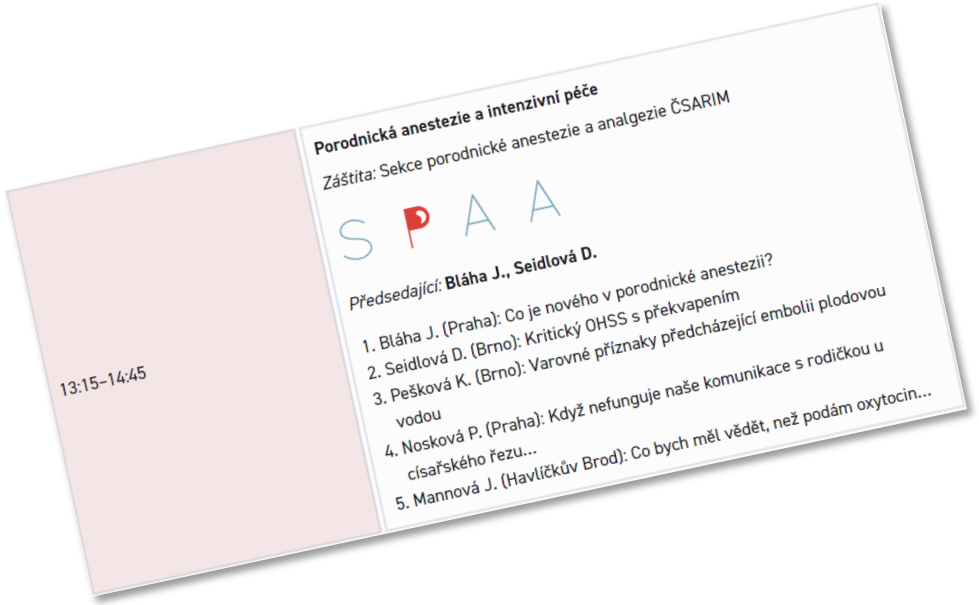
Co je nového...?

O čem se mluvit



13:15–14:45

Porodnická anestezie a intenzivní péče

Záštita: Sekce porodnické anestezie a analgezie ČSARIM

SPAA

Předsedající: **Bláha J., Seidlová D.**

1. Bláha J. (Praha): Co je nového v porodnické anestezii?
2. Seidlová D. (Brno): Kritický OHSS s překvapením
3. Pešková K. (Brno): Varovné příznaky předcházející embolii plodovou vodou
4. Nosková P. (Praha): Když nefunguje naše komunikace s rodičkou u císařského řezu...
5. Mannová J. (Havlíčkův Brod): Co bych měl vědět, než podám oxytocin...

JAN BLÁHA

KLINIKA ANESTEZIOLOGIE, RESUSCITACE A INTENZIVNÍ MEDICÍNY

1. LÉKAŘSKÁ FAKULTA Univerzita Karlova

VŠEOBECNÁ FAKULTNÍ NEMOCNICE V PRAZE

jan.blaha@vfn.cz

Možný konflikt zájmů: tady výjimečně asi ne

Review Article

A narrative review of the literature relevant to obstetric anesthesiologists: the 2023 Gerard W. Ostheimer lecture

P. Sultan *

Stanford University School of Medicine, Stanford, CA, USA

This narrative review of the 2023 Gerard W. Ostheimer lecture presented at the Society for Obstetric Anesthesia and Perinatology 2023 annual meeting summarizes 2022 literature relevant to obstetric anesthesiologists.

Antenatal studies: Neonatal morbidity is reduced with antenatal maternal buprenorphine compared with methadone for treatment of opioid use disorder. Antenatal pregnancy allergy testing is safe and feasible.

Analgesia and anesthesia studies: Intrathecal (IT) 3% chloroprocaine for cervical cerclage results in faster sensory block resolution and discharge readiness compared with bupivacaine. The ED90 of 3% chloroprocaine (with IT fentanyl 10 μg) is 49.5 mg. Dural puncture epidural technique does not improve the quality of labor analgesia in obese parturients compared with epidural analgesia. Low- (>0.08 to ≤0.1%) and ultra-low (<0.08%) concentrations of bupivacaine for epidural analgesia maintenance result in similar maternal and neonatal outcomes. Lower doses of first line uterotonic agents are non-inferior to higher doses (oxytocin 0.5 IU vs. 5 IU and carbetocin 20 vs. 100 μg) in patients at low risk for postpartum hemorrhage. Supplemental analgesia or conversion to general anesthesia is necessary in approximately 15% of elective cesarean deliveries. Intravenous dexamethasone improves analgesia outcomes, however optimal dosing and timing remain unclear; it may induce neonatal hypoglycemia in the setting of gestational diabetes.

Postpartum studies: A core outcome set may help evaluate enhanced recovery protocol implementation. History of migraine and accidental dural puncture (ADP) above the L3 level are associated with epidural blood patch (EBP) failure and ADP at or below L3 and >48 h interval between ADP and EBP are associated with success.

International Journal of Obstetric Anesthesia 58 (2024) 103973

Chlorprocain lepší než bupivacain

Dural Puncture Epidural nezlepšuje porodnickou analgezii

Ultranízké koncentrace EDA mají podobné výsledky

Nízká dávky uterotonik po SC stačí

Nedostatečná analgezie U SC v RA je častá

ERAS !!!

Vyšší perforace dury = selhání krevní zátky

THE JOURNAL OF MATERNAL-FETAL & NEONATAL MEDICINE 2023, VOL. 36, NO. 2, 2278020

REVIEW ARTICLE

Risk factors for failure of conversion from epidural labor analgesia to cesarean section anesthesia and general anesthesia incidence: an updated meta-analysis

Pan Li[a], Xiaoting Ma[b], Shuang Han[a], Izumi Kawagoe[c], Kurt Ruetzler[d], Amos Lal[e], Longlu Cao[a], Ran Duan[a] and Jianli Li[a]

[a]Department of Anesthesiology, Hebei General Hospital, Shijiazhuang, China; [b]Department of Clinical Laboratory, Hebei General Hospital, Shijiazhuang, China; [c]Department of Anesthesiology and Pain Medicine, Juntendo University School of Medicine, Tokyo, Japan; [d]Department of Outcomes Research, Cleveland Clinic, Cleveland, OH, USA; [e]Department of Medicine, Division of Pulmonary and Critical Care Medicine, Mayo Clinic, Rochester, MN, USA

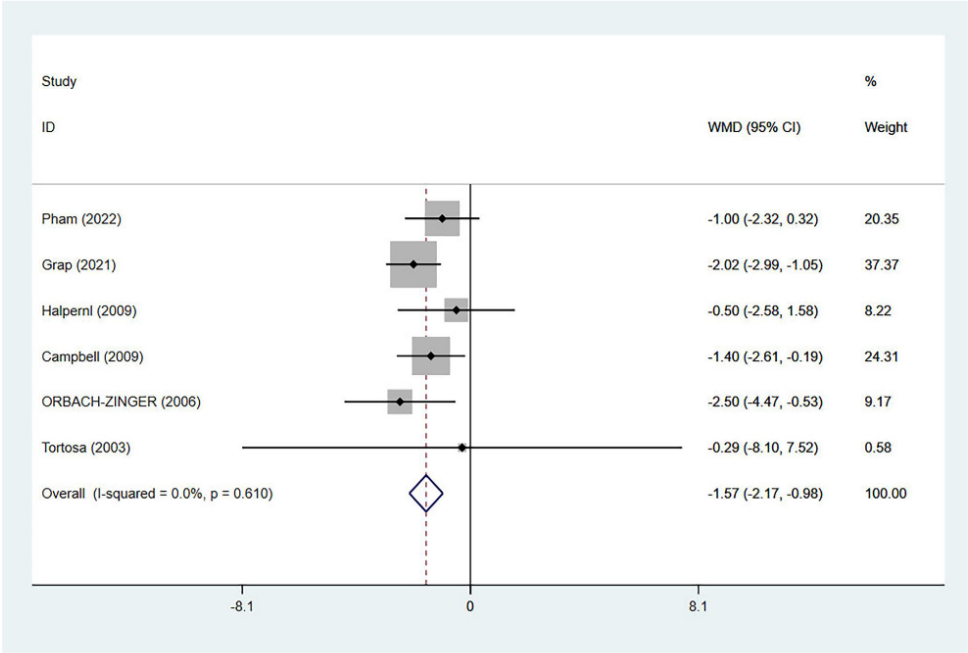


Figure 3. Summarized the effect of the age on failed epidural anesthesia conversion. WMD, weighted mean difference; CI, confidence interval.

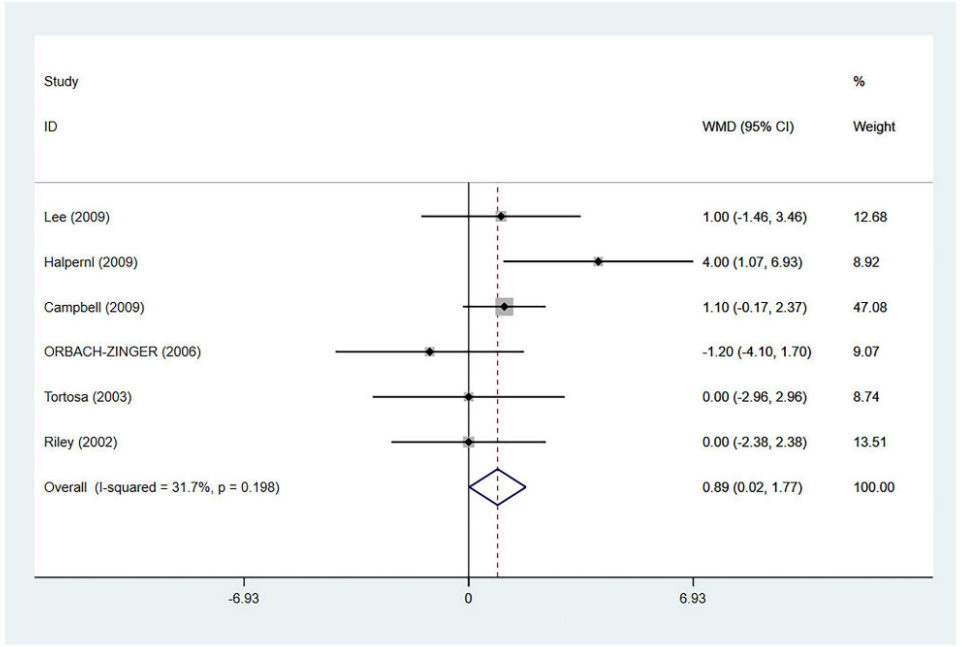
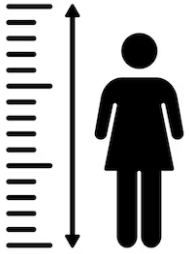
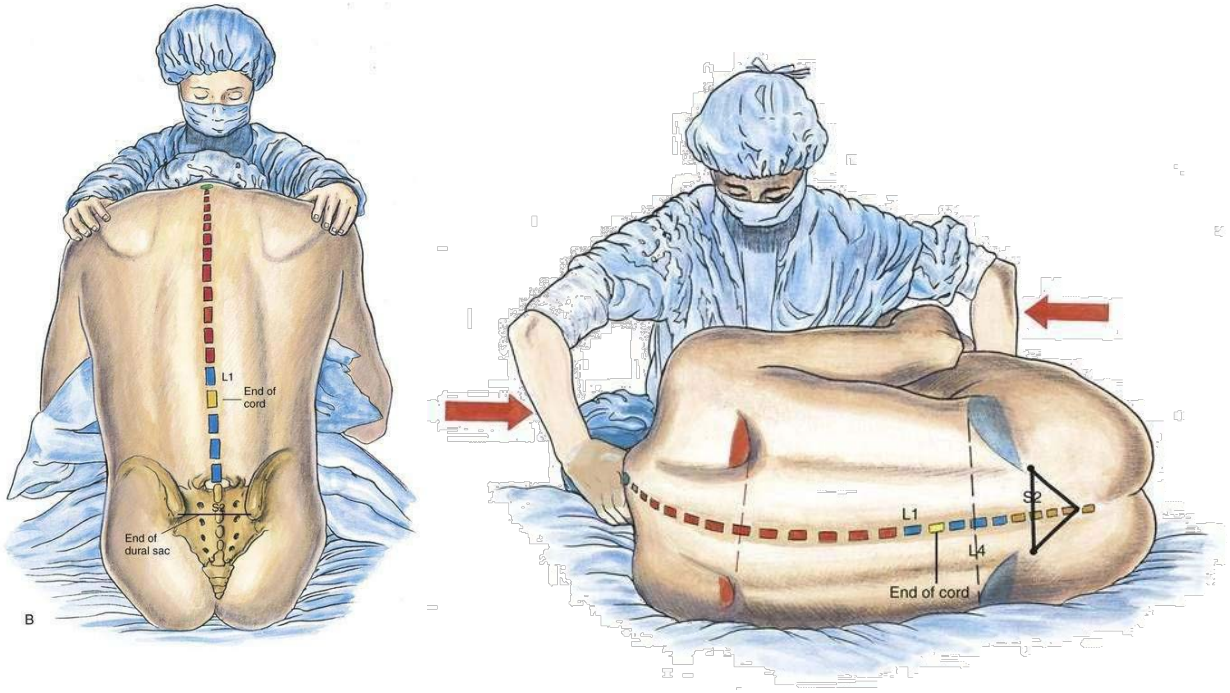


Figure 4. Summarized the effect of the height on failed epidural anesthesia conversion. WMD, weighted mean difference; CI, confidence interval.





International Journal of Obstetric Anesthesia (2014) 23, 206–212
0959-289X/$ - see front matter
http://dx.doi.org/10.1016/j.ijoa.2014.02.004

ORIGINAL ARTICLE

ELSEVIER
www.obstetanesthesia.com

Spinal anaesthesia for caesarean section: an ultrasound comparison of two different landmark techniques

K. Kallidaikurichi Srinivasan, M. Deighan, L. Crowley, K. McKeating
Department of Anaesthesia, National Maternity Hospital, Dublin, Ireland

Table 2 Intervertebral space marked

	Group A ($n = 55$)	Group B ($n = 55$)	P value
L1–2	5 (9.1%)	0 (0%)	<0.001
L2–3	20 (36.4%)	4 (7.3%)	<0.001
L3–4	27 (49.1%)	31 (56.4%)	<0.001
L4–5	3 (5.5%)	14 (25.5%)	<0.001
L5–S1	0 (0%)	6 (10.9%)	<0.001

Data are number (%).

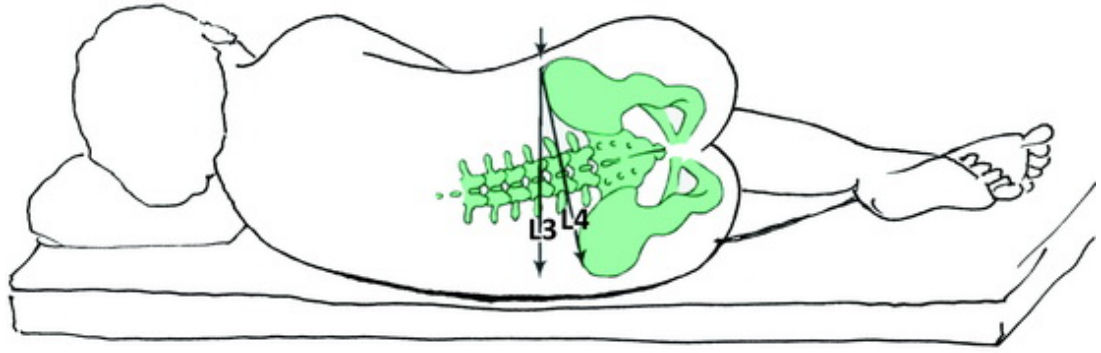


Fig 1. Projection of the junction of the two iliac bristles in a supine pregnant woman.

International Journal of Obstetric Anesthesia (2014) 23, 206–212
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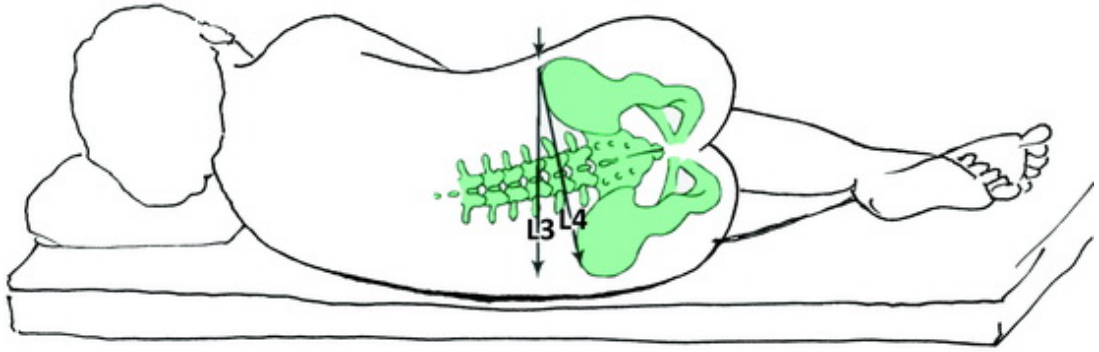


Fig 1. Projection of the junction of the two iliac bristles in a supine pregnant woman.

Všeobecná fakultní nemocnice v Praze
U Nemocnice 499/2, 128 08 Praha 2   IČ 00064165, tel. 22496 1111
Klinika anesteziologie, resuscitace a intenzivní medicíny
Přednosta: Doc. MUDr. Martin Stříteský, CSc.   Primář: MUDr. Jan Kříštof

F-KARIM-058 strana 1/1 verze 2015/1.0

ANESTEZIOLOGICKÝ ZÁZNAM

číslo /operační sál: 452/852

[redacted] 6P3
83[redacted] DG: Z35.8
VFN Praha 2 IČP: 02004377
NS: odb.6P3 POR-PJIP

výška (cm)	váha (kg)	ASA	Riziko obtížné intubace: nízké - střední - vysoké	datum
165	165/200	III	MT I	10.8.17

diagnóza: Obezitas permagna, [illegible]

operační výkon: S.C.

anesteziolog: BLAHA | anesteziologická sestra: Mgr. Daniela Šnajdrová | operatér: PAŘÍZEK

☒ Podepsaný informovaný souhlas s anestezií.

ALERGIE: kys. acetylsalicylová, pyly, [illegible]

PŘEDOPERAČNÍ ANESTEZIOLOGICKÉ VYŠETŘENÍ:

Arter. hypertenze
Asthma bronchiale – nyní bez terapie; [illegible]
– dyšnost při stresu
Přijata k zjištění preeklampsie; TK [illegible]
ještě není v dispozici
Monstrózní obezita, BMI 73
Souhlas se všemi typy anestezie
PICC zaveden 7.8. na LHK

CHRONICKÁ MEDIKACE:
Dopegyt 2x 1tbl

☐ POZOR! Pacient(ka) nerozumí česky. Hovoří těmito jazyky:

VOLBA ANESTEZIE: ☒ celková ☒ epidurální ☒ spinální ☐ kombinovaná

PŘEDOPERAČNÍ DOPORUČENÍ:
~~2x TH EBR do depa~~
– ráno v den S.C. perorální Degan 10 mg, Ranitidin 300 mg p.o.

Jitka Janoušková porodní asistentka

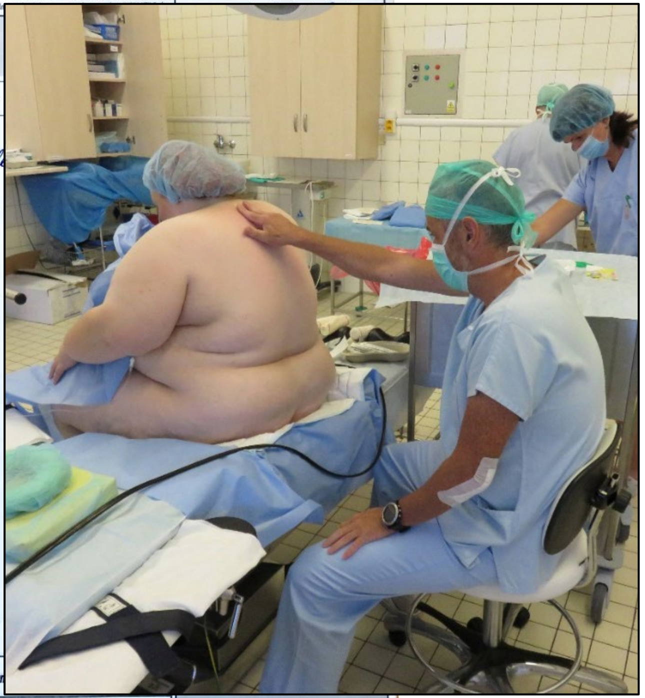
9.8.17 14:00   MUDr. Jana Kubátová 1639

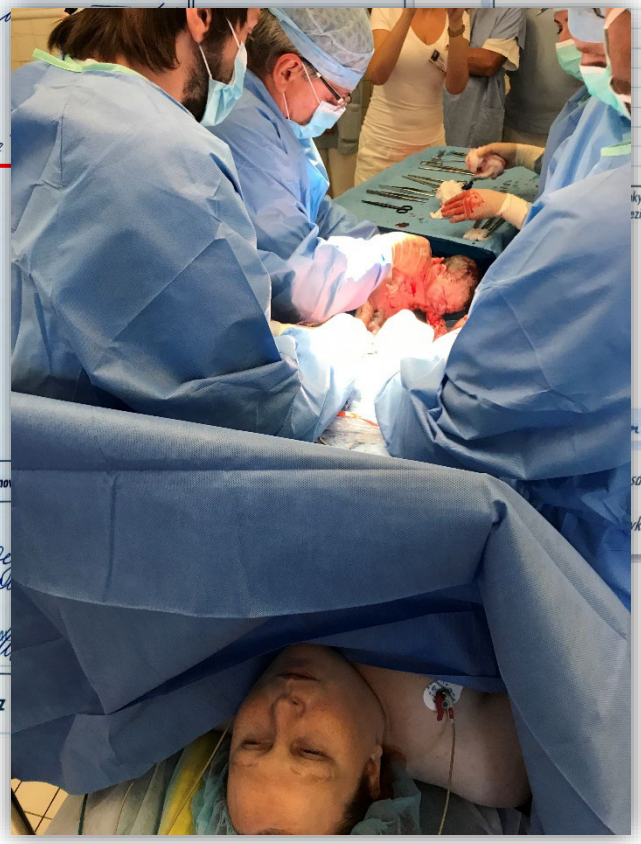
ZÁVĚR: Schopen(a) anesteziologického výkonu.   Datum, čas a podpis:

POLOHA PACIENTA

MONITORACE: ☐ EKG ☐ NIBP ☐ SpO_2 ☐ $EtCO_2$ ☐ $\%O_2$ ☐ %VA ☐ ST úsek ☐ ABP ☐ CVP ☐ BIS ☐ TOF ☐

☐ Ostatní viz Předoperační protokol   ☐ Akutní výkon bez Předoperačního protokolu





Všeobecná fakultní nemocnice v Praze
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Klinika anesteziologie, resuscitace a intenzivní medicíny
Přednosta: Doc. MUDr. Martin Stříteský, CSc. Primář: MUDr. Jan Krátol

6P3
83 DG: 235.8
VFN Praha 2 IČP: 02004377
NS: odb. 6P3 POR-PJIP

BLÁHA

Mgr. Daniela Šna

☒ Podepsaný informovaný souhlas s anestezií.

ALERGIE:

PŘEDOPERAČNÍ ANESTEZIOLOGICKÉ VYŠETŘENÍ:

CHRONICKÁ MEDIKACE:

☐ POZOR ! Pacient(ka) nerozumí česky. Hovoří těmito jazyky:

VOLBA ANESTEZIE: ☒ celková ☒ epidurální ☒ spinální ☐ kombinov

PŘEDOPERAČNÍ DOPORUČENÍ:

ZÁVĚR: Schopen(a) anesteziologického výkonu. Datum, čas a podpis:

☐ Ostatní viz Předoperační protokol ☐ Akutní výkon bez

Stav pacienta se shoduje s anesteziologickým vyšetřením: ☒ ANO ☐ NE (podrobnosti jsou uvedeny v dekurzu). VĚDOMÍ: ☒ normální ☐ GCS ..... OBĚHOVĚ: ☒ stabilní ☐ nestabilní DÝCHÁNÍ: ☒ eupnoe ☐ dyspnoe ☐ UPV

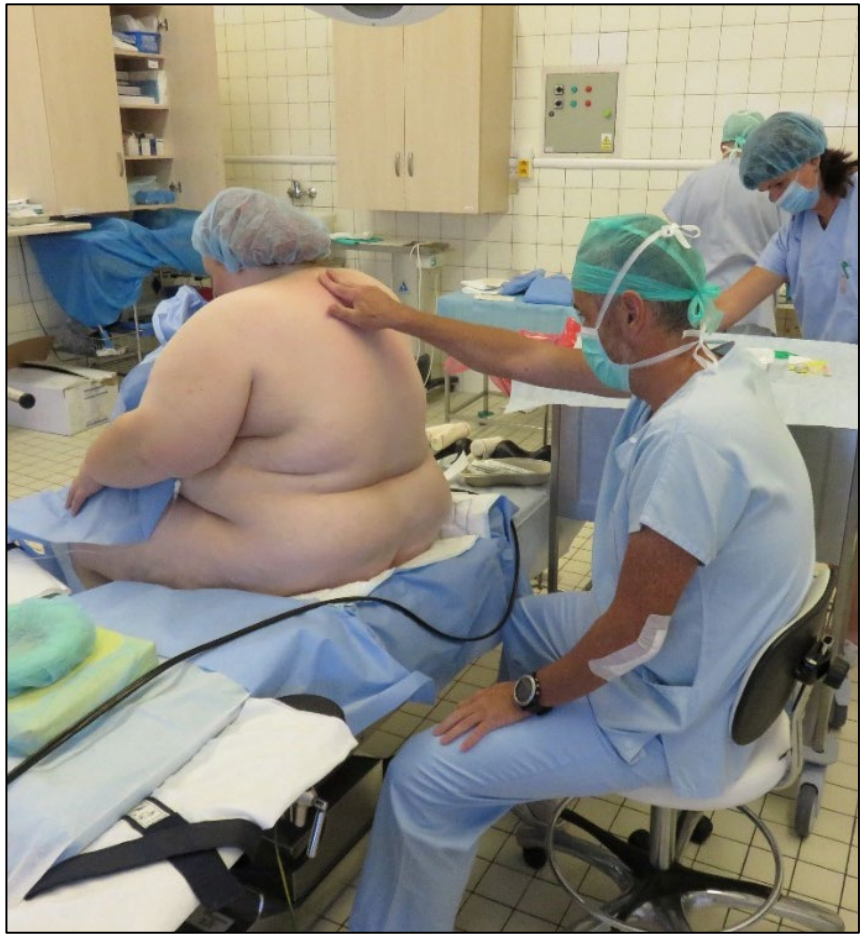
REGIONÁLNÍ ANESTEZIE ☐ katetr
oblast/typ: L3-4 (2.) / EPID
Pokusy: 1x
Test katetru: bolus aspirace:
Aplikováno:
Efekt:
INFÚZE:

Moč:
Krevní ztráty:
PŘÍJEM krystaloidů koloidů

TK 113/53 P 103 /min SpO2 97 % při FiO2

PODPIS ANESTEZIOLOGA: doc. MUDr. Jan Bláha, Ph.D.

PACIENTA(KU) PŘEVZAL(A):



Difficult Spinal in Obese Patient- Crash course with Dr. Hadzic

The Accuracy of a Handheld Ultrasound Device for Neuraxial Depth and Landmark Assessment: A Prospective Cohort Trial

Katherine M. Seligman, MD,* Carolyn F. Weiniger, MBChB,† and Brendan Carvalho MBBCh, FRCA‡

This study investigated the accuracy of a wireless handheld ultrasound with pattern recognition software that recognizes lumbar spine bony landmarks and measures depth to epidural space (Accuro, Rivanna Medical, Charlottesville, VA) (AU). AU measurements to epidural space were compared to Tuohy needle depth to epidural space (depth to loss of resistance at epidural placement). Data from 47 women requesting labor epidural analgesia were analyzed. The mean difference between depth to epidural space measured by AU versus needle depth was −0.61 cm (95% confidence interval, −0.79 to −0.44), with a standard deviation of 0.58 (95% confidence interval, 0.48–0.73). Using the AU-identified insertion point resulted in successful epidural placement at first attempt in 87% of patients, 78% without redirects. (Anesth Analg 2018;126:1995–8)

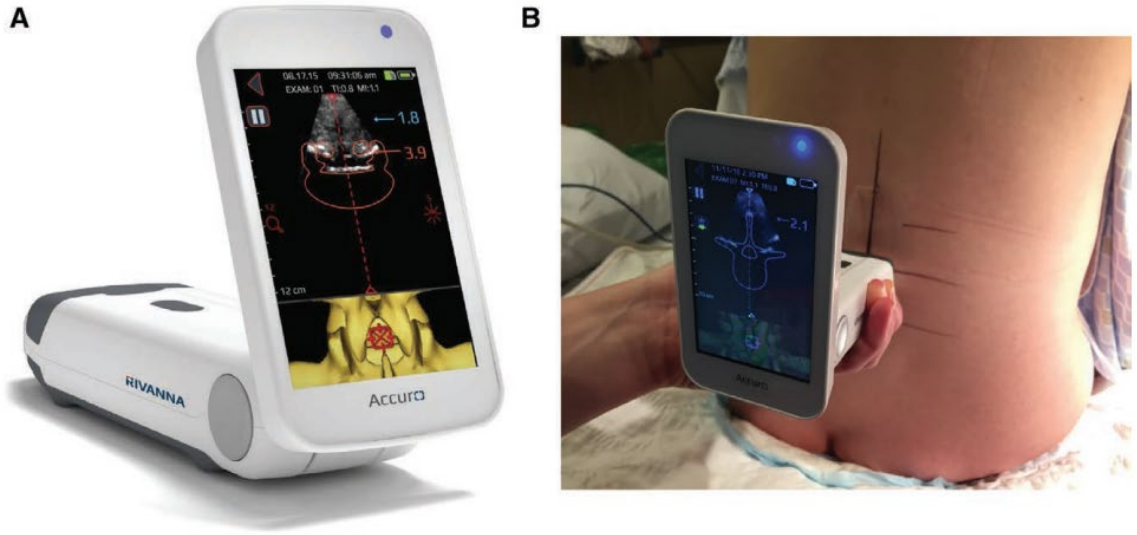


Figure 1. A, An image of the wireless handheld ultrasound (Accuro, Rivanna Medical, Charlottesville, VA) (AU) device investigated. The device has integrated software algorithm to depict bony landmarks and measure depth to spinous process and epidural space in real time. The image was downloaded from https://rivannamedical.com. Accessed February 24, 2017. B, A photograph to illustrate the ultrasound examination technique for the wireless handheld ultrasound (Accuro, Rivanna Medical, Charlottesville, VA) (AU) device. The ultrasound examination was conducted in the seated position. The probe was placed in the gluteal cleft and translocated cephalad. Marks that were placed on the patient's back indicate the horizontal and vertical midline. AU indicates Accuro.

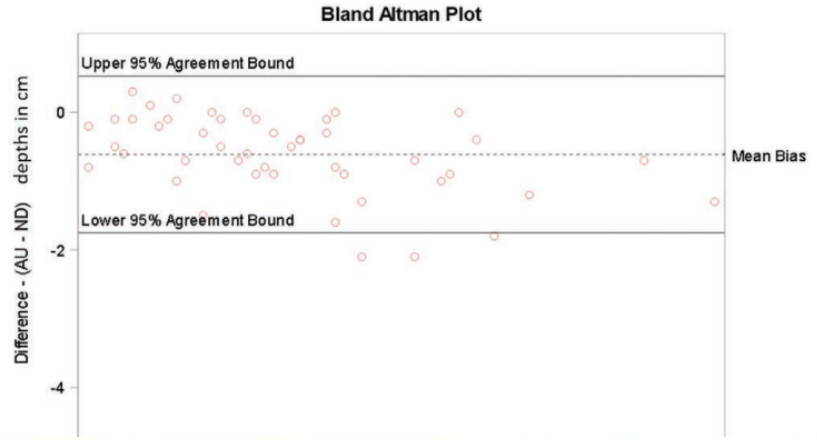
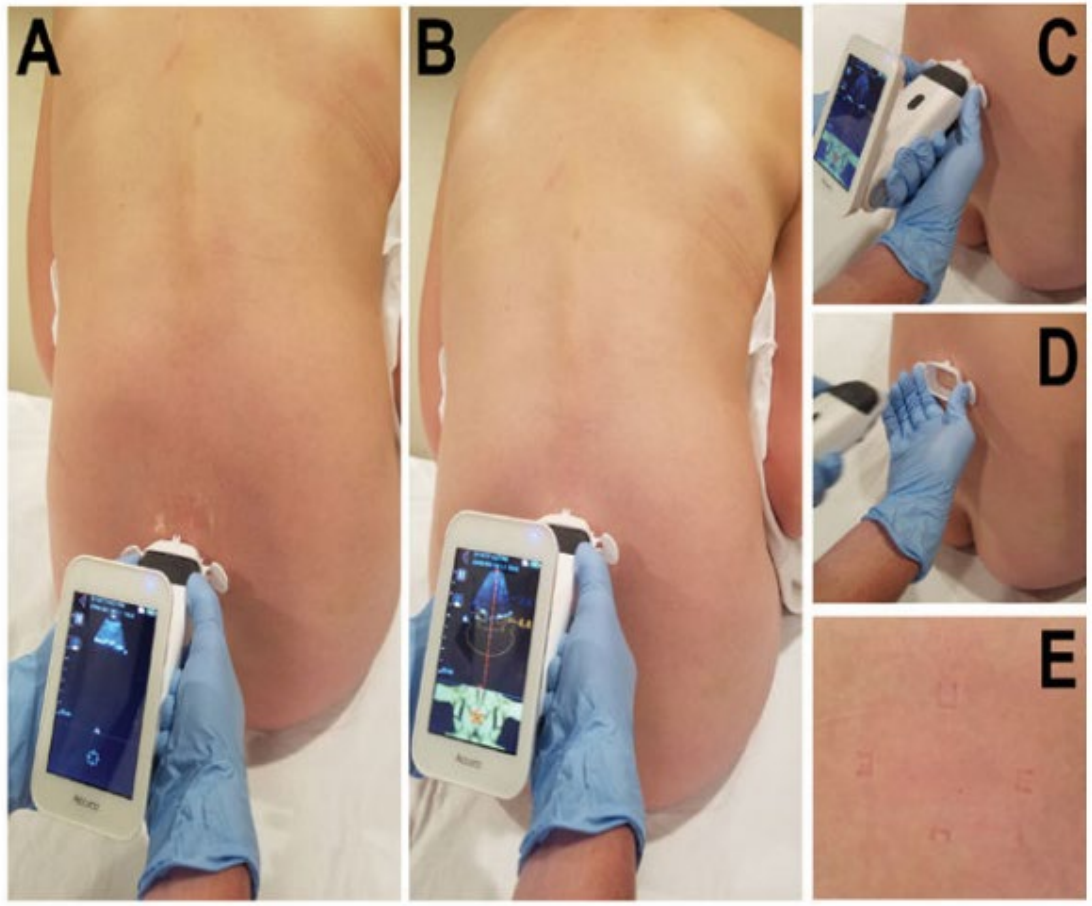


Figure 2. Bland-Altman plot of the agreement between epidural depths (cm) measured using the AU ultrasound (Accuro; Rivanna Medical, Charlottesville, VA) versus the ND at loss of resistance. The y-axis represents the difference between these measured depths and the x-axis represents the mean of the depths. Mean bias with 95% limits of agreement and respective confidence intervals are presented. AU indicates Accuro; ND, needle depth



Anesth Analg 2018;126:1995–8

Review Article

Conventional landmark palpation vs. preprocedural ultrasound for neuraxial analgesia and anaesthesia in obstetrics – a systematic review and meta-analysis with trial sequential analyses

B. Young,[1] **D. Onwochei**[2] and **N. Desai**[2,3]

1 Speciality Registrar, 2 Consultant, Department of Anaesthesia, Guy's and St Thomas' NHS Foundation Trust, 3 Honorary Senior Clinical Lecturer, King's College London, London, UK

Summary

The aim of this systematic review and meta-analysis was to examine the efficacy, time taken and the safety of neuraxial blockade performed for obstetric patients with the assistance of preprocedural ultrasound, in comparison with the landmark palpation method. The bibliographic databases Central, CINAHL, EMBASE, Global Health, MEDLINE, Scopus and Web of Science were searched from inception to 13 February 2020 for randomised controlled trials that included pregnant women having neuraxial procedures with preprocedural ultrasound as the intervention and conventional landmark palpation as the comparator. For continuous and dichotomous outcomes, respectively, we calculated the mean difference using the inverse-variance method and the risk ratio with the Mantel–Haenszel method. In all, 22 trials with 2462 patients were included. Confirmed by trial sequential analysis, preprocedural ultrasound increased the first-pass success rate by a risk ratio (95%CI) of 1.46 (1.16–1.82), p = 0.001 in 13 trials with 1253 patients. No evidence of a difference was found in the total time taken between preprocedural ultrasound and landmark palpation, with a mean difference (95%CI) of 50.1 (−13.7 to 113.94) s, p = 0.12 in eight trials with 709 patients. The quality of evidence was graded as low and very low, respectively, for these co-primary outcomes. Sub-group analysis underlined the increased benefit of preprocedural ultrasound for those in whom the neuraxial procedure was predicted to be difficult. Complications, including postpartum back pain and headache, were decreased with preprocedural ultrasound. The adoption of preprocedural ultrasound for neuraxial procedures in obstetrics is recommended and, in the opinion of the authors, should be considered as a standard of care, in view of its potential to increase efficacy and reduce complications without significant prolongation of the total time required.

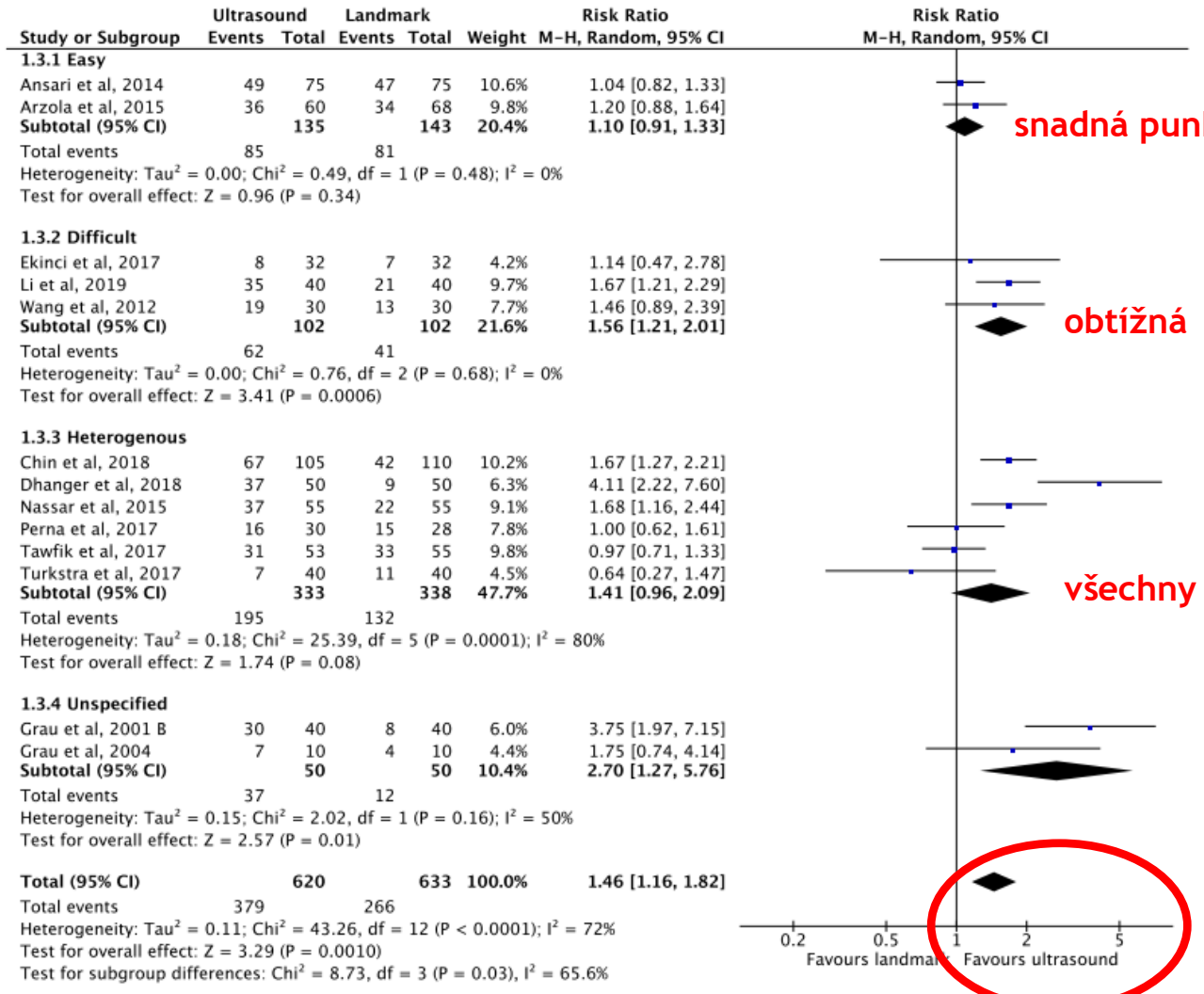


Figure 3 Forest plot of the first-pass success rate according to the predicted difficulty of the neuraxial procedure. M–H, Mantel–Haenszel.

THE JOURNAL OF MATERNAL-FETAL & NEONATAL MEDICINE 2023, VOL. 36, NO. 2, 2278020

Risk factors for failure of conversion from epidural labor analgesia to cesarean section anesthesia and general anesthesia incidence: an updated meta-analysis

Pan Li[a], Xiaoting Ma[b], Shuang Han[a], Izumi Kawagoe[c], Kurt Ruetzler[d], Amos Lal[e], Longlu Cao[a], Ran Duan[a] and Jianli Li[a]

[a]Department of Anesthesiology, Hebei General Hospital, Shijiazhuang, China; [b]Department of Clinical Laboratory, Hebei General Hospital, Shijiazhuang, China; [c]Department of Anesthesiology and Pain Medicine, Juntendo University School of Medicine, Tokyo, Japan; [d]Department of Outcomes Research, Cleveland Clinic, Cleveland, OH, USA; [e]Department of Medicine, Division of Pulmonary and Critical Care Medicine, Mayo Clinic, Rochester, MN, USA

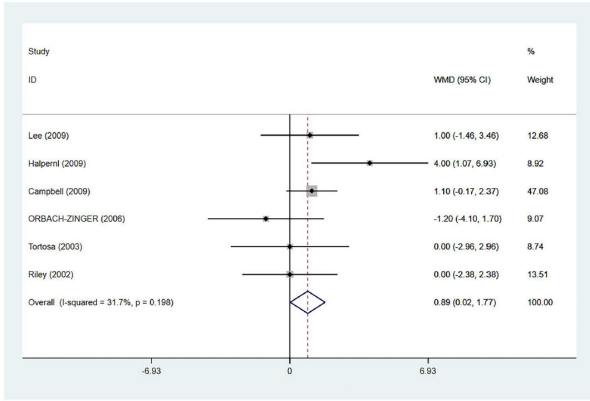


Figure 4. Summarized the effect of the height on failed epidural anesthesia conversion. WMD, weighted mean difference; CI, confidence interval.

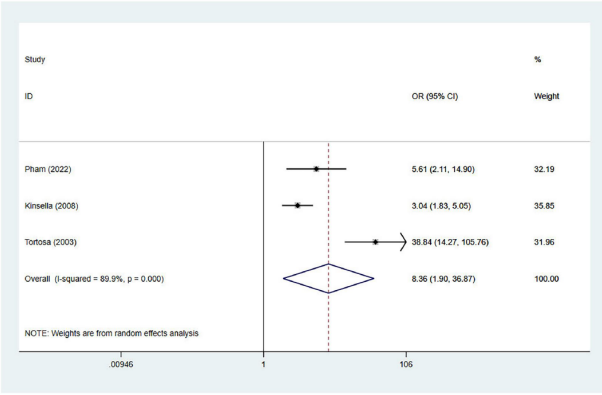


Figure 11. Summarized the effect of the poor blocking effect on failed epidural anesthesia conversion. CI, confidence interval; or, odds ratio.

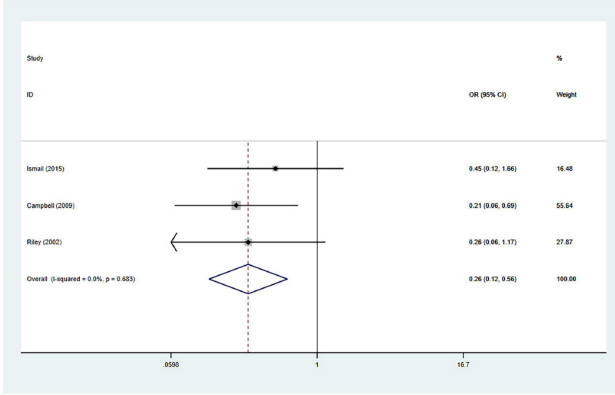


Figure 13. Summarized the effect of obstetric anesthesiologist effect on failed epidural anesthesia conversion. CI, confidence interval; or, odds ratio.

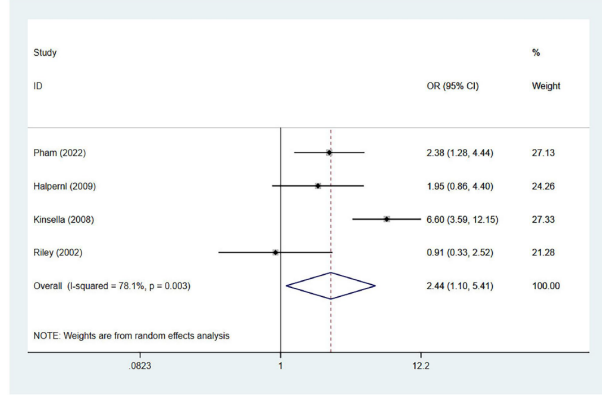


Figure 12. Summarized the effect of the urgent cesarean delivery on failed epidural anesthesia conversion. CI, confidence interval; or, odds ratio.

- výška
- váha
- věk matky
- urgentní císařský řez
- „neplánované“ dávky epidurální analgezie
- „neporodnický“ anesteziolog

zvyšují riziko selhání epidurální konverze

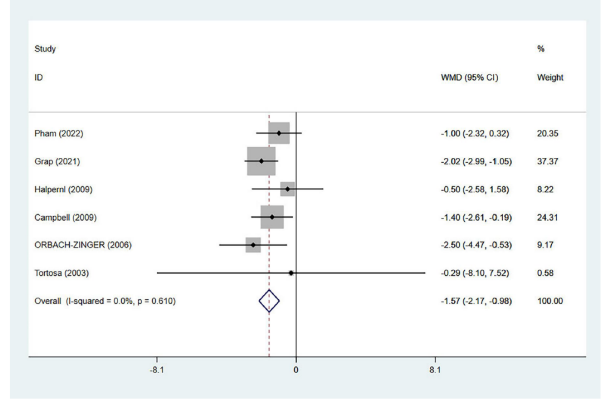


Figure 3. Summarized the effect of the age on failed epidural anesthesia conversion. WMD, weighted mean difference; CI, confidence interval.

Failed spinal anesthesia for cesarean delivery: prevention, identification and management

Thierry Girard[a] *and Georges L. Savoldelli*[b]

Curr Opin Anesthesiol 2024, 37:207–212

Purpose of review
There is an increasing awareness of the significance of intraoperative pain during cesarean delivery. Failure of spinal anesthesia for cesarean delivery can occur preoperatively or intraoperatively. Testing of the neuraxial block can identify preoperative failure. Recognition of the risk of high neuraxial block in repeat spinal in case of preoperative failure is important.

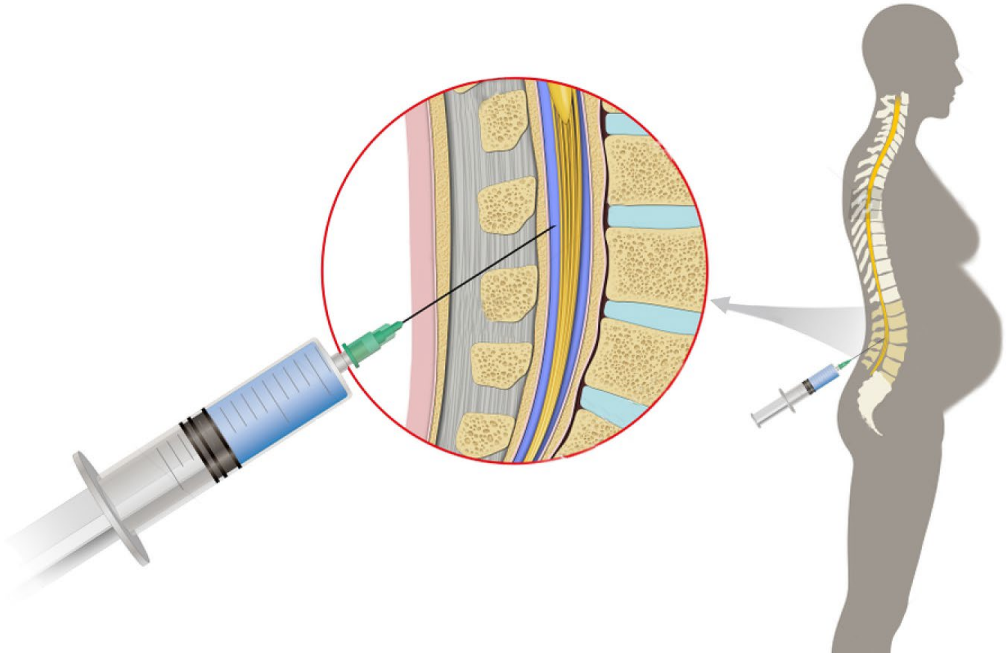
Recent finding
Knowledge of risk factors for block failure facilitates prevention by selecting the most appropriate neuraxial procedure, adequate intrathecal doses and choice of technique. Intraoperative pain is not uncommon, and neither obstetricians nor anesthesiologists can adequately identify intraoperative pain. Early intraoperative pain should be treated differently from pain towards the end of surgery.

Summary
Block testing is crucial to identify preoperative failure of spinal anesthesia. Repeat neuraxial is possible but care must be taken with dosing. In this situation, switching to a combined spinal epidural or an epidural technique can be useful. Intraoperative pain must be acknowledged and adequately treated, including offering general anesthesia. Preoperative informed consent should include block failure and its management.

Table 1. Factors associated with spinal anesthesia failure

Parameter	Odds ratio	95% Confidence interval
Previous CD	11.33	7.09–18.20
Tubal ligation	8.23	3.12–19.20
Peripartum hemorrhage	5.96	1.09–25.18
Size of spinal needle 27 G vs. 25 G	5.08	1.91–13.27
Height of lumbar puncture (L4/5 vs. L3/4 or L2/3)	1.81	1.06–3.10
Emergency CD	1.68	0.99–2.80
Surgical duration (per minute)	1.03	1.02–1.04
Body mass index (per kg/m2)	0.94	0.90–0.98
Gestational age (per week)	0.91	0.84–0.99
Dose of bupivacaine	0.54	0.38–0.75

CD, cesarean delivery.



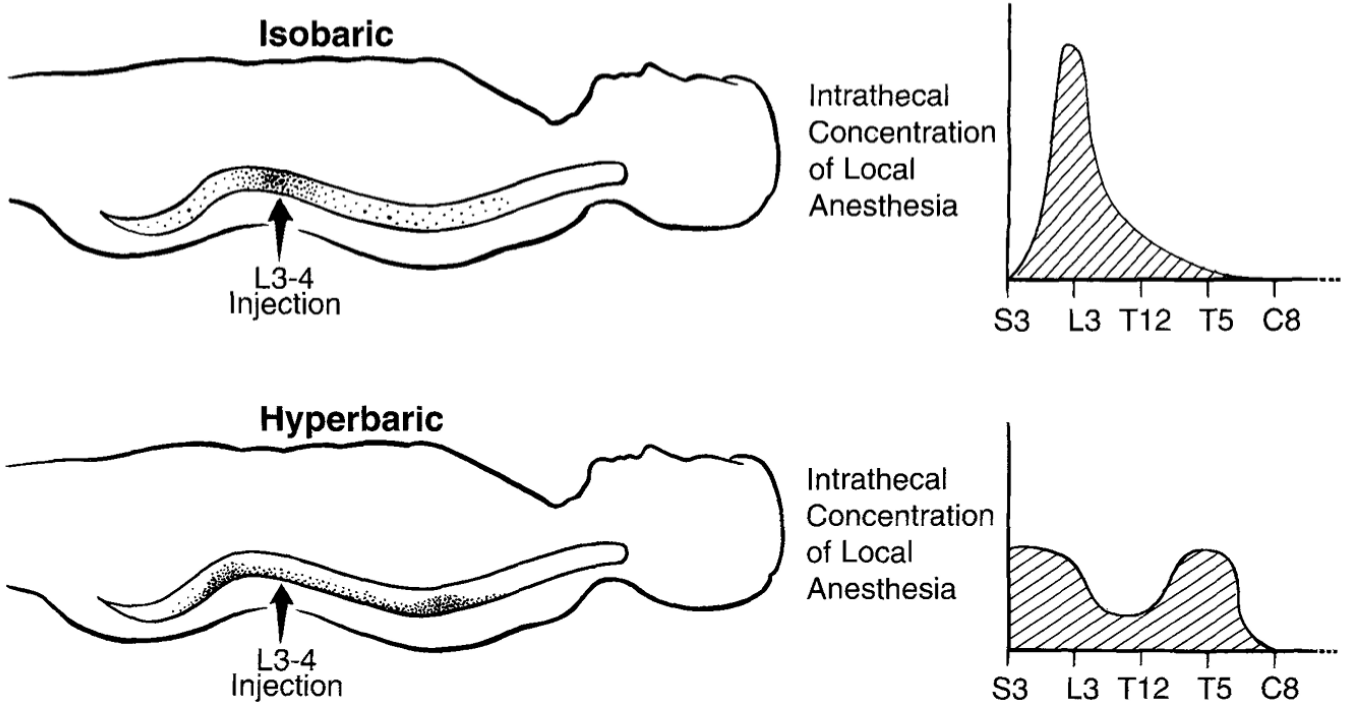


Fig 4. Distribution of plain local anesthetic (isobaric) in the subdural space.

Techniques in RegionalAnesthesia and Pain Management, Vol 1, No 3 (July), 199

MECHANISMS OF FAILED SPINAL ANESTHESIA

NYSORA Learning System

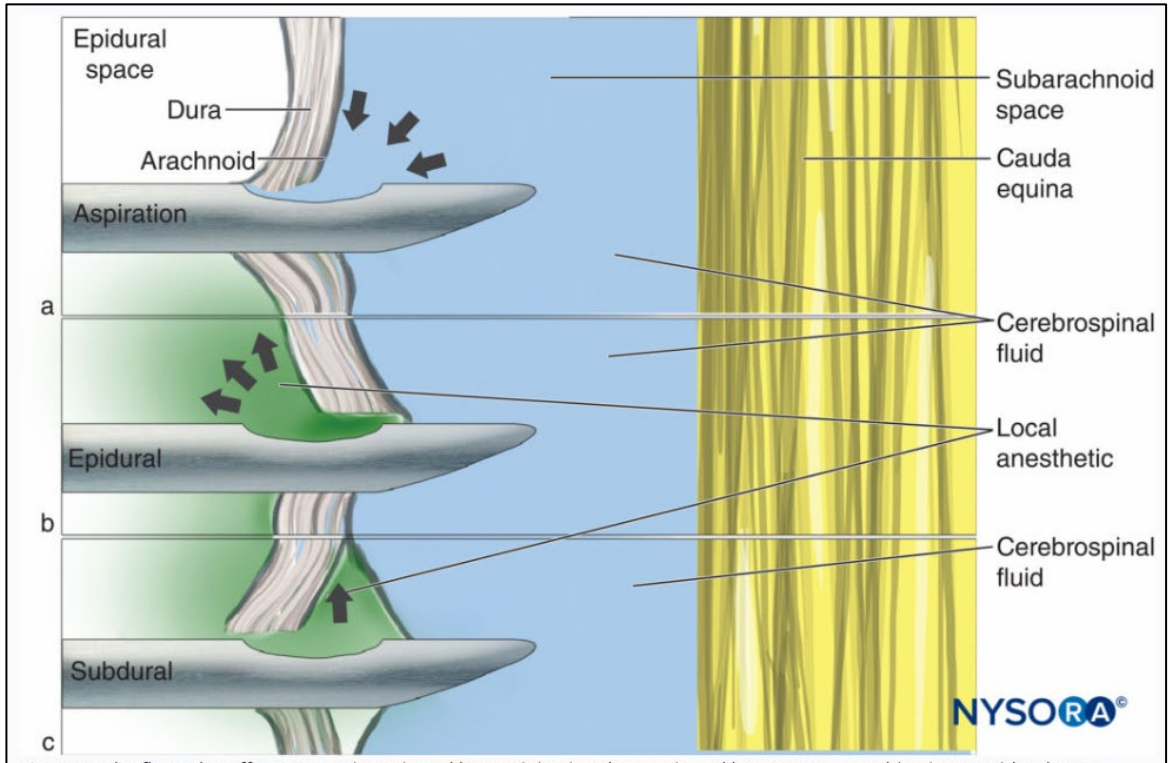


Figure 2. The flap valve effect: (A) CSF is aspirated but on injection the meningeal layers move, resulting in (B) epidural or (C) subdural injection of drug.

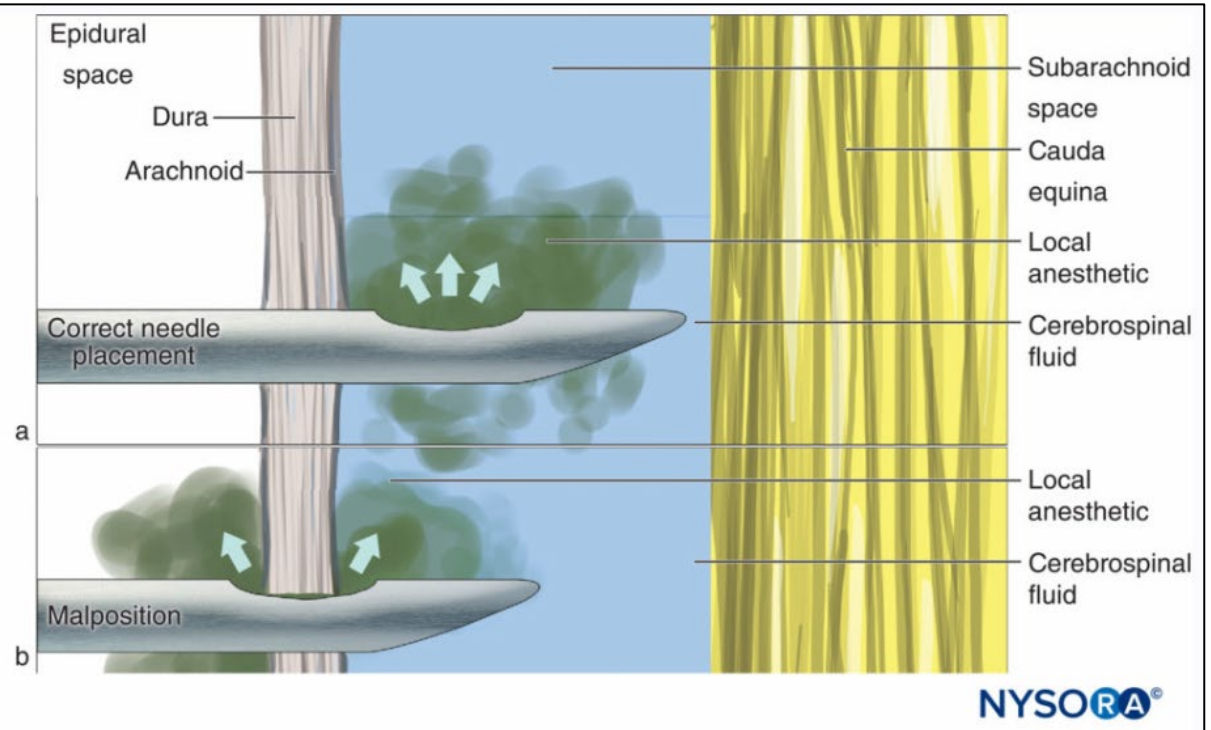


Figure 1. Correct needle placement with (A) all drug delivered to CSF and (B) malposition where some of the drug is lost into the epidural space.

Rizikové faktory selhání RA u SC

- Urgentní císařský řez
- …

URGENTNÍ nebo URGENTNÍ ?

- bradykardie plodu
- prolaps pupečníku
- masivní krvácení
- eklampsia
- ruptura dělohy
- …

International Journal of Women's Health

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ORIGINAL RESEARCH

Anesthesia for Cesarean Section: Retrospective Comparative Study

Naser Al-Husban[1]
Mohammad Sami Elmuhtaseb[1]
Hedaieh Al-Husban[2]
Mohammed Nabhan[3]
Hamza Abuhalaweh[3]
Yasmine Mohamed Alkhatib[3]
Maysa Yousef[3]
Bayan Aloran[3]
Yousef Elyyan[3]
Asma Alghazo[3]

[1]Faculty of Medicine, The University of Jordan, Amman, Jordan; [2]Al-Noor Fertility Center, Eye Specialty Hospital, Amman, Jordan; [3]Obstetrics and Gynecology Department, Jordan University Hospital, Amman, Jordan

Background: Cesarean section is a widely performed surgery.
Objective: To compare anesthetic types regarding feto-maternal outcomes.
Methods: Retrospective comparative study of 3599 cesarean sections (emergency and elective).
Conclusion: There was no statistically significant difference among the three types of anesthesia regarding neonatal intensive care admission and length of hospital stay for emergency and elective categories. APGAR score was higher with spinal than with general anesthesia in the emergency category with no significant difference in the elective category. More diclofenac sodium and paracetamol and less opioids were used after regional than after general anesthesia. Satisfaction was higher with epidural anesthesia.

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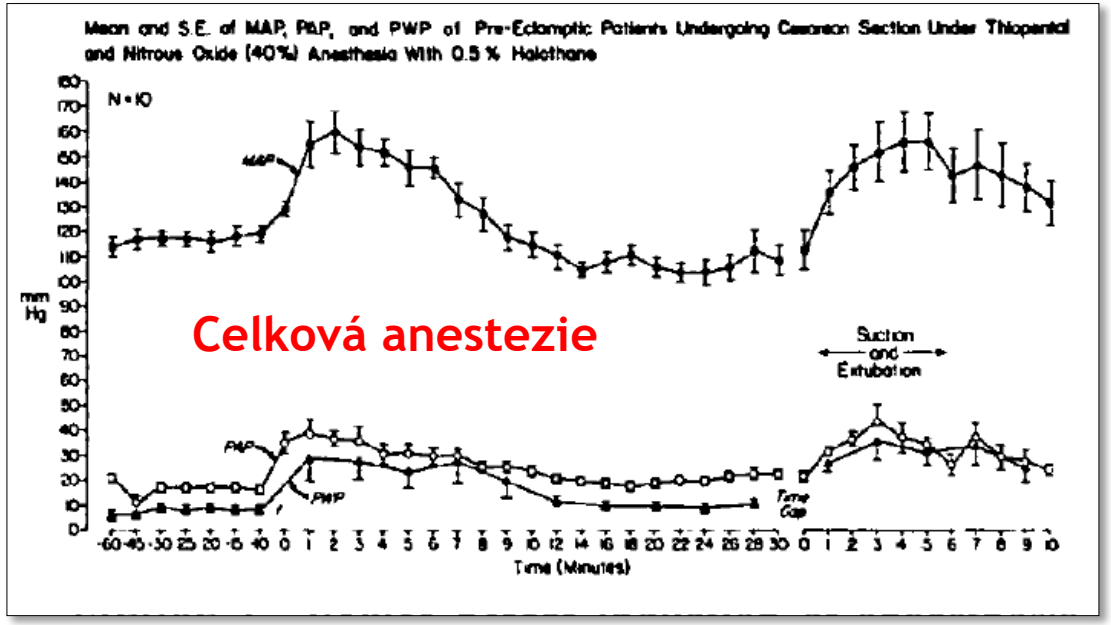
http://doi.org/10.2147/IJWH.S292434

International Journal of Women's Health 2021:13 141–152

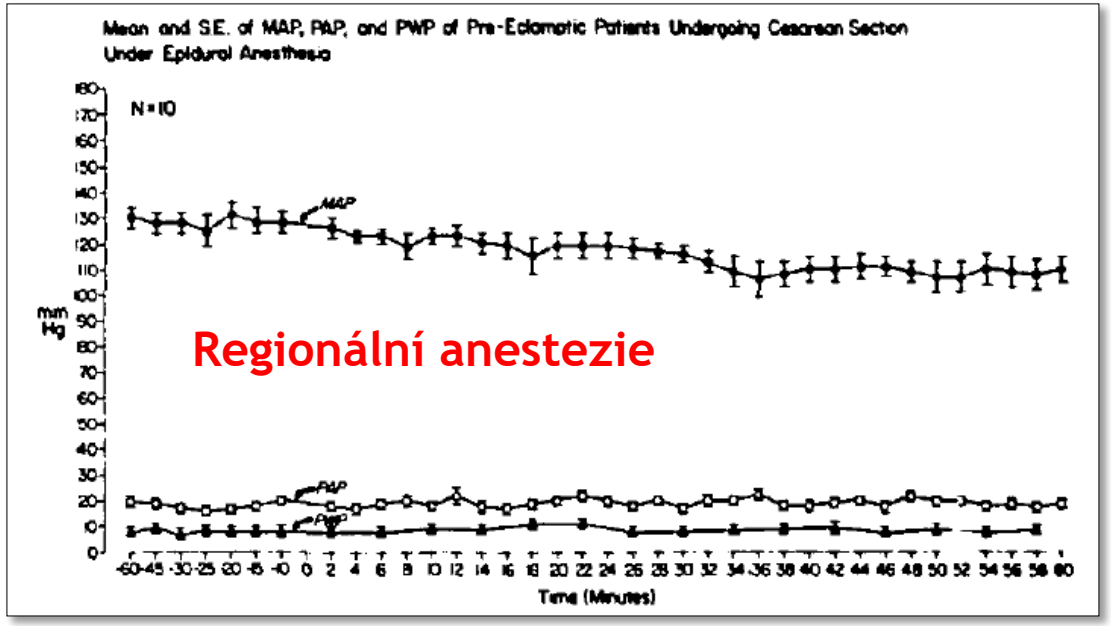
Table 3 Comparison of Different Anesthesia Types in Relation to Different Feto-Maternal Outcomes in the Emergency Cesarean Section Category

Variables	Emergency Category		
	Epidural	General	Spinal
	N=314	N=278	N=659
Age; mean (SD)	30.6 (5.5)	31.9 (5.7)	32.5 (5.6)
LOS (days)	3.6 (2.6)	3.2 (2.1)	3.5 (2.4)
Operative time (min)	43.03 (13.9)	46.4 (21.0)	44.2 (15.2)
EBL (mL)	730.3 (184.7)	877.3 (709)	733.1 (213.5)
Apgar-1 min	7.7 (1.1)	7.5 (1.4)	7.88 (0.67)
Apgar-5 min	8.9 (0.43)	8.9 (0.68)	8.98 (0.37)
Diclofenac sodium	2.1(1.7)	1.96 (1.48)	2.3 (1.9)
Morphine sulphate	0.02 (0.25)	0.15 (0.47)	0.03 (0.19)
Pethidine HCL	1.75 (1.53)	1.62 (1.4)	1.6 (1.4)
Paracetamol	4.3 (3.2)	4.3 (4.5)	4.5 (3.5)
Tramadol HCL	0.03 (0.28)	0.02 (0.16)	0.02 (0.14)
Previous CS			
Yes	47 (15%)	108 (38.8%)	326 (49.5%)
No	267 (85%)	170 (61.2%)	333 (50.5%)
NICU admission			
Yes	143 (45.5%)	130 (46.8%)	277 (42.0%)
No	171(54.5%)	148 (53.2%)	382 (58.0%)

Abbreviations: SD, standard deviation; N, number; LOS, length of stay; min, minute; EBL, estimated blood loss; mL, milliliter; HCL, hydrochloride; CS, cesarean section; NICU, neonatal intensive care unit.



Celková anestezie



Regionální anestezie

Co je jinak u emergentního SC ?

Liší se technika pro urgentní SC od techniky pro elektivní SC?

- Spinál
- Epidurál
- Combined spinal-epidural

- Levobupivakain/bupivakain
- Lidokain

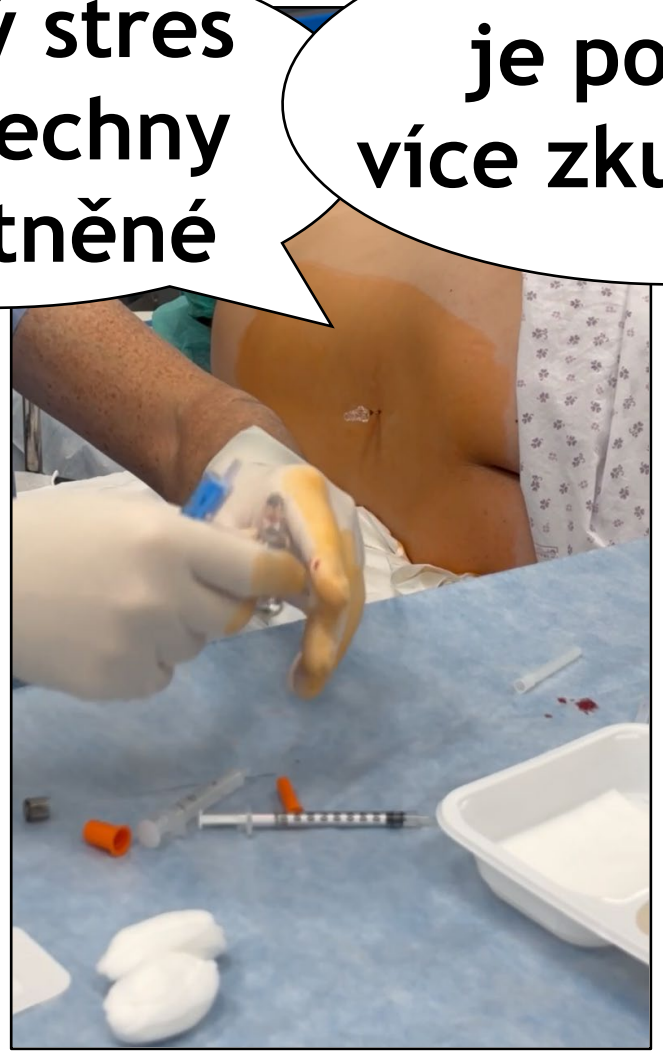
- Stejný pacient, anesteziolog i operační sál…

Co je jinak u emergentního SC

Vysoký stres pro všechny zúčastněné

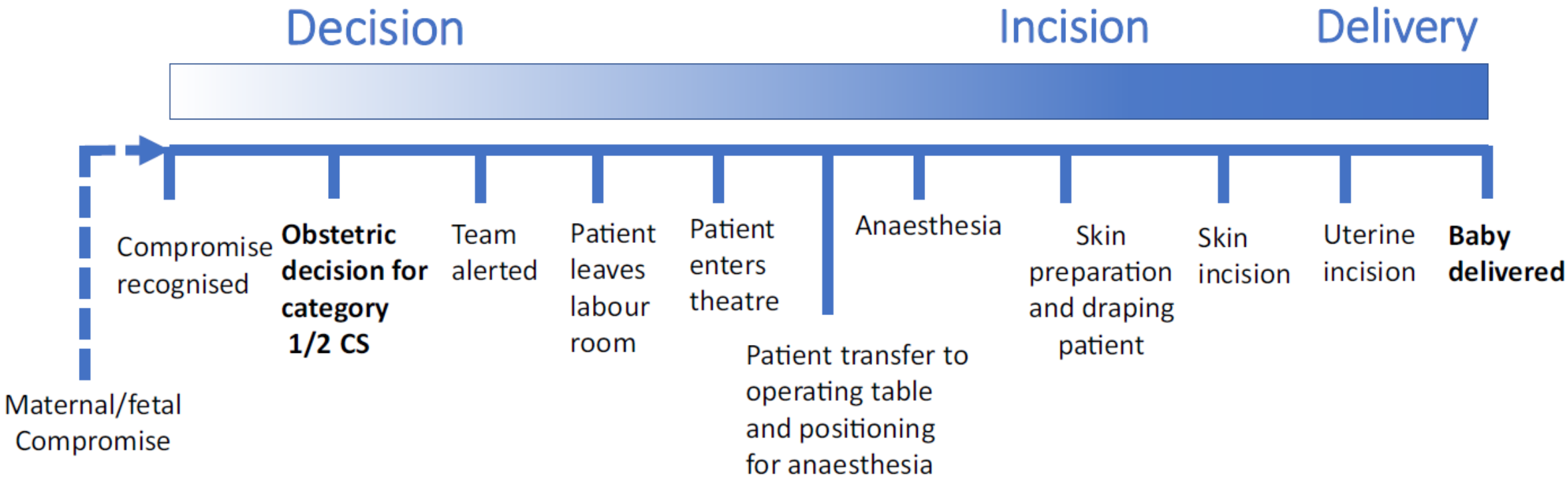
je potřeba více zkušeností

sebedůvěra anesteziologa



rychlé rozhodování

NEDOSTATEK ČASU



Timeline for decision-to-delivery.

May et al. Anaesthesia 2022, 77, 96–104

- Celková anestezie za 5-6 min

- Spinální anestezie za 8-12 min





- Spinální anestezie 8-12 min






"aspirační„
identifikace moku


delší čas identifikace moku v jehle
= lepší ověření, že vše je v pořádku

Rapid sequence spinal anesthesia

RSSA was established with 26 G pencil point spinal needle in L3-L4 or one space below in a sitting position with 2.5 ml of hyperbaric bupivacaine (0.5%) without adjuvant after cleaning the skin with a single wipe of 0.5% chlorhexidine.

Drug kit for SA was prepared aseptically, and the anesthesiologist who performed the procedure was ready with a sterile gown and gloves before the patients came to the operating room.

Bhattacharya et al. J Obstet Anaesth Crit Care 2016;6:75-80.

Rapid sequence spinal anesthesia versus general anesthesia: A prospective randomized study of anesthesia to delivery time in category-1 caesarean section

Susmita Bhattacharya, Sarmila Ghosh, Uddalak Chattopadhya, Dona Saha, Subrata Bisai, Mrityunjoy Saha

Department of Anaestehsiology, Burdwan Medical College, Burdwan, West Bengal, India

J Obstet Anaesth Crit Care 2016;6:75-80

ABSTRACT

Results: The time for anesthesia, surgical readiness, and emergence were significantly longer ($P < 0.001$) in rapid sequence general anesthesia group as compared to rapid sequence spinal anesthesia group (144.80 ± 3.42 vs 131.20 ± 3.40 s, 178.76 ± 4.09 vs 169.93 ± 3.08 s, 512.13 ± 34.33 vs 222.10 ± 12.80 s). No significant difference was found in incision to delivery time and Apgar scores between the two groups.

Conclusion: Because anesthesia to delivery time is shorter in rapid sequence spinal anesthesia, this technique may be equivalent to rapid sequence general anesthesia in category-1 emergency caesarean section.

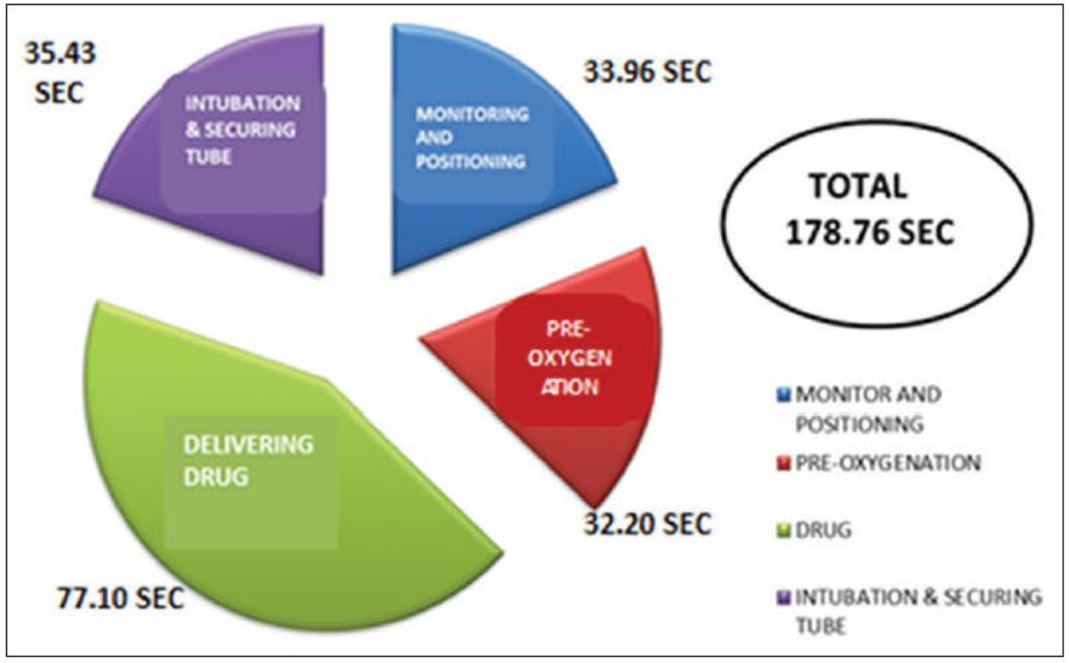


Figure 3: Components of time (seconds) for surgical readiness in RSGA

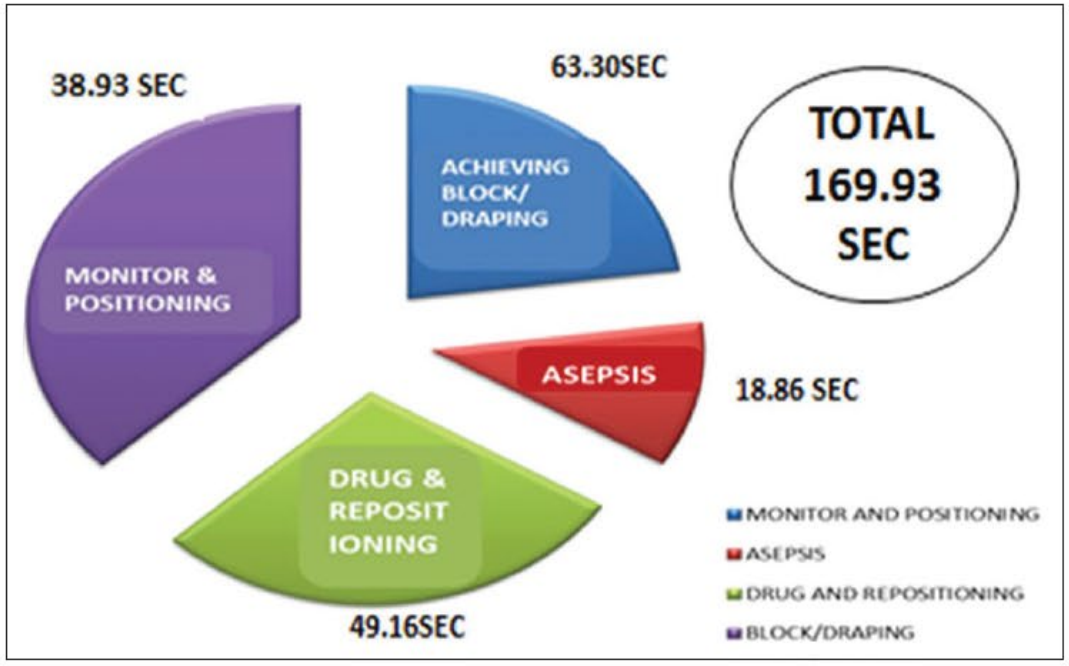


Figure 4: Components of time (seconds) for surgical readiness in RSSA

Celková anestezie

Spinální anestezie

Bhattacharya et al. J Obstet Anaesth Crit Care 2016;6:75-80.

TAKE HOME MESSAGE

- Použijte techniku, se kterou máte nejlepší zkušenosti
- 26G jehla, heavy bupivakain
- Vyšší dávka je lepší - hypotenze se řeší mnohem snadněji než nedostatečná anestezie
- Buďte sebekritičtí - rozhodněte se pro CA brzy, pokud se věci nedaří
- Urgentní situace jsou pro pacienta velmi stresující, poskytněte mu podporu, vysvětlete každý krok, aby věděl, co ho čeká
- Zvažte podání mírných anxiolytik (např. midazolam)

Anaesthesia 2018, 73, 825–831 doi:10.1111/anae.14296

Operating room-to-incision interval and neonatal outcome in emergency caesarean section: a retrospective 5-year cohort study*

E. Palmer,[1,2] S. Ciechanowicz,[1] A. Reeve,[3] S. Harris,[3,4] D. J. N. Wong[5] and P. Sultan[3,4]

1 Registrar, 3 Consultant, Department of Anaesthesia, University College London Hospital, London, UK
2 Doctoral Student, 4 Honorary Senior Lecturer, Division of Medicine, University College London, London, UK
5 Research Fellow, Surgical Outcomes Research Centre, University College London / University College London, UK

Summary

We conducted a 5-year retrospective cohort study on women undergoing caesarean section to investigate factors influencing the operating room-to-incision interval. Time-to-event analysis was performed for category-1 caesarean section using a Cox proportional hazards regression model. Covariates included: anaesthetic technique; body mass index; age; parity; time of delivery; and gestational age. Binary logistic regression was performed for 5-min Apgar score ≥ 7. There were 677 women who underwent category-1 caesarean section and who met the entry criteria. Unadjusted median (IQR [range]) operating room-to-incision intervals were: epidural top-up 11 (7–17 [0–87]) min; general anaesthesia 6 (4–11 [0–69]) min; spinal 13 (10–20 [0–83]) min; and combined spinal-epidural 24 (13–35 [0–75]) min. Cox regression showed general anaesthesia to be the most rapid method with a hazard ratio (95%CI) of 1.97 (1.60–2.44; $p < 0.0001$), followed by epidural top-up (reference group), spinal anaesthesia 0.79 (0.65–0.96; $p = 0.02$) and combined spinal-epidural 0.48 (0.35–0.67; $p < 0.0001$). Underweight and overweight body mass indexes were associated with longer operating room-to-incision intervals. General anaesthesia was associated with fewer 5-min Apgar scores ≥ 7 with an odds ratio (95%CI) of 0.28 (0.11–0.68; $p < 0.01$). There was no difference in neonatal outcomes between the first and fifth quintiles for operating room-to-incision intervals. General anaesthesia is associated with the most rapid operating room-to-incision interval for category-1 caesarean section, but is also associated with worse short term neonatal outcomes. Longer operating room-to-incision intervals were not associated with worse neonatal outcomes.

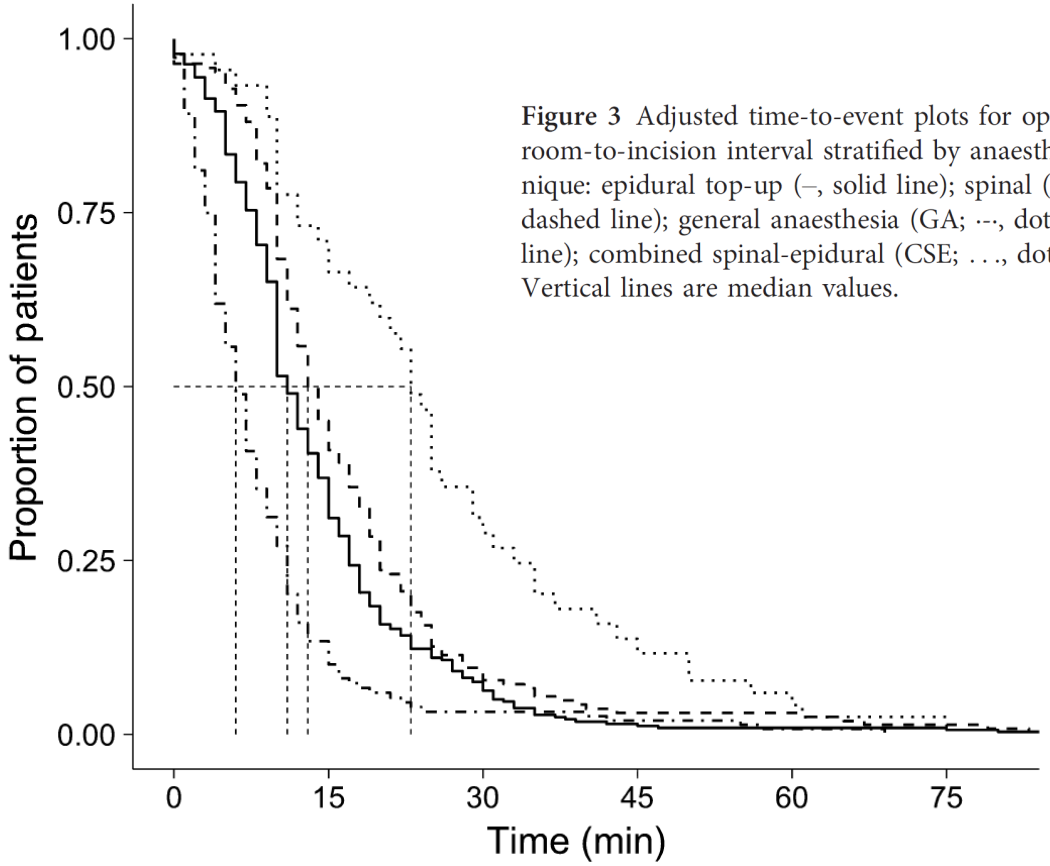


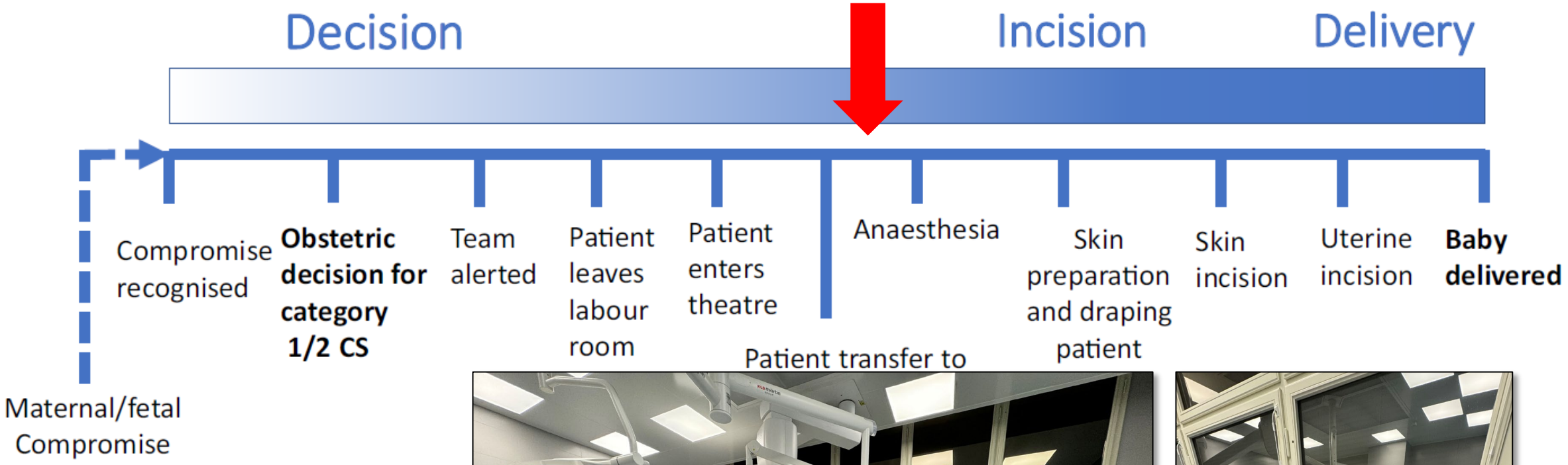
Figure 3 Adjusted time-to-event plots for operating room-to-incision interval stratified by anaesthetic technique: epidural top-up (–, solid line); spinal (- -, dashed line); general anaesthesia (GA; ·-·, dot-dashed line); combined spinal-epidural (CSE; . . ., dotted line). Vertical lines are median values.

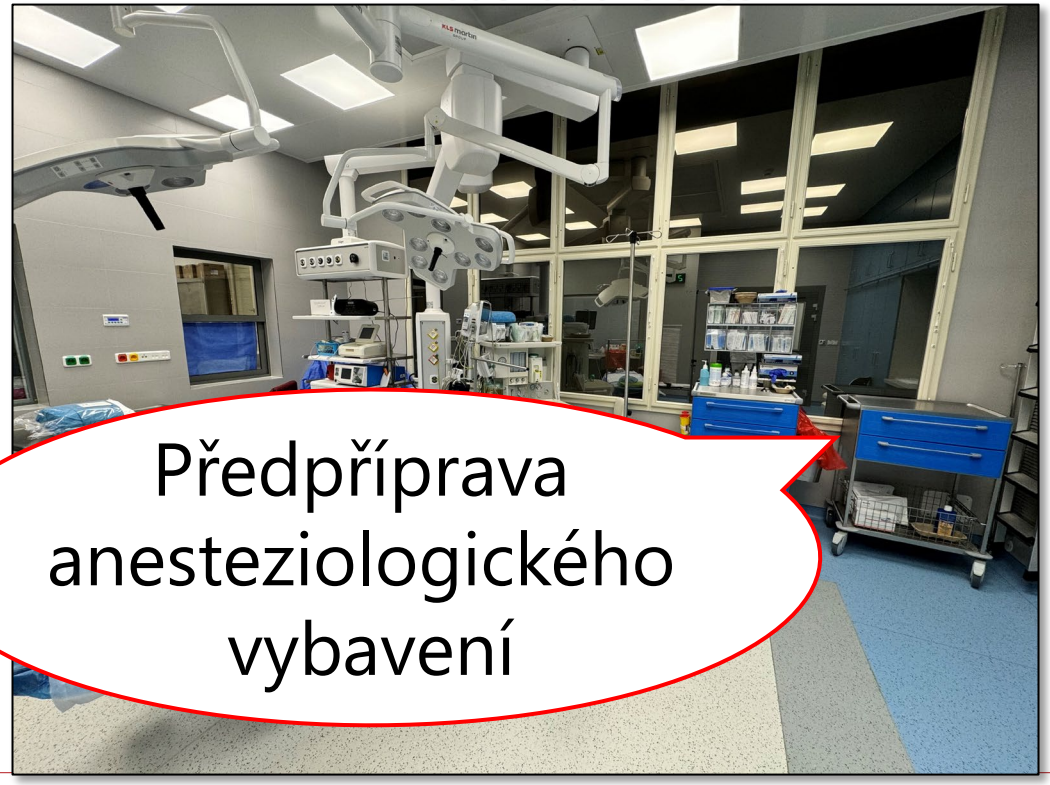
Table 1 Distribution of covariates according to anaesthetic type in category-1 caesarean section. Values are median (IQR [range]), mean (SD) or number (proportion).

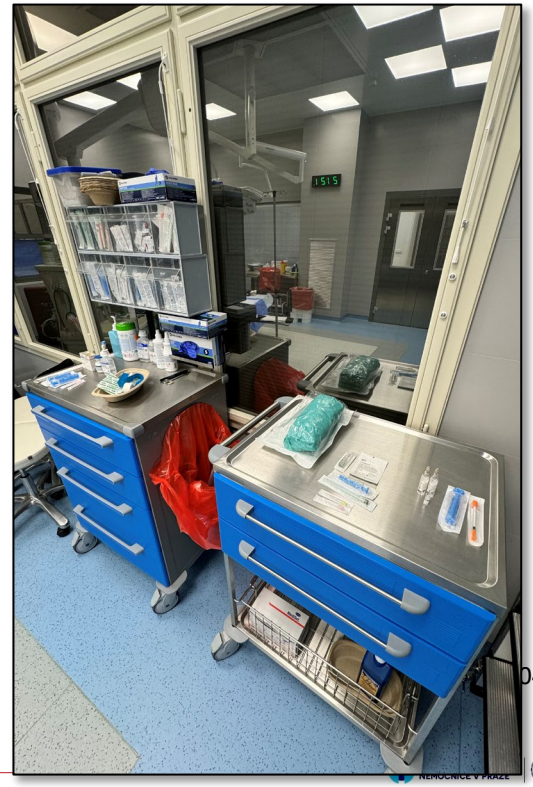
	Epidural top-up n = 317	General n = 147	Spinal n = 167	Combined spinal-epidural n = 46
Operating room-to-incision interval; min	11 (7–17 [0–87])	6 (4–11 [0–69])	13 (10–20 [0–83])	24 (13–35 [0–75])
5-min Apgar score	10 (9–10 [3–10])	9 (8–10 [0–10])	10 (9–10 [6–10])	10 (9–10 [7–10])

TAKE HOME MESSAGE 2

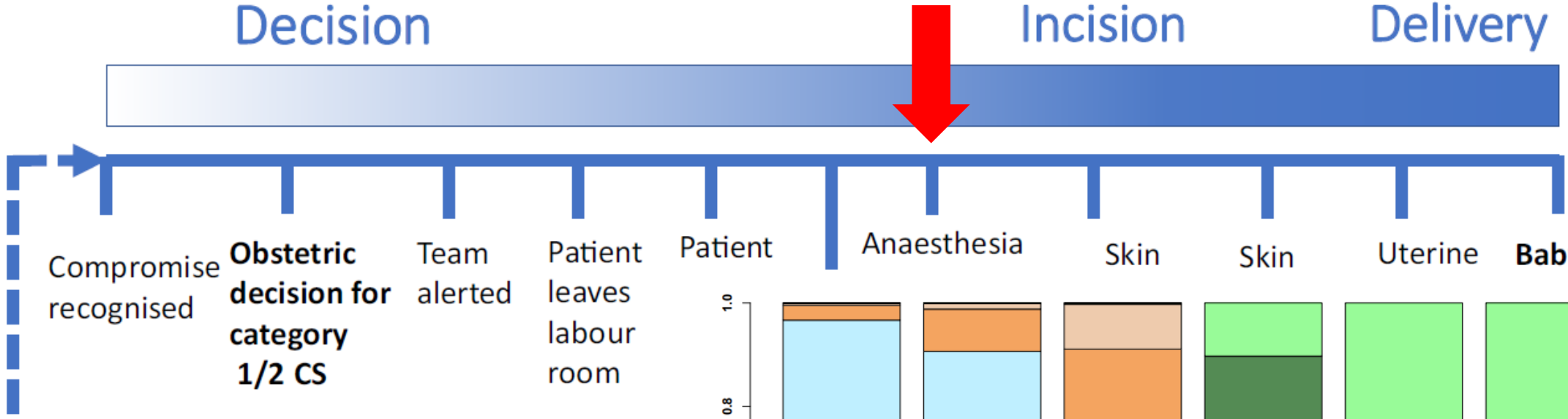
- O způsobu anestezie rozhoduje anesteziolog, nikoli porodník!
- Zvažte čas, který máte k dispozici, přání rodiček a své schopnosti!
- Komunikujte s ostatními, mluvte s porodníkem!







Předpříprava anesteziologického vybavení



Anaesthesia 2020, 75, 674-682 doi:10.1111/anae.14966

Choice of local anaesthetic for epidural caesarean section: a Bayesian network meta-analysis

M. M. Reschke,[1] D. T. Monks,[2] S. S. Varaday,[3] Y. Ginosar,[4] A. Palanisamy[3] and P. M. Singh[2]

1 Assistant Professor, Division of Obstetric Anesthesia, Johns Hopkins University, Baltimore, MD, USA
2 Assistant Professor, 3 Associate Professor, 4 Professor, Division of Obstetric Anesthesia, Department of Anesthesiology, Washington University in St. Louis, MI, USA

Summary

Rapid-onset epidural local anaesthesia can avoid general anaesthesia for caesarean delivery. We performed a Bayesian network meta-analysis of direct and indirect comparisons to rank speed of onset of the six local anaesthetics most often used epidurally for surgical [illegible] caesarean [illegible] searched Google Scholar, PubMed, EMBASE, Ovid, CINAHL and CENTRAL to June 2019. We analysed 24 randomised controlled trials with 1280 women. The mean (95%CrI) onset after bupivacaine 0.5% was 19.8 (17.3–22.4) min, compared with which the mean (95%CrI) speed of onset after lidocaine 2% with bicarbonate, 2-chloroprocaine 3% and lidocaine 2% was 6.4 (3.3–9.6) min faster, 5.7 (3.0–8.3) min [illegible] respectively. Speed of onset was similar to bupivacaine 0.5% after ropivacaine 0.75% and l-bupivacaine 0.5% at 1.6 (−1.4 to 4.8) min faster and 0.4 (−2.2 to 3.0) min faster, respectively. The rate (95%CrI) of intra-operative hypotension was least after l-bupivacaine 0.5%, 315 (236–407) per 1000, and highest after 2-chloroprocaine 3%, 516 (438–594) per 1000. The rate (CrI) of intra-operative supplementation of analgesia was least after ropivacaine 0.75% 48 (19–118) per 1000 and highest after 2-chloroprocaine 3%, 250 (112–569) per 1000.

Použití nejrychlejších anestetik

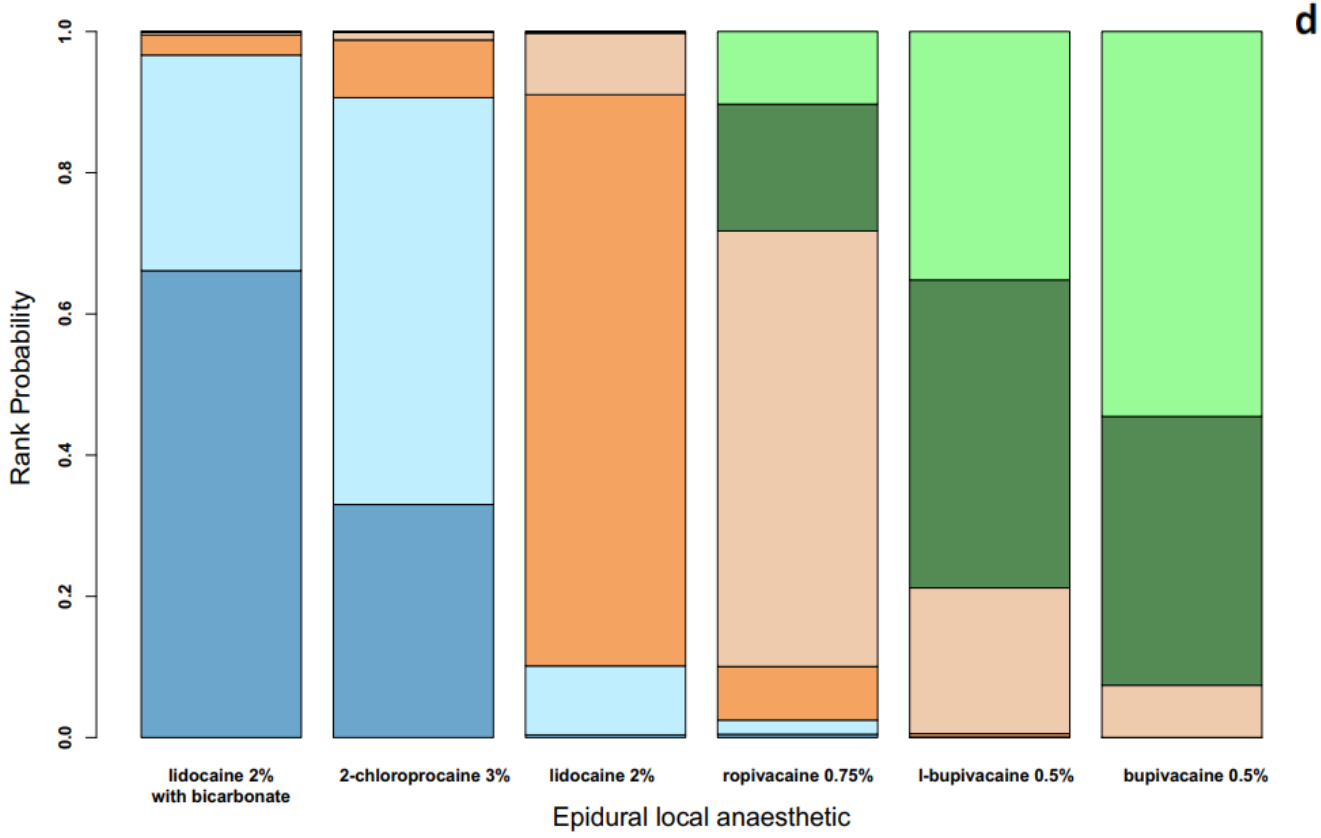


Figure 3 A rankogram of the probabilities that the speed of onset for six local anaesthetics was rank: first (■); second (□); third (■); fourth (□); fifth (■); and sixth (□).

Reschke et al. Anaesthesia 2020, 75, 674–682

International Journal of Obstetric Anesthesia 46 (2021) 102977

The extension of epidural blockade for emergency caesarean delivery: a survey of UK practice

A.L. Richardson S. Bhuptani D.N. Lucas
London North West University Healthcare NHS Trust, London, UK

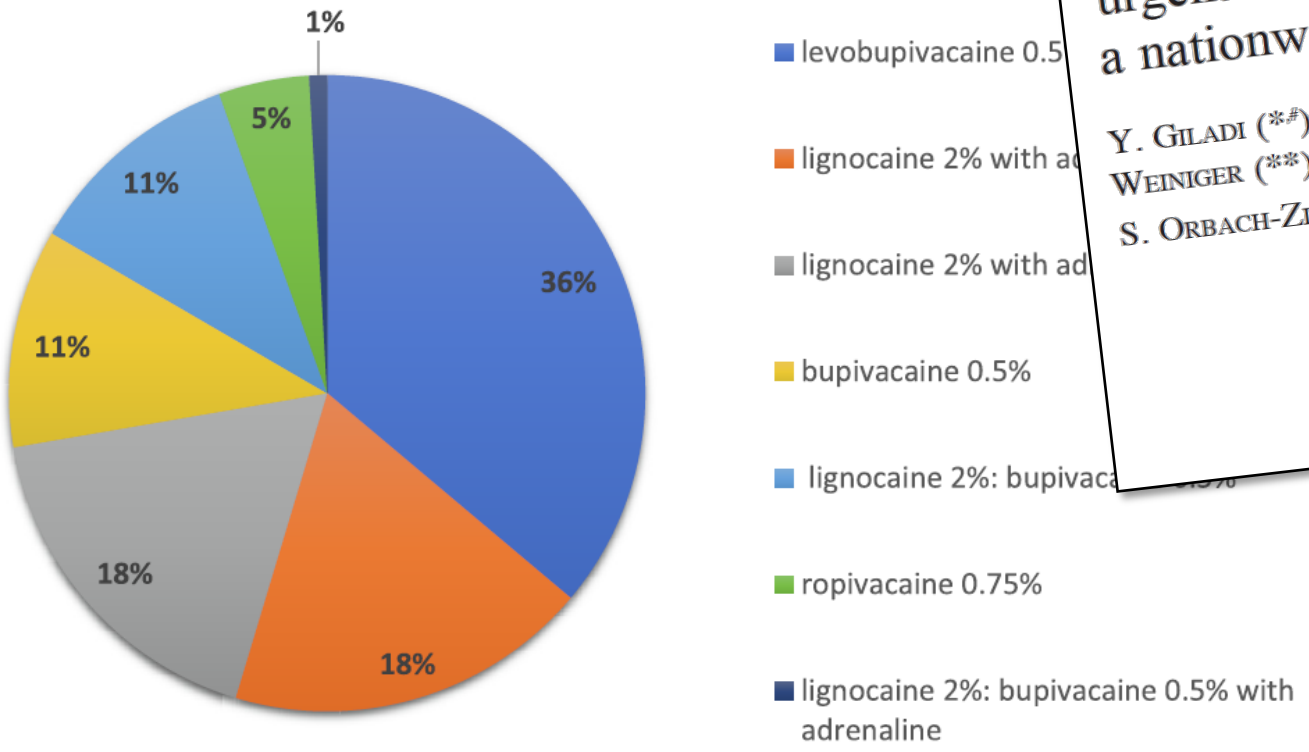
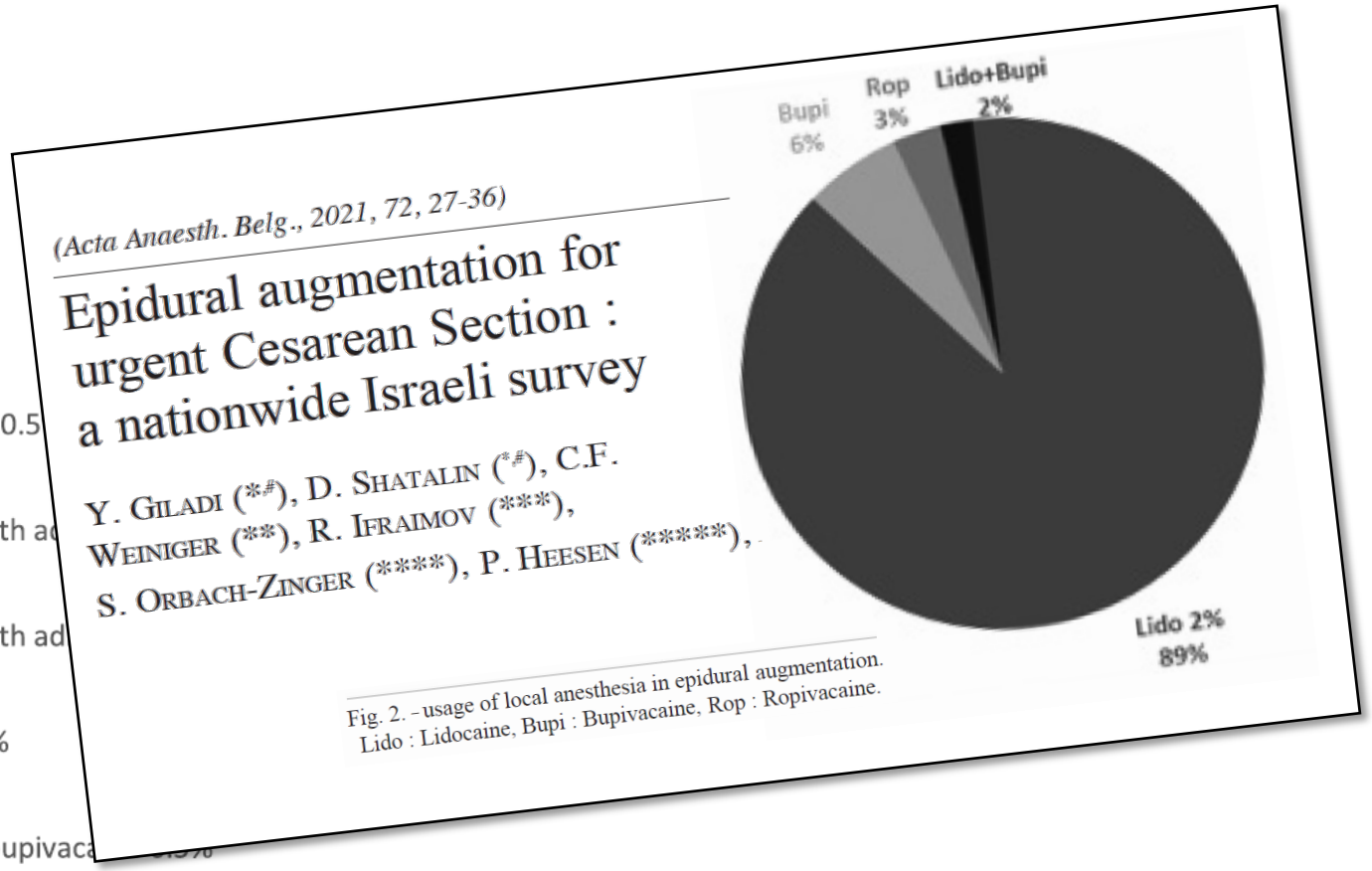


Fig. 1. Choice of local anaesthetic to extend labour epidural analgesia for caesarean delivery



CAN J ANESTH 2001 / 48: 9 / pp 890–893

The Trendelenburg position increases the spread and accelerates the onset of epidural anesthesia for Cesarean section

[La position de Trendelenburg permet une plus grande distribution de l'anesthésie épidurale et en accélère le début d'action lors de la césarienne]

Ahmad R. Setayesh MD,* Ali R. Kholdebarin MD,* Masoud Saber Moghadam MD,* Hamid R. Setayesh MD†

Purpose: *The effect of position on the spread and the onset time of epidural anesthesia has not been well documented. This study was undertaken to assess the effect of modified Trendelenburg position on the spread of epidural anesthesia for Cesarean section.*

Methods: *Seven hundred thirty-nine parturients underwent epidural anesthesia for elective or emergent Cesarean section. Patients were divided into two groups in a randomized-controlled study. All patients received 20 mL of 2% lidocaine injected through a 19G epidural needle, a standard technique in our institution. During induction of epidural anesthesia, the first group was placed in 15 Trendelenburg with 10 head-up position and the second in the horizontal position. The onset time and the level of anesthesia, patients' vital signs, and Apgar score were recorded in both groups.*

Results: *There were no significant differences in vital signs, oxygen saturation and Apgar score between the two groups. The results show significant differences in the time of onset (on average four minutes faster in the modified Trendelenburg position group) (P <0.001), and in achieving T5 level sensory blockade (97.5% vs 42.8%) between the modified Trendelenburg and horizontally positioned pregnant women.*

Conclusion: *This study demonstrates that the modified Trendelenburg position has a significant effect on the spread and the onset time of single shot epidural anesthesia, and can be used safely in term parturients for emergency or elective Cesarean section.*

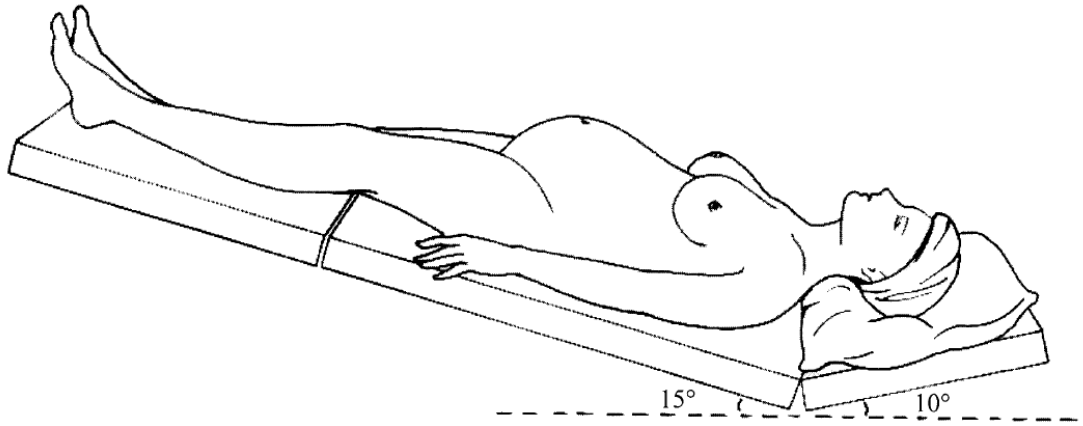


FIGURE 1 Modified Trendelenburg position.

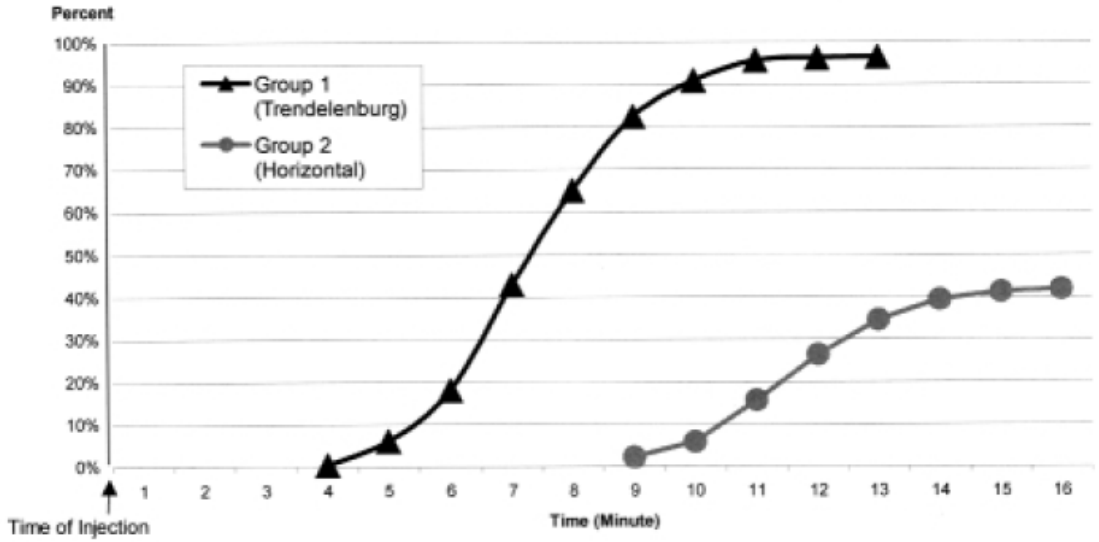
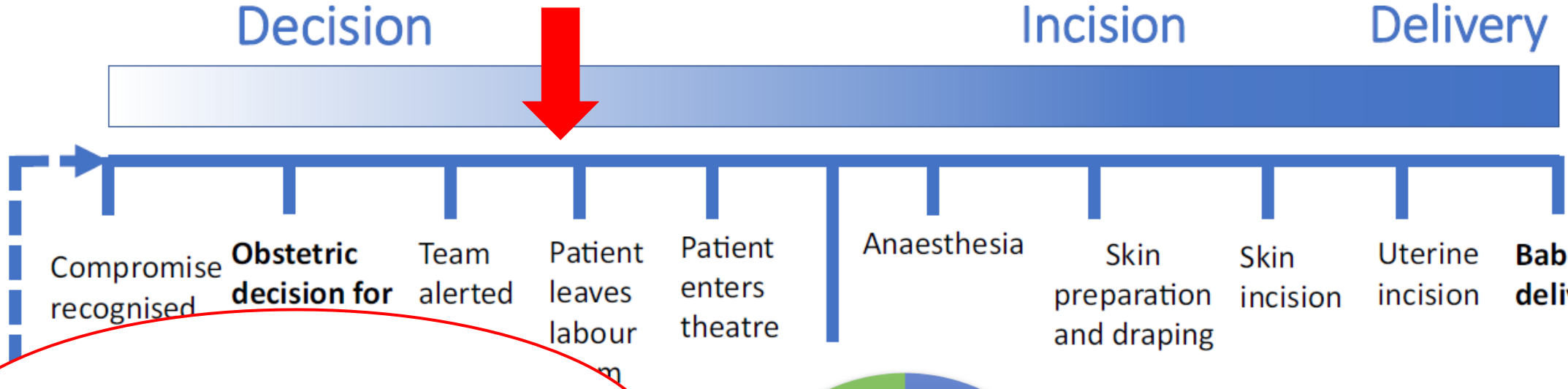


FIGURE 2 Percentage of subjects in each group achieving T5 sensory block over time.



Top-up epidurální dávka na porodním boxu

International Journal of Obstetric Anesthesia 46 (2021) 102977

The extension of epidural blockade fo emergency caesarean delivery: a survey of UK practice

A.L. Richardson S. Bhuptani D.N. Lucas
London North West University Healthcare NHS Trust, London, UK

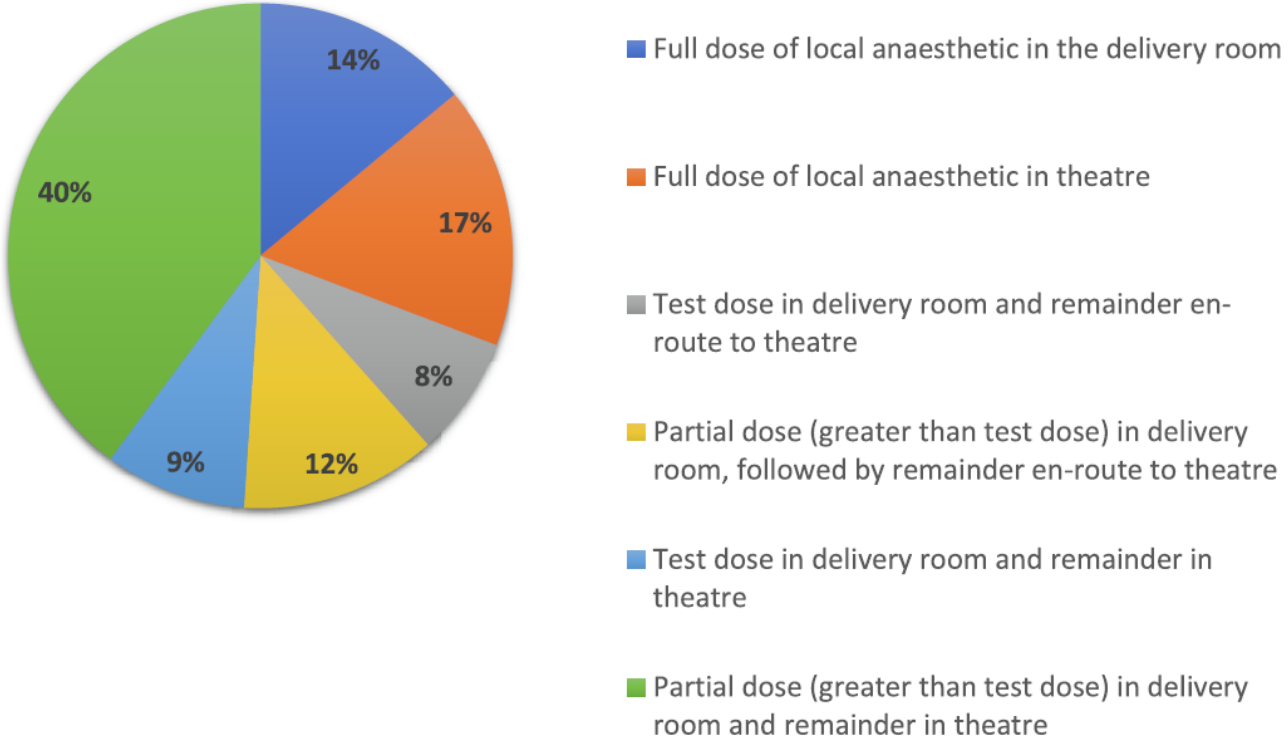
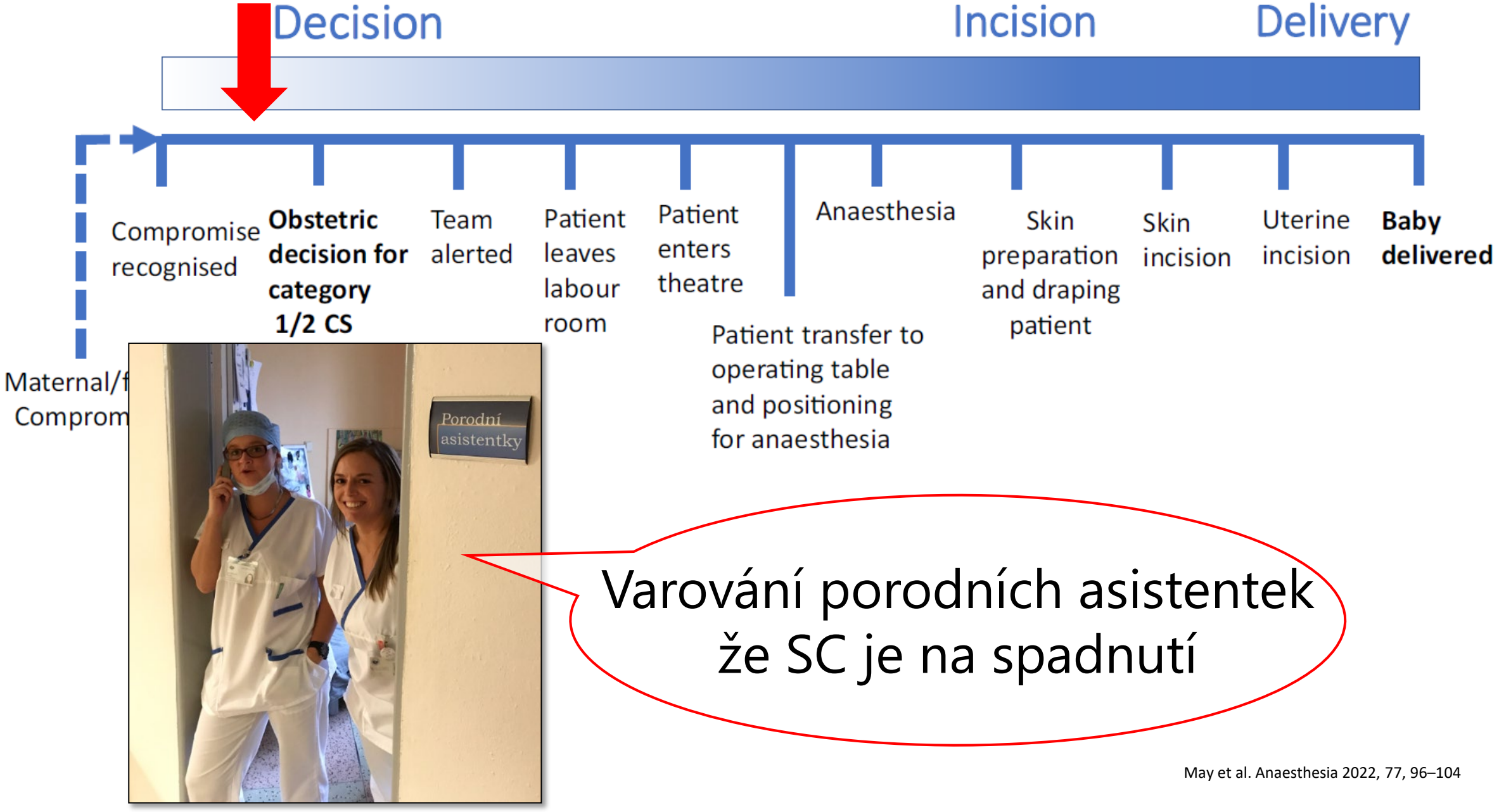


Fig. 2. Location of administration of local anaesthetic for epidural top-up for caesarean delivery



May et al. Anaesthesia 2022, 77, 96–104

TAKE HOME MESSAGE 3

- U top-up epidurálu lidokain 2%
- Buďte vždy připraveni na selhání blokády
- Případné pochybnosti okamžitě komunikujte s porodníkem a matkou
- Vždy mějte plán B

- CAVE: „outliers“

British Journal of Anaesthesia 102 (1): 90–6 (2009)
doi:10.1093/bja/aen321 Advance Access publication November 16, 2008

BJA

OBSTETRICS

Supplementary oxygen for emergency Caesarean section under regional anaesthesia†‡

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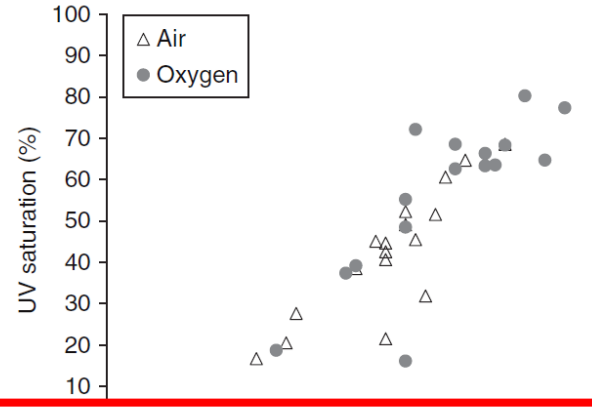
[1]*Department of Anaesthesia and Intensive Care and* [2]*Department of Obstetrics and Gynaecology, The*

Background. Controversy still exists if the administration of supplementary oxygen patients having emergency Caesarean section (CS) under regional anaesthesia is beneficial potentially harmful. Therefore, in a prospective double-blinded study, we randomized patie having emergency CS under regional anaesthesia to receive either air or 60% oxygen u delivery and compared the effects on fetal oxygenation and lipid-peroxidation in the mot and baby.

Methods. We recruited 131 women having emergency CS under regional anaesthesia. Eit 21% (air group) or 60% oxygen (oxygen group) was administered using a Venturi-type facem until delivery. We compared the oxygen exposure duration, umbilical arterial (UA) and ven (UV) blood gases and oxygen content, and plasma concentration of 8-isoprostane. Subanal was performed according to whether or not fetal compromise was considered present.

Results. Data from 125 patients were analysed. For the oxygen group *vs* the air group, th were greater values for UA Po_2 [mean 2.2 (SD 0.5) *vs* 1.9 (0.6) kPa, P=0.01], UA O_2 cont [6.6 (2.5) *vs* 4.9 (2.8) ml dl^{-1}, P=0.006], UV Po_2 [3.8 (0.8) *vs* 3.2 (0.8) kPa, P<0.0001], and O_2 content [12.9 (3.5) *vs* 10.4 (3.8) ml dl^{-1}, P=0.001]. There was no difference between groups in maternal, UA, or UV 8-isoprostane concentration. Apgar scores and UA pH w similar between the groups. Similar changes were observed regardless of whether fetal cc promise was considered present (n=37) or not (n=88).

Conclusions. Breathing 60% oxygen during emergency CS under regional anaesthesia increa fetal oxygenation with no associated increase in lipid-peroxidation in the mother or fetus.



Conclusions. Breathing 60% oxygen during emergency CS under regional anaesthesia increased fetal oxygenation with no associated increase in lipid-peroxidation in the mother or fetus.

	Air group (n=44)	Oxygen group (n=44)	P-value	Air group (n=20)	Oxygen group (n=17)	P-value
O_2 exposure duration (min)	31	30	0.66	16	19	0.22
Maternal vein						
Baseline 8-isoprostane (pg ml^{-1})	152.1 (62.5)	133.0 (48.4)	0.19	153.7 (40.0)	151.6 (35.6)	0.19
Delivery 8-isoprostane (pg ml^{-1})	210.0 (95.0)	217.2 (76.0)	0.74	258.4 (113.5)	294.2 (126.0)	0.44
Umbilical artery						
Po_2 (kPa)	2.0 (0.6)	2.2 (0.5)	0.06	1.7 (0.4)	1.8 (0.5)	0.39
Oxyhaemoglobin saturation (%)	23.8 (14.0)	31.4 (11.0)	<0.01	16.6 (8.0)	22.3 (10.7)	0.08
O_2 content (ml dl^{-1})	4.9 (2.8)	6.6 (2.5)	<0.01	3.4 (1.6)	4.8 (2.3)	<0.05
8-isoprostane (pg ml^{-1})	412.7 (156.8)	469.5 (191.0)	0.12	551.2 (304.7)	481.8 (195.9)	0.49
Umbilical vein						
Po_2 (kPa)	3.3 (0.8)	3.9 (0.8)	<0.01	2.9 (0.7)	3.4 (0.8)	0.04
Oxyhaemoglobin saturation (%)	54.3 (17.2)	65.0 (14.9)	<0.01	42.1 (16.7)	53.7 (21.6)	0.04
O_2 content (ml dl^{-1})	11.1 (3.9)	13.4 (2.8)	<0.01	8.7 (3.2)	11.5 (4.7)	0.04
8-isoprostane (pg ml^{-1})	392.2 (162.7)	473.8 (195.8)	0.28	501.9 (225.6)	465.0 (191.7)	0.65

Values are mean (SD)

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higher umbilical oxygen content.

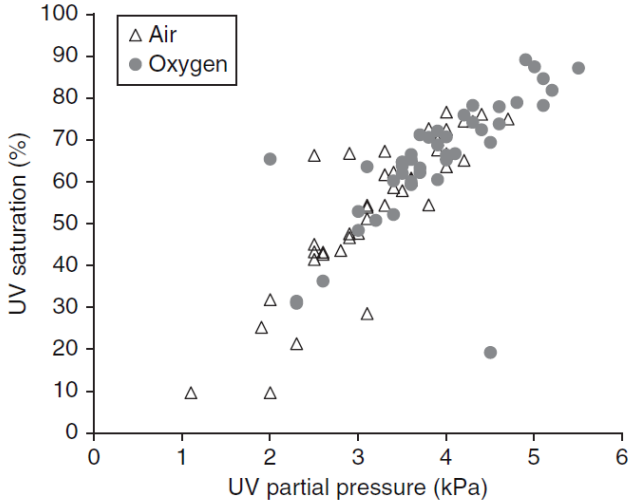

Fig 1 Plot of UV partial pressure against oxyhaemoglobin saturation for patients requiring emergency CS with no fetal compromise. Baby of mothers who breathed oxygen are scattered to the upper right quadrant and have higher umbilical oxygen content.

ADJUVANS - ZESÍLENÍ ÚČINKU

Především itrathékální aplikace (je hydrofilní)

Doporučena standardní poporodní monitorace !

Vyvolává dobrou analgezii trvající až 6 hodin

Možnost pozdního dechového útlumu ?? **NEPROKÁZÁNO !**

CAVE konzervační přísady (magistraliter vydrží cca 3 týdny)

Table 1. Suggested Clinical Decision Tool for Risk Stratification Using Neuraxial Morphine

Risk Factors	Neuraxial Morphine Dose		Postoperative Respiratory Monitoring Recommendation
	Intrathecal	Epidural	
None (healthy, normal BMI)	≤0.05 mg	≤1 mg	No further respiratory monitoring needed in addition to institutional guidelines for postoperative monitoring in this patient population
	>0.05 and ≤0.15 mg	>1 and ≤3 mg	Q 2 h for 12 h RR and sedation checks
	>0.15 mg	>3 mg	Follow ASA/ASRA guidelines[3]: 1. RR and sedation assessments for Q 1 h for first 12 h; Q 2 h for 12–24 h 2. Consider additional monitoring modalities (eg, pulse oximetry, capnography); continuous versus continual intermittent monitoring as indicated
Patient risk factors examples Cardiopulmonary/neurological comorbidity Class III obesity (BMI ≥40 kg/m^2) Known or suspected OSA[a] Chronic opioid use Hypertension	≤0.05 mg	≤1 mg	No further respiratory monitoring needed in addition to institutional guidelines for postoperative monitoring in this patient population
Peri/postoperative risk factors examples General anesthesia Supplemental IV opioid Concomitant sedating medications[b] Magnesium administration Desaturation event in the PACU	>0.05 mg	>1 mg	Follow ASA/ASRA guidelines[3]: 1. RR and sedation assessments for Q 1 2 h for 12–24 h 2. Consider additional monitoring modalit oximetry, capnography); continuous ve intermittent monitoring as indicated

Abbreviations: ASA, American Society of Anesthesiologists; ASRA, American Society of Regional Anesthesia and Pain Medicine; BMI, bod
obstructive sleep apnea; PACU, postanesthesia care unit; Q, every; RR, respiratory rate; EPI, epidural; IV, intravenous.

[a]All patients with risk factors for OSA (ie, obesity > 30 kg/m^2, hypertension, etc) should be screened using any or a combination of STOP S
checklist, Flemons Index Berlin, or the Epworth Sleepiness Scale.[7–12] Additionally consider these OSA screening questions: BMI > 35 kg/m^2,
talking with someone, and history of treatment for hypertension.[13,14]

[b]Examples include general anesthetics, benzodiazepines, and sedating antiemetics.

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Box 2. Examples of Patient and Postoperative Risk Factors for Respiratory Depression in the Obstetric Population

Perioperative	General anesthesia
	Desaturation event in PACU
	Coadministration of intravenous opioid
	Coadministration of sedatives (intra/postoperative)
	Coadministration of magnesium
Patient	Cardiopulmonary or neurological comorbidities
	Class III obesity (BMI ≥ 40 kg/m^2)
	Obstructive sleep apnea
	Chronic opioid use
	Hypertension

Abbreviations: BMI, body mass index; PACU, postanesthesia care unit.

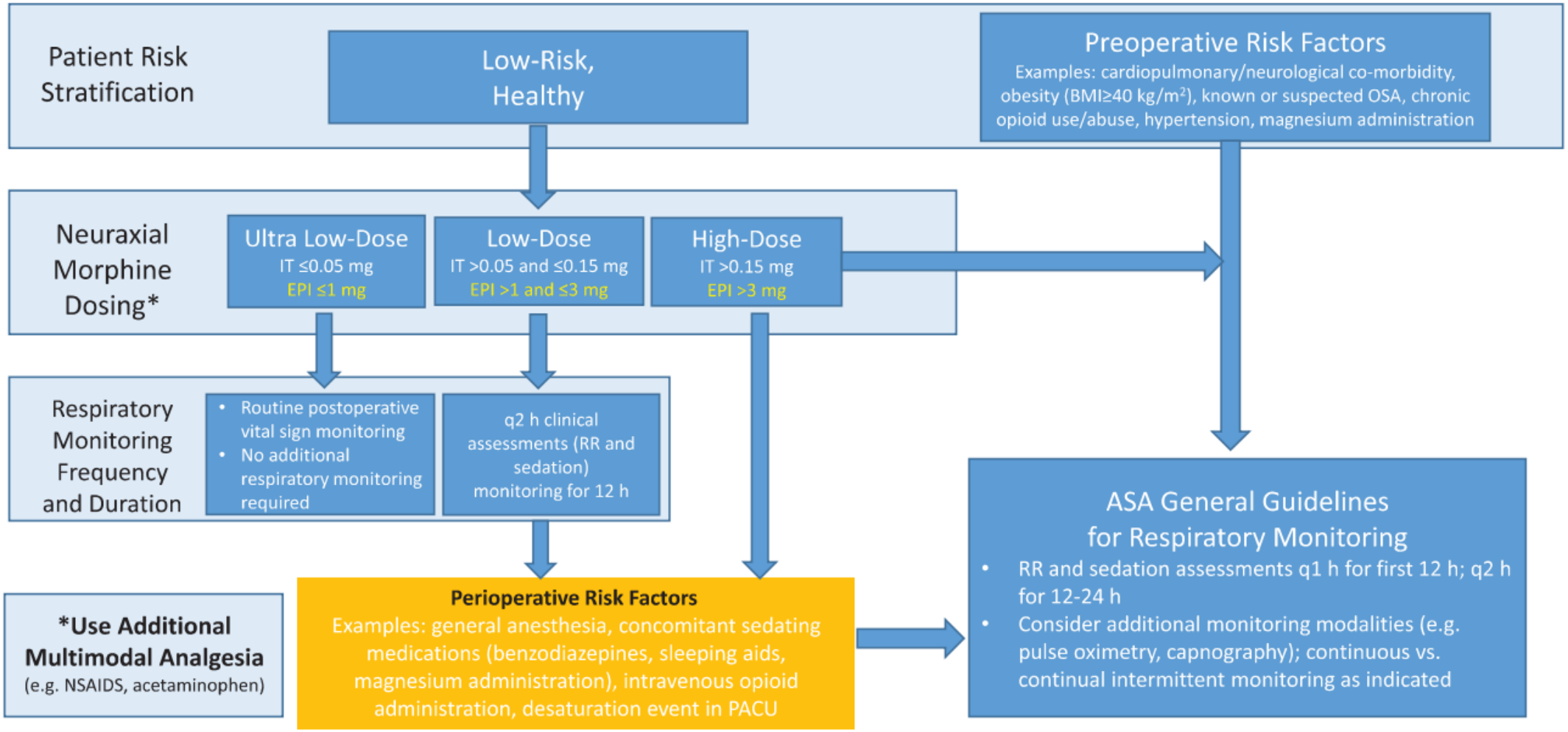

Figure. Respiratory monitoring algorithm following neuraxial morphine administration for postcesarean delivery analgesia. BMI indicates body mass index; EPI, epidural; IT, intrathecal; Mg, magnesium; NSAIDs, nonsteroidal anti-inflammatory drugs; OSA, obstructive sleep apnea; PACU, postoperative anesthesia care unit; Q, every; RR, respiratory rate.

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SOAP Task Force Recommendations for Neuraxial Morphine Dosing for Postcesarean Delivery Analgesia

Bauchat et al. Anesth Analg. 2019 Aug;129(2):458-474

1. Scientific literature findings: neuraxial (intrathecal and epidural) morphine dose selection for postcesarean delivery analgesia:
   a. An analgesic dose–response ceiling exists for neuraxial morphine for postcesarean analgesia (level A [intrathecal] and B-R [epidural]).
   b. Increasing doses of neuraxial morphine can increase the duration of analgesia (level A).
   c. Increasing doses of neuraxial morphine increase the risk of opioid-related side effects (eg, pruritus, nausea, vomiting) (level A).
   d. Higher neuraxial morphine doses increase the risk of respiratory depression (level C-LD).
   e. Nonopioid multimodal analgesic regimens allow for both reduction in neuraxial dosing and systemic opioid use in the perioperative setting (level A).
2. Recommendations:
   a. The Task Force members strongly agree that low-dose intrathecal morphine and epidural morphine should be used to minimize opioid-related side effects (class 2A).
   b. The Task Force members agree that a multimodal nonopioid analgesic approach is beneficial to use in addition to neuraxial morphine (class 2A).

zvyyšující se dávky prodlužují analgesii

vyšší dávky zvyšují riziko dechového útlumu

multimodální neopioidní analgesie k intrathekálnímu morfinu snižuje jeho dávku

... a je velmi vhodná

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