization, and discharge were also collected.

Results: Both groups were comparable for age, sex, body mass index (BMI), American Society of Anesthesiologists (ASA) status, duration of surgery, and laparoscopic/open nephrectomy ratio. Pain scores were ≤ 1 at all measured time intervals. There were no significant between-group differences in pain scores. Mean intra- and post-operative morphine consumption was 8.2 ± 6.9 mg for the SSE group and 20.7 ± 4.9 mg for the PCA group ($P < 0.05$). The average duration of PCA was 24.1 ± 11.2 h (range 17–55 h) and the total dose of morphine, 53.4 ± 24.3 mg (range 14–103 mg). The SSE group had a lower incidence of nausea (58.3 vs. 71.4%, $P < 0.05$). The average time to oral fluid and solid food intake and the time for assisted mobilization was similar in both groups. However, independent mobilization and hospital discharge was significantly faster in the SSE group (34.0 vs. 47.4 h, $P < 0.05$ and 3.7 vs. 4.7 days, $P < 0.05$).

Conclusion: SSE with 20 mL levobupivacaine 0.125% and 3 mg diamorphine provided similar post-operative analgesia to morphine PCA. However, SSE group patients had a lower incidence of nausea, were mobile earlier, and were discharged from hospital earlier than the PCA group

P14. Large volume dye spread in transversus abdominis plane block via three injection sites: A cadaveric study

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Background: TAP block is a recently described regional anaesthesia technique for the abdominal wall. Three access points for injection have been described. There have been few anatomical studies in this field, and this study aimed to investigate the spread of dye following injection via all 3 sites with a large volume injectate.

Materials and methods: 24 hemiabdomens were injected with 40 mL 25% black food dye: 8 via the lumbar triangle of Petit (LTOP), 4 via the midaxillary line (MAL), 4 via the subcostal region (SC). Dissection was performed to reveal the extent of nerve involvement and dye spread.

Results: Variation in the size and shape of the LTOP was found between cadavers. 2 pilot cadavers and 2 cadavers with incorrect dye deposition were excluded. Mean areas of dye spread (range of nerve involvement) in the remaining 16 hemiabdomens for LTOP, MAL and SC were 77.9 cm² (T10-ilioinguinal), 50.3 cm² (T10-ilioinguinal) and 91.3 cm² (T7-ilioinguinal) respectively. Communications were seen between nerves within the TAP in one dissection. Dye staining was seen to involve nerves outside the TAP.

Discussion: Subcostal injection gives more superior dye spread, with a greater area and a wider range of nerve involvement. This should perhaps be the preferred injection site, and could have broader indications.

P15. Monitoring motor block for intratectal application of drug on modified bromage scale

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Background and purpose: Monitoring degree of motor block on modified Bromage scale and effects of various factors on degree and duration of block of patients that had lower extremities or lower abdominal surgery over 3 months.

Materials and methods: 125 patients (male 83/female 42) were treated with intratectal hyperbaric (77) or isobaric (48) Bupivacain 0,5%. Survey was done at the time of drug induction and after surgery (diagnosis, type of surgery, gender, age, height, weight, baricity of the drug, dose, puncture place, monitoring degree of sensory and motor block up to 10 minutes after drug application and at the end of surgery, and length of the surgery).

Results: Most patients were in group II that got 13–15 mg hypo/isobaric drug, and 58% had degree 2 motor block. Gender and degree of the block are not in correlation. Average time for block to occur was 7,2 minutes (min. 2, max. 10 min). 3 patients didn't have motor block after 10 minutes. Correlation between time for a block to occur and the degree of the block, dose and time, and age and degree of motor block was noticed. Degree 2 block manifests more often during application of hyperbaric drug, and degree 1 block during application of isobaric drug.

Conclusion: There is correlation between some factors we observed, but factors that have no effect on each other are also clearly shown.

P16. Comparison of continuous wound infiltration with diclofenac and 0,25% bupivacaine after hysterectomy

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Background and Purpose: Continuous wound infiltration with local anaesthetic is a part of multimodal postoperative analgesia widely used after many different operations. The analgesic effect of continuous wound infiltration

with diclofenac was found efficient after cesarean section, but was not studied after hysterectomy. Therefore, we compared the analgesic effect of 48 hours continuous wound infiltration of diclofenac and 0,25 % bupivacaine after transabdominal hysterectomy.

Materials and Methods: We studied 20 patients (ASA I-II) scheduled for total abdominal hysterectomy with or without bilateral salpingo-oophorectomy. In all patients a 20-gauge epidural catheter was placed above the superficial abdominal fascia on completion of the operation. One group (Group B-10 patients) received through the catheter 0,25 % bupivacaine 10 mL bolus, followed by 48 h hour continuous infusion of 7 mL/h, and second group (Group D-10 patients) received continuous infusion of diclofenac in total dose of 300 mg in 48 h, 7 mL/h. All patients also received additional patient-controlled analgesia with intravenous morphine.

Results: VAS at rest and moving at 2, 4, 6, 12, 24 and 48 hours after operation was similar in both groups. VAS at rest after 4 hours was significantly lower in group B ($p=0,035$). There was no differences in degree of sedation, nausea and onset of peristalsis between groups. Morphine consumption was significantly less ($p=0,04$) in group B ($9,71 \pm 5,22$) during the first day in comparison to group D ($13,5 \pm 4,88$). No side effects were observed.

Conclusion: The results of our preliminary study imply that continuous wound infiltration with bupivacaine might provide better postoperative analgesia than wound infiltration with diclofenac. Further studies with larger patient number are needed to define relative analgesic potency of bupivacaine and diclofenac used for continuous wound infiltration.

P17. General versus epidural anaesthesia for radical cystectomy

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Background and purpose: We compared two anaesthetic techniques: combined general-epidural anaesthesia and general anaesthesia and two methods of postoperative analgesia in regard to intraoperative bleeding, transfusion requirements, ileus, thrombosis and infection rate, duration of hospital stay and mortality after radical cystectomy.

Materials and Methods: Retrospective study was performed on 74 patients scheduled for radical cystectomy. Patients were allocated into two groups. Group 1: combined general-epidural anaesthesia with continuous postoperative epidural analgesia. Group 2: general anaesthesia and continuous intravenous analgesia postoperatively.

Results: In Group 1 we observed significantly lower intraoperative blood loss ($497,37 \pm 354,13$ mL vs. $742,31 \pm 403,69$ mL, $p=0,006$) and transfusion requirements ($107,20 \pm 263,92$ mL vs. $388,18 \pm 321,32$ mL, $p=0,0$). After operation epidural analgesia was not found superior to the intravenous one. The first day of peristalsis was significantly shorter in Group 1 ($2,00 \pm 1,142$ days vs. $2,92 \pm 2,699$ days, $p=0,029$) and the incidence of postoperative ileus was higher in patients under general anaesthesia ($p=0,024$). Postoperative thrombosis was found in 3.4% patients in Group 2, while in Group 1 there was no thrombotic incident (p NS). There was no significant difference in duration of hospital stay among these two groups. The only lethal outcome was in the group under general anaesthesia.

Conclusion: Combination of general and epidural anesthesia provides less intraoperative bleeding and transfusion requirements and speeds postoperative bowel recovery.

P18. Analysis of blood pressure changes in spinal and general anaesthesia in patients undergoing total hip or knee replacement

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Background and purpose: To analyse haemodynamic changes in hypertensive and normotensive patients during the total hip or knee replacement in regional or general anaesthesia.

Materials and methods: 80 patients, who underwent total hip or knee replacement in the period between July 2010 and February 2011 at University Hospital Sveti Duh, were retrospectively evaluated. 17 patients underwent the operation with general anaesthesia, and 63 patients with regional anaesthesia. They were allocated into groups of normotensive (n=24) and hypertensive patients (n=56). Their anthropological, haematological and biochemical parameters were compared, as well as their intraoperative blood pressure changes. Blood pressure at the beginning of the operation, the highest and the lowest intraoperative blood pressure were recorded.

Results: Blood pressure at the beginning of the operation was significantly higher in hypertensive patients who underwent the operation in regional anaesthesia compared to normotensive patients (158.48 mmHg vs 144.71 mmHg, P=0.006). Also, the highest intraoperative systolic blood pressure was significantly higher in hypertensive patients who underwent the operation in regional anaesthesia compared to normotensive patients (161.20 mmHg vs 146.76 mmHg, P=0.007). The highest intraoperative systolic blood pressure was significantly higher in normotensive patients who underwent the operation in general anaesthesia compared to those who underwent the operation in regional anaesthesia (167.14 mmHg vs 146.76 mmHg, P=0.015).

Conclusion: The results presented in this paper indicate that the fluctuations of intraoperative blood pressure are greater in hypertensive compared to normotensive patients, and in general compared to regional anaesthesia.

P19. Incidence and treatment of post dural puncture headache in Clinical Hospital »Sveti Duh« – our experience

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Background and purpose: Post dural puncture headache (PDPH) results from puncture of the dura mater during spinal or epidural anaesthesia. There are two treatment options: a conservative treatment, which involves hydration, bedrest, analgesics, oral caffeine, and an invasive treatment, epidural blood patch (EBP) placement. Our standard protocol includes a conservative treatment as first line, and EBP as second line in patients who are refractory to this conservative treatment for longer than 72 hours. The aim of this study was to evaluate the incidence of PDPH in our Institution and the frequency of used treatments.

Materials and methods: We retrospectively reviewed 1222 anaesthetic charts of caesarean sections (SC) in Clinical Hospital »Sveti Duh«, Zagreb, Croatia during the period from 01/01/2009 till 31/10/2010. In further analysis we in-

volved only SC performed in spinal (n=969) or epidural anaesthesia (n=92). We collected noted data on occurrence of PHDH after SC and treatment option (conservative or EBP).

Results: During the studied period there were 138 PDHP (13%) after spinal or epidural anaesthesia. In 77 parturients (55%) conservative treatment was the only treatment of PHDP. In 61 parturients (45%) EBP was performed after failed conservative treatment. In all parturients in whom EBP was performed, there was no report of recurrent headaches or need for blood patch repeating. No other, minor nor major, complication was reported.

Conclusion(s): EBP is a valuable method that can be safely applied in patients who do not respond to conservative treatment of post-dural puncture headache. This remains the gold standard method for the patients in whom conservative therapy has no satisfactory results.

P20. Epidural analgesia outcome in obese and non-obese parturients

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Introduction: Today obesity is a global health problem. In pregnant woman obesity is considered as a high risk state and is associated with anesthesia-related complications. Epidural analgesia have many advantages in parturients who are obese and have many advantages, especially if Cesarean section is required. The aim of this study was to compare the anesthetic and obstetric outcome between obese parturients with BMI > 30 and parturients with a normal BMI.

Methods: Anesthesia records were retrospectively collected for all parturients delivered during year 2009. A normal BMI is defined as 20–25 and obese as a BMI > 30. Anesthetic and obstetric outcome variables were extracted from medical records and analyzed.

Results: During the observed period 608 (18,39%) parturients have birth in epidural analgesia. Among them 144 (23,3%) have BMI > 30. An emergent Cesarean section was required in 108 (18,08%) with BMI 20–25, in 47 (32,63%) parturients with BMI >30, and in 19 (37,9%) with BMI >35.

Conclusion: Obese women experienced high incidence of complications and emergent Cesarean section. Due to the high rate of the potential difficulties of emergent anesthesia among these women, efforts to place an epidural catheter in the early phase of labour, epidural analgesia should be able to avoid general anesthesia when unplanned Cesarean section is required.

P21. Preliminary study: Ultrasound in locating the epidural space in obstetric patients using ultrasound

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Background and purpose: Ultrasound (US) imaging of the lumbar space has been shown to be effective in improving the success rate of neuraxial blocks in obstetric patients. This method minimizes the incidence of epidural vein cannulation during catheter placement, intravascular local anaesthetic administration, seizures and cardiovas-

cular toxicity. In addition, the prepuncture lumbar ultrasound helps in the estimating the distance from skin to lig. flavum and determining the optimal insertion point in obese patients.

Patients and Methods: Our preliminary study included 40 obstetric patients with inserted epidural catheter for pain relief during labour; 20 patients in group A with US scanning before epidural catheter needle insertion and 20 in group B without ultrasound scanning. Ultrasound scanning was performed with the patient in transverse plane. The patient was in the sitting position with legs flexed and crossed, and the same position was used for the epidural needle.

Results:

TABLE 1

	BMI	Ages	Repeated puncture	Vein punct.	Seizures	Caesarean section	VAS before	VAS after
Group A	28,8	27	2	1	1	2	8,27	0,25
Group B	28	29,6	6	3	6	6	8,25	0,45

TABLE 2

Data for Group A.

US depth	5,2	3,6	4,8	4,9	3,8	5,3	4,6	5,1	4,2	4,5	5,2	3,9	3,6	4,8	4,9	3,8	5,3	5,1	4,2	4,8
Real depth	5	3,6	4,8	4,6	3,8	5,2	4,3	5	4,2	4,8	5	3,5	3,6	4,8	4,6	3,8	5,2	5	4,2	4,8

Conclusions: This preliminary study confirmed that ultrasound is a reliable tool to facilitate labour epidural needle placement in obstetric patients. Observed results in Table 1. pointed out the smaller number of complications connected with epidural catheter placement with prepuncture US scanning. Table 2. indicates the good correlation of US depth and real depth during catheter placement.

P22. Restricted spinal block by epidural volumen extension for Caesarean section: a different approach to CSE-EVE

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Introduction: Spinal anesthesia is the preferred anesthetic technique for elective and for unplanned Caesarean section. Spinal-induced hypotension remains the most important side effect with a reported incidence between 20 and 100%; it can cause maternal discomfort (nausea and vomiting) and impaired utero-placental perfusion. The risk of fetal acidemia depends on the severity and duration of the hypotensive episode.

Material and methods: After approval by the Ethics Committee, we included 60 full term parturients (ASA I or II) with uncomplicated pregnancies. The women were prospectively randomized into two groups: SSS-single shot spinal anesthesia (29 patients) and CSE-EVE – combined spinal-epidural anesthesia to induce the restriction of the spinal space by the epidural volumen compression (31 patients). The blocks were performed at L2/3 level in sitting position, for CSE-EVE using needle through-needle technique. The initial dose for CSE-EVE was exactly half of the SSS dose (0,5mg per 10 cm height of hyperbaric levobupivacaine and 20 µg fentanyl). After spinal injection, an epidural catheter was located in the CSE-EVE and injected a volume of 20 mL saline solution epidurally. After injection women were turned supine with a left uterine displacement. Surgery was allowed when a sensory block at or above T8 dermatome was established. Anaesthetic efficacy was assessed every 4 min using hemodynamic monitoring

(NIBP,HR) Bromage motor score, visual analogue pain score (VAPS), Apgar score at birth, pH-placentae, and epinephrine consumption.

Results: Patients characteristics were similar. All the blocks were adequate for surgery. The following table summarizes the results of the study:

	SSS	CSE-EVE
Readiness for surgery (min)	9 ± 2	10 ± 2
Surgery time (min)	39 ± 5	42 ± 5
% Intraop. hypotension (>20% meanBP)	32 %	9 %
Bromage motor score at end of CS	3 (88%)	1 (68%)
pH-placentae	7,18	7,29
Intraoperative nausea (No. of patient's)	4	0
Time for first walk (min)	310 ± 35	130 ± 20

Conclusions: These results support the idea that hypotension can be avoided with the implementation of CSE-EVE technique for caesarean section.

P23. Epidural analgesia for pain relief during labour

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Background and purpose: Epidural analgesia is a commonly employed technique of providing pain relief during labour. Good epidural can provide analgesia without affecting muscle power or other types of sensation. Most of ten complication occurring with epidural analgesia is maternal hypotension. Other side effects include unilateral block, accidental dural puncture, puncture of epidural vein, paresthesias and pruritis.

Materials and methods: We retrospectively reviewed 100 anaesthetic charts of epidural analgesia for labour in Clinical Hospital »Sveti Duh«, Zagreb, Croatia during January and February 2011. We analyzed average time between epidural catheter placement and delivery, VAS scores before and after catheter insertion, satisfaction with epidural, complications and side effects and the number of caesarean sections.

Results: Average time between epidural catheter placement and delivery time was 4.36 hrs. Mean VAS score before epidural catheter placement was 8.26 and 0.56 after analgesia received. Two patients had hypotension after applied first dose of local anaesthetic but extra fluid resolve this problem. Four patients required repeated procedure due to vein puncture or difficulties with the identification of epidural space. Four patients had unilateral block and one had paresthesias in one leg. No other major complication was reported.

Conclusion(s): All parturient were satisfied with the procedure. There was no association between difficulty of insertion of catheter, hypotension, blood in needle/catheter or paresthesias and unilateral blockade. Consideration of this experience leads to the conclusion that if the rules of management are rigorously followed, epidural analgesia for labour and delivery is characterised by an extremely high level of safety.

P24. Spinal block in elective cesarean section: why is it not used in our hospital?

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Background and purpose: Spinal block as a method of anaesthesia is used in Croatian hospitals with varied frequency. Analyzing PATH indicators for the year 2010 in 15 Croatian hospitals, General hospital Bjelovar was classified among 5 hospitals in which elective Cesarean section is performed exclusively under general anaesthesia. Since multiple advantages of spinal block for Cesarean section are well-known, we wanted to examine the reasons why it is still not applied in our hospital.

Materials and methods: The research was conducted on a voluntary basis and anonymously among anaesthesiologists and obstetricians of General hospital Bjelovar using the method of paper survey created by the authors, which contained two common questions for both groups, as well as a separate set of questions for each group of specialists. Paper survey was completed by 11 anaesthesiologists and 7 obstetricians, and the results were processed using basic statistical methods.

Results: The results show that two thirds of specialists in both fields have little or no experience in application of spinal block in elective Cesarean section. According to the anaesthesiologists, the main reasons for the current practice are: impossibility of adequate postoperative supervision, reluctance of obstetricians, use of general anaesthesia as »an unwritten rule«, lack of time, patients' refusal, as well as insufficient knowledge and experience. According to the obstetricians, spinal block should be used more often, but under the postoperative supervision of anaesthesiologists. They consider the conditions in their department inadequate for spinal block, claiming that they lack experience and that anaesthesiologists are disinclined to apply this kind of anaesthesia. Both sides think that they would perform Cesarean section with spinal block more often, if there were better conditions.

Conclusion: In conclusion, both specialist groups have predominantly positive attitude towards spinal anaesthesia in elective Cesarean section, with the main reasons for avoiding its application being of organizational nature. Other crucial obstacles are the existing habits, inexperience and lack of communication between the two groups of specialists, and between doctors and patients.

P25. Temporomandibular disorders – validity of clinical diagnostics compared to magnetic resonance imaging

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Background and purpose: Orthopedic examination techniques of the musculoskeletal system contribute to the successful diagnostics of temporomandibular disorders (TMD). The purpose of this study is to determine the validity of TMD clinical diagnostics by comparing the findings of manual functional analysis (MFA) and the results of MRI of temporomandibular joint (TMJ). The diagnostic significance of limited mouth opening and pain upon passive mouth opening were taken into consideration.

Patients and methods: 59 patients with clinical signs and symptoms of TMD were examined consecutively. There was a subgroup comprising 40 patients diagnosed with DD. Clinical diagnoses were made by means of MFA. MRI was the gold standard in the assessment of clinical diagnostics validity, in certain diagnoses of DD (partial with reduction, complete with reduction, complete without reduction), as well as in the diagnostic significance of limited mouth opening (<40 mm) and pain upon passive mouth opening.

Results: Validity of MFA in diagnostics of TMD showed maximal sensitivity of 100% and specificity of 57%. Matching of TMD diagnoses between findings of MFA and MRI was 95%. Sensitivity of MFA for certain diagnoses of DD was from 67 to 78%. Lower values were determined for active mouth opening (<40 mm) for certain diagnoses of DD (from 25 to 35%), while the sensitivity for findings of pain in the TMJ on passive mouth opening was 86%.

Conclusion: By using compression and joint play technique, the existing clinical diagnostics for specific diagnostics of subgroups as well as for various TMD diagnoses was enhanced.

P26. The effect of injection speed on haemodynamic changes immediate after lidocaine/adrenaline infiltration of nasal submucosa under general anaesthesia

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Background and purpose: Substantial systemic absorption after adrenaline-containing local anaesthetic infiltration can cause transitional changes in heart rate and arterial blood pressure in humans even during general an-

aesthesia. The aim of this study was to determine the effect of injection speed of local infiltration of adrenaline- containing lidocaine solution on transitional haemodynamic changes during local infiltration of nasal submucosa under general anaesthesia.

Patients and methods: A retrospective, comparative, non-randomised, open study on 1–2 ASA physical status 83 patients, aged 18 to 81 years, scheduled for septoplasty, septorhinoplasty, classical or functional endoscopic sinus surgery was performed. All patients received the submucosal infiltration of 2% lidocaine containing adrenaline solution (2 mL) plus adrenaline (0.025 mg) plus plain 2% lidocaine solution (5 mL) before surgical incision. Two different infiltration techniques were identified: fast infiltration (Group F, n=40) and slower, incremental infiltration (Group S, n=43). Heart rate (HR), systolic arterial pressure (SAP), diastolic arterial pressure (DAP) and mean arterial pressure (MAP) were recorded before, five minutes after and ten minutes after infiltration.

Results: There was no significant difference in HR, SAP, DAP nor MAP between the F group and the S-group. There was significant decrease of HR ($p=0.006$), SAP ($p=0.018$), DAP ($p=0.029$), and MAP ($p=0.010$) at 10 minutes point within the S group compared to baseline. There was significant decrease of HR ($p=0.04$) at the 10 minutes point within the F group compared to baseline.

Conclusions: This study did not confirm that the speed of injection of lidocaine with adrenaline makes any effect on haemodynamic changes during local infiltration of nasal submucosa. However it confirmed that lidocaine with adrenaline induces decrease of blood pressure.

P27. Spinal vs. general anaesthesia in inguinal hernia repair: a comparison of patients' satisfaction

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Background and purpose: Inguinal hernia repair is a common surgical procedure. The choice of anesthetic techniques ranges from local infiltration via regional or subarachnoidal block to general endotracheal. This choice may be made on the basis of the complexity of the procedure and its expected duration, the preferences of the surgeon and the anesthesiologist, the wishes of the patient, coexisting morbidities or any combination of these. In this study we compared the use of 2 anesthetic techniques for inguinal hernia repair: general anaesthesia versus subarachnoidal block. The purpose was to compare satisfaction with the anesthetic technique between these two groups of patients.

Materials and methods: 40 patients were included in this study. They were divided in two groups depending on whether they received general or spinal anaesthesia. Self administered questionnaire was developed and tested. Post-operatively, each patient was asked to complete the questionnaire.

Results: Patient satisfaction was high with both techniques. They were generally satisfied with the explanation about the anesthesia technique and found all possible complications and uncertainties explained and clarified. In the group that received general anesthesia patients were more likely to have nausea, vomiting, and were less satisfied with postoperative pain control compared to the group that received spinal anesthesia. In both groups patients declared that if they were to choose between anesthesia techniques again they would select the same type of anesthesia.

Conclusion: There was no difference in patient satisfaction with the anesthetic experience between subarachnoidal block and general anaesthesia. This is good evidence that the two techniques performed in our institution are equivalent from a patient's point of view.

P28. Insertion of brain ventricular catheter in awake patient – a case report

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Background and goal: Insertion of brain ventricular catheter for monitoring of intracranial pressure is an emergency neurosurgical procedure commonly performed under general anesthesia. Maintaining hemodynamic stability is crucial in order not to affect cerebral perfusion pressure and further deteriorate cerebral blood flow. Furthermore, these patients may present with full stomach requiring rapid sequence induction which may lead to abrupt increase of intracranial pressure.

Subject and methods: A 60-year old male suffered from the rupture of the posterior inferior cerebellar artery aneurysm. His Glasgow Coma Scale Score was 15 and Hunt and Hess Classification was 1. Before the surgery procedure, patient received unilateral scalp block on the side of the head where burr hole was planned to be made. Scalp block included block of following nerves: supratrochlear, supraorbital, auriculotemporal, greater and lesser occipital. Total amount of 18 mL of 0.5% levobupivacaine (Chirocaine[®]) was used. During surgical procedure, propofol infusion was used to sedate patient at the rate of 3 mg/kg/h.

Results: Procedure lasted for 30 minutes. Patient was verbally arousable and did not complain on pain. His blood pressure and pulse frequency remained in the margin of $\pm 10\%$ of patient's preoperative values.

Conclusion: Scalp block with continuous intravenous sedation might be useful alternative technique for insertion of brain ventricular catheter in patients with good neurological status.

P29. Distribution of research on regional anaesthesia in Croatia

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Background and purpose: Regional anaesthesia has gained popularity in clinical practice in Croatia. However, only publishing of articles makes this practice visible to the scientific community. The aim of this study was to investigate distribution of research on regional anaesthesia in Croatia on the basis of the visibility of Croatian cities in the international bibliographic database Pubmed in the last decade.

Materials and methods: The PubMed Web Site was used to find out articles on regional anaesthesia and local anaesthetics in which authors' affiliation address included the names of the Croatian cities. The articles were analysed by research and article type, institution and medical specialty.

Results: In the period from 01/01/2001 till 31/12/2010 there were 23 published Pubmed articles on regional anaesthesia from Croatia (0.0935 % of world publication). The year 2009 was most productive (8 articles), followed by 2010 (5 articles). The majority of articles were clinical research (78 %). Among them there were 16 clinical trials and 2 reviews. The cities were ranked as follows: 1. Zagreb (n=18); 2. Rijeka (N=2); 2. Split (n= 2); 4. Osijek (n=1). The institutions were ranked as follows: UH Sveti Duh (n=4); 2. UHC Zagreb (n=3); 2. UH Sestre milosrdnice (n= 3); 4. UHC Rijeka (n= 2 articles); 4. UH Dubrava (n=2 article); 6.UHC Split (n= 1 article); 6. UHC Osijek (n=1); 6. UH Jordanovac (n=1); 6. School of Medicine Zagreb (n=1); 6. School of Medicine Split (n=1); 6. School of Pharmacy and Biochemistry (n=1); School of Veterinary Medicine (n=1); School of Dental Medicine (n=1); Institute of Medical Research and Occupational Health (n=1). The predominant specialty who reported research was anaesthesiology (57%), and the most applied field was orthopaedics (26%).

Conclusions: The Croatian research publication on regional anaesthesia in Pubmed was low in the last decade. Research was located predominantly to the capital city. More education and financial support should be injected to make all Croatian cities visible in regional anaesthesia.

P30. Hemodynamic variation in spinal anesthesia for varicose vein surgery

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Background and objective: One of the most common complications of spinal anesthesia is hypotension as a result of sympathetic nervous system blockade, which decreases systemic vascular resistance and cardiac output. In this study we compared bilateral spinal anesthesia and unilateral spinal anesthesia according to hemodynamic change in patients undergoing surgery for varicose veins.

Methodology: In this study 33 ASA I-II patients undergoing varicose vein surgery were included. The patients were divided into two groups according to the anesthetic technique which was performed. Group 1 patients (n=24) received bilateral spinal anesthesia with 15 mg of isobaric 0.5% levobupivacaine, and Group 2 patients (n=9) received unilateral spinal anesthesia with hyperbaric spinal solution (0.5% levobupivacaine 5 mg plus fentanyl 50 µg and 1 mL of 10% glucose). Systolic and diastolic blood pressures were recorded before the anesthesia was applied and 30 minutes after anesthesia was applied at 5-minute intervals.

Results: In both groups, systolic and diastolic blood pressures decreased after spinal anesthesia. A statistically significant drop in systolic blood pressure was found in Group 1 10, 15, 20, 25 and 30 minutes after the anesthetic was applied, while no statistically significant changes were seen in diastolic blood pressure between the study groups.

Conclusion: This study shows that unilateral spinal anesthesia with a lower dose of levobupivacaine induces less hemodynamic change than the conventional spinal anesthesia.

P31. Cost management of general and regional anaesthesia techniques in context of quality resource management at the department of orthopaedics

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Background and purpose: In this study the goal was to analyze costs of regional versus general anaesthesia techniques through a retrospective study. Using an interdisciplinary approach of cost management in health care institutions, independent financial analysis of costs of surgical procedures and resource utilization was conducted. The

study has several aims: to emphasize benefits of regional compared to general anaesthesia, and emphasize the need for better resource allocation in order to stay competitive. Both of the aims can be summarized into one main goal, interdisciplinary approach in health care institutions must be recognized in order to organize quality (cost) management of the institution.

Materials and methods: 181 patient's medical records were analyzed during different surgical procedures performed under regional or general anaesthesia. Data such as duration of operation and anaesthesia, total costs of physician and material used during the procedure, as well as anaesthesia technique were extracted from the records and elaborated.

Results: Ratio of regional to general anaesthesia was 61% : 39% in the observed 4 month period. Average total cost of regional anaesthesia operation, calculated from the surgical lists for the observed four month period, was 11,6 €, while average total cost of general anaesthesia was 44,8 €. Thereby costs of anaesthesia technique were lower ($p < 0,01$) for regional anaesthesia. Both material and medication costs showed statistically and clinically relevant difference, since they were significantly less in regional anaesthesia group ($p < 0,01$).

Conclusion: Study showed clear economic benefits of regional anaesthesia compared with general anaesthesia. It was concluded that regional anaesthesia indeed does have lower costs than general anaesthesia. Great discrepancy between physicians' salary and the salary they actually earn by spending specific amount of time working in the OR suggest poor resource utilization.

P32. Development of post-thoracotomy pain syndrome in patients undergoing lung surgery – comparison of thoracic paravertebral and epidural analgesia

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Background and purpose: Postthoracotomy pain syndrome is one of the major concerns following the thoracic surgery. Our study was aimed to compare two methods of regional analgesia in development of this syndrome and to establish the quality of life in both groups.

Patients and methods: 50 patients undergoing thoracotomy were enrolled in the study and randomized to thoracic paravertebral catheter analgesia group (group TPA; 25 patients) and to thoracic epidural analgesia group (group TEA; 25 patients). Before induction of general anaesthesia patients in both groups received 60 µg/kg morphine and local anaesthetic (TEA group: 0.125% bupivacaine, TPA group: 0.5% bupivacaine according to Bromage scheme). After the procedure TEA group received a mixture, composed of morphine 10 mg, bupivacaine 125 mg and clonidine 0.15 mg/100 mL saline; the rate of infusion was 0.05 mL/kg/h. TPA group received another mixture, composed of morphine 10 mg, bupivacaine 250 mg and clonidine 0.15 mg/100 mL saline; the rate of infusion was the same as already noted above. Postthoracotomy pain was assessed in 3 month's period after the surgery. The quality of life was evaluated with Brief Pain Inventory.

Results: Postthoracotomy pain was experienced in 52, 25% of all the patients (TPA group 47, 37%, TEA group 57, 14%). No differences in assessment of postthoracotomy pain were observed in TPA group as compared to TEA group. No differences in the quality of life were observed.

Conclusion: We recommend the application of analgesic mixtures through the paravertebral catheter as compared to standard epidural as our study proved the equivalence of these two methods in development of post-thoracotomy syndrome, chronic pain after the procedure and the quality of life.

P33. Hemodynamic effects of epidural clonidine at patients undergoing lung surgery

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Background and purpose: Clonidine is an α_2 -adrenergic agonist which can be used as an adjuvant in epidural drug mixture and is interesting for its diverse responses, including analgesia and sympatholysis. Many surveys reported contradictory hemodynamic effects of clonidine. We wanted to determine if postoperative epidural clonidine causes hemodynamic instability in patients undergoing lung surgery. We were interested in hypotension and bradycardia and required administration of additional i.v. fluids or drugs during early postoperative period.

Materials and methods: In a prospective randomized double-blinded study we enrolled 24 patients with lung carcinoma scheduled for thoracotomy. They were randomly assigned to morphine group (M) or clonidine group (C). Before operation we inserted an epidural catheter at level T6-7. Group-M received a bolus of 40 $\mu\text{g}/\text{kg}$ of morphine in 10 mL saline and group-C additionally to that 4 $\mu\text{g}/\text{kg}$ of clonidine. For postoperative analgesia we used a mixture of 4 $\mu\text{g}/\text{kg}/\text{h}$ of morphine and 10 $\mu\text{g}/\text{kg}/\text{h}$ of bupivacain in saline for group-M, and additionally to that 0.2 $\mu\text{g}/\text{kg}/\text{h}$ of clonidine for group-C. Blood pressure, heart rate, amount of fluids and atropine given were monitored during operation and throughout the first 42 hours after operation.

Results: The results of this trial demonstrate a marked reduction in systolic, diastolic and mean arterial pressure as well as heart rate throughout the early postoperative study period in group-C. Hypotension demanded treatment with i.v. fluids.

Conclusion: High thoracic epidural clonidine used for postoperative analgesia in patients undergoing lung surgery lowers the heart rate and causes hypotension.

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ZALDIAR®

Paracetamol 325 mg / Tramadol 37.5 mg

Aktivne supstance: tramadol i paracetamol **Sastav:** 1 filmom obložena tableta sadržava 37,5 mg tramadol hidroklorida i 325 mg paracetamola **Indikacije:** Simptomatsko liječenje umjerene do žestoke boli **Kontraindikacije:** Poznata preosjetljivost na tramadol, paracetamol ili bilo koju od pomoćnih tvari, akutna intoksikacija alkoholom, hipnoticima, analgeticima sa središnjim djelovanjem, opioidima ili psihotropnim lijekovima, ozbiljna oštećenja jetre, epilepsija koja nije kontrolirana lijekovima. Zaldiar® se ne smije davati bolesnicima koji su na terapiji MAO- inhibitorima ili tijekom dva tjedna nakon prestanka njihove primjene. **Upozorenja i mjere opreza:** Uporaba Zaldiar® ograničena je na odrasle i adolescente starije od 12 godina. Maksimalna dnevna doza je 8 tableta. Potrebno je izbjeći istovremenu uporabu lijekova koji sadrže paracetamol ili tramadol (opasnost od predoziranja i hepatotoksičnosti). Zaldiar® se ne preporuča kod teške bubrežne insuficijencije, kod teške insuficijencije dišnog sustava, niti je pogodna zamjena u liječenju ovisnika opioidima. Potrebno je uzeti u obzir rizik od konvulzija u bolesnika koji su bili skloni napadajima ili su uzimali druge lijekove koji snižavaju prag napadaja (selektivne inhibitore ponovne pohrane serotonina, tricikličke antidepresive, antipsihotike, analgetike sa središnjim djelovanjem ili lokalnu anesteziju). Zaldiar® se smije upotrebljavati samo uz poseban oprez u bolesnika preosjetljivih na opioide ili u bolesnika: s povredom glave, sklonih konvulzijama, s bolestima žuči, u stanju šoka, s poremećajem svijesti nepoznata uzroka, s poremećajem respiratorne funkcije ili s povećanim intrakranijalnim tlakom. Primjenom Zaldiar® mogu se javiti simptomi ustezanja, slično onim simptomima koji se pojavljuju nakon prekida uzimanja opijata. Bolesnici trebaju izbjegavati istovremeni unos alkoholnih pića i lijekova koji sadržavaju alkohol. Upravljanje vozilima ili strojevima može biti opasno zbog djelovanja na budnost. Zaldiar® se ne smije koristiti za vrijeme trudnoće i dojenja. Bolesnicima starijim od 75 godina ili sa umjerenom bubrežnom insuficijencijom preporuča se da interval doziranja ne bude kraći od 6 sati odnosno da produže interval doziranja. **Doziranje:** Treba biti individualno prilagođeno svakom bolesniku ponaosob, uzimajući u obzir intenzitet boli i odgovor bolesnika. Maksimalna dnevna doza je 8 tableta. Interval doziranja ne smije biti kraći od 6 sati. **Nuspojave:** Najčešće zabilježene nuspojave su mučnina, vrtoglavica i pospanost. Često se mogu javiti: povraćanje, zatvor, suha usta, dijareja, bol u trbuhu, dispepsija, nadutost, znojenje, pruritus, smetenost, promjene raspoloženja, poremećaj spavanja glavobolja, drhtanje. **Način i mjesto izdava:** u ljekarnama, samo na recept.

Broj odobrenja za stavljanje lijeka u promet

Zaldiar® 20 tableta: UP/1530-09/05-01/449, **Zaldiar® 30 tableta:** UP/1530-09/05-01/450, **Zaldiar® 50 tableta:** UP/1530-09/05-01/451