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Porodnická anestezie

Pavλίna Nosková, KARIM VFN a 1. LF UK Praha

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Ordináři

Anesteziologického oddělení KARIM GPK



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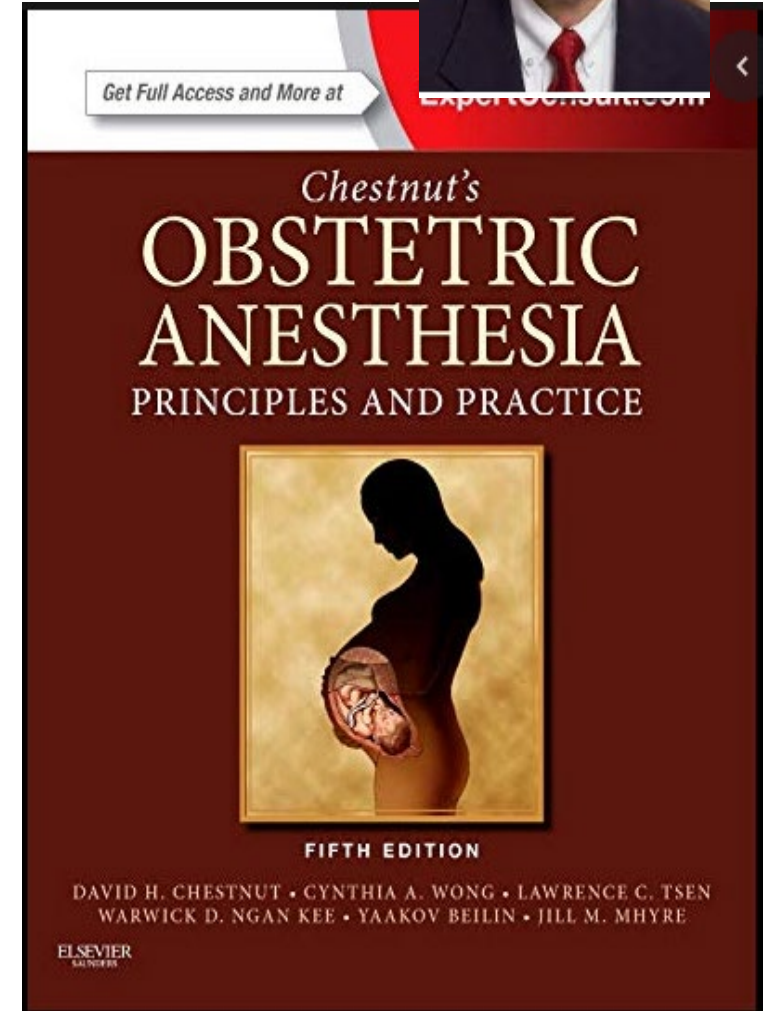
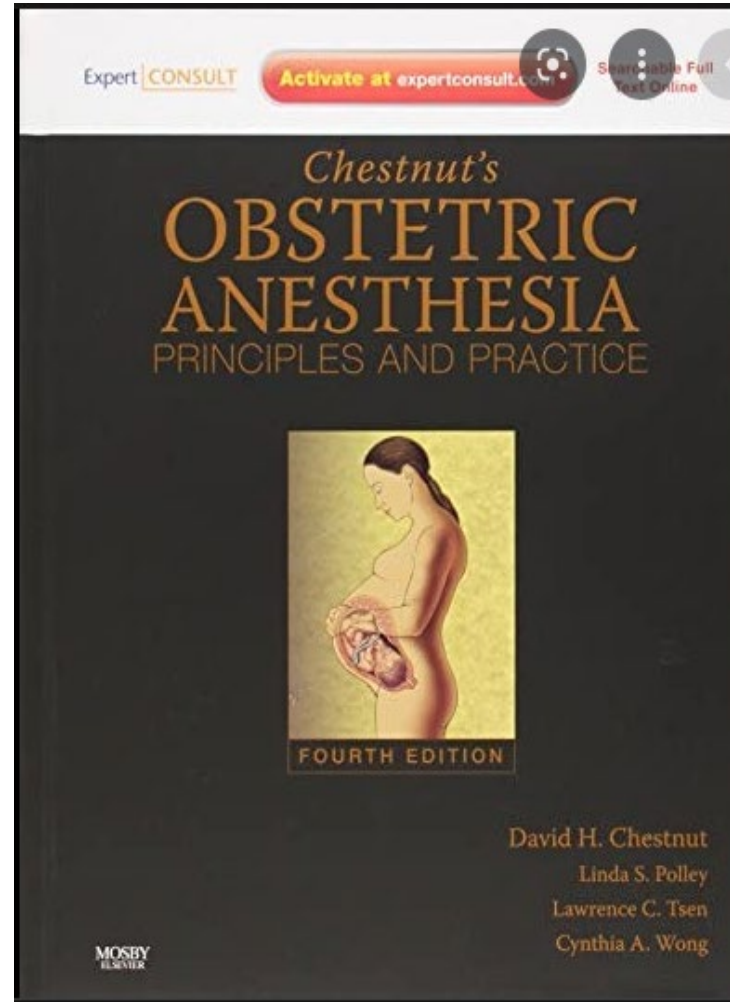
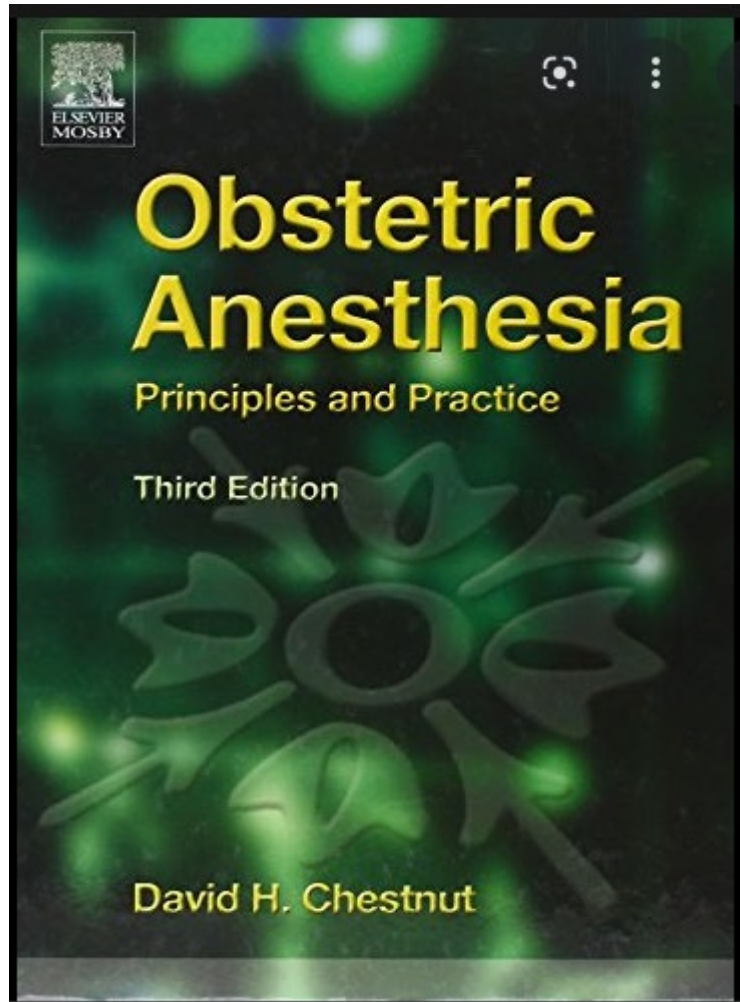
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VŠEOBECNÁ FAKULTNÍ
NEMOCNICE V PRAZE



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Porodnická anestezie ve světě



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Thiopental x propofol



BJA Education, 17 (3): 79–83 (2017)

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The future of general anaesthesia in obstetrics

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Table 2 Factors favouring the use of thiopental and propofol for induction of general anaesthesia in obstetrics^{2,8}

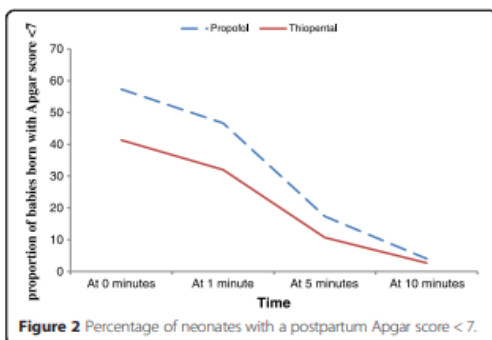
Favouring thiopental	Favouring propofol
Well known, especially to older anaesthetists	New generation of anaesthetists may be unfamiliar with thiopental Propofol is commonly used for non-obstetric cases
Relatively cardiostable	Evidence of overdosage with thiopental in MBRRACE-UK report, contributing to haemodynamic instability Evidence of underdosage with thiopental in NAP5 report, contributing to AAGA
More known about its neonatal effects than other agents	No evidence that propofol has more adverse effects on the neonate compared with thiopental Risk of syringe swap between thiopental and antibiotic Propofol does not require pre-mixing before administration Propofol cheaper than thiopental Thiopental in short supply

RESEARCH ARTICLE

Open Access

Effects of propofol versus thiopental on Apgar scores in newborns and peri-operative outcomes of women undergoing emergency cesarean section: a randomized clinical trial

Janat Tumukunde¹, Dlamini Diana Lomangisi, Ocen Davidson, Andrew Kintu, Ejoku Joseph and Arthur Kwizera



1. minuta
ve prospěch
thiopentalu

Table 2 Percentage of neonates with an Apgar score < 7 post-cesarean section

Apgar score	Propofol group	Thiopental group	% difference (95% CI)	p-value
0 min	43 (57.33)	31 (41.33)	16.00 (0.2–31.80)	0.050
1 min	35 (46.67)	24 (32)	14.67 (-0.7–30.12)	0.066
5 min	13 (17.33)	8 (10.67)	6.67 (-4.39–17.72)	0.239
10 min	3 (4)	2 (2.67)	1.33 (-4.41–7.07)	0.649

Data are presented as the number (percentage) of patients. CI, confidence interval.



Original Contribution

Hypnotic agents for induction of general anesthesia in cesarean section patients: A systematic review and meta-analysis of randomized controlled trials[☆]



Kavita Houthoff Khemlani, MD^a, Stephanie Weibel, PhD^b, Peter Kranke, MD, MBA^b, Jan-Uwe Schreiber, MD, PhD^{a,*}

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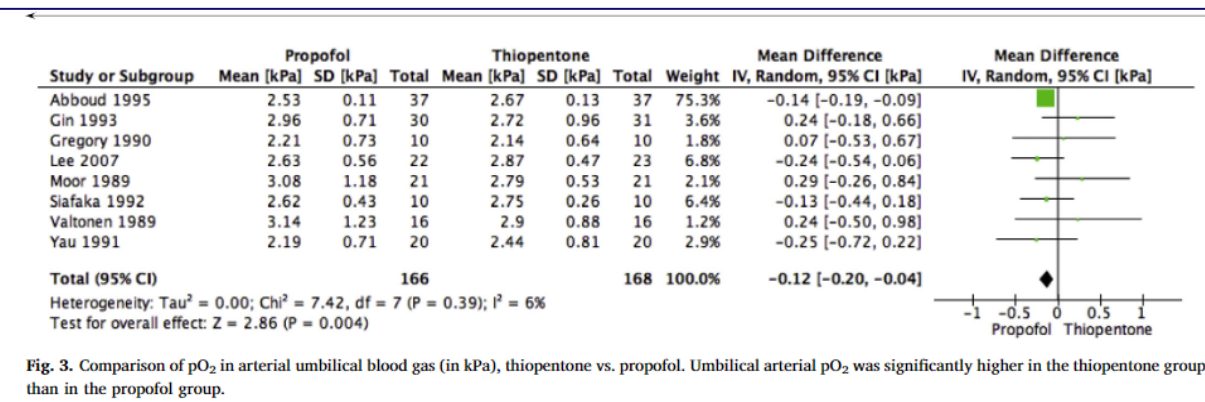


Fig. 3. Comparison of pO₂ in arterial umbilical blood gas (in kPa), thiopentone vs. propofol. Umbilical arterial pO₂ was significantly higher in the thiopentone group than in the propofol group.



Lidokain epidurálně k SC



British Journal of Anaesthesia 107 (5): 668–78 (2011)
doi:10.1093/bja/aer300

BJA

Extending epidural analgesia for emergency Caesarean section: a meta-analysis

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Editor's key points

- Emergency Caesarean section requires a rapid onset of sustained analgesia.
- Topping-up an epidural that is already *in situ* is a good option, but the best local anaesthetic solution to use is not clear.
- This meta-analysis suggests that lidocaine 2% with epinephrine ± fentanyl gives the fastest onset.
- Bupivacaine and levobupivacaine 0.5% were the least effective.

Summary. There is no high-level evidence supporting an optimal epidural analgesia solution for surgical anaesthesia for Caesarean section. This meta-analysis was to identify the best epidural solution for Caesarean section anaesthesia, with respect to rapid onset and duration of intraoperative block. Eleven randomized controlled trials, identified for inclusion after a systematic literature search, were included. 'Top-up' boluses were classified into three groups: 0.5% bupivacaine (Bup/Levo); lidocaine and epinephrine, with or without ropivacaine (Ropi). Pooled analysis using the fixed-effects model showed the mean difference (MD) for continuous outcomes and risk ratios (RR) for binary outcomes. Lidocaine and epinephrine, with or without fentanyl, resulted in a significantly faster onset of sensory block [MD -4.51 min, 95% confidence interval (CI) -5.89 to -3.13 min, $P < 0.00001$]. Bup/Levo was associated with a significantly increased risk of intraoperative supplementation compared with the other groups (RR 2.03; 95% CI 1.22–3.39; $P = 0.007$), especially compared with Ropi (RR 3.24, 95% CI 1.26–8.33, $P = 0.01$). Adding fentanyl to a local anaesthetic resulted in a significantly faster onset but did not affect the need for intraoperative supplementation. Bupivacaine or levobupivacaine 0.5% was the least effective solution. If the speed of onset is important, then a lidocaine and epinephrine solution, with or without fentanyl, appears optimal. If the quality of epidural block is paramount, then 0.75% ropivacaine is suggested.

Keywords: Caesarean section; epidural anaesthesia; epidural analgesia

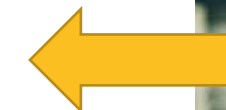
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> Br J Anaesth. 2012 May;108(5):879-80; author reply 880-1. doi: 10.1093/bja/aes118.

Extending epidural analgesia for emergency Caesarean section

S Malhotra, S M Yentis, N Lucas

PMID: 22499752 DOI: 10.1093/bja/aes118



Oxytocin 2007

British Journal of Anaesthesia 98 (1): 116–19 (2007)
doi:10.1093/bja/ael302 Advance Access publication December 2, 2006

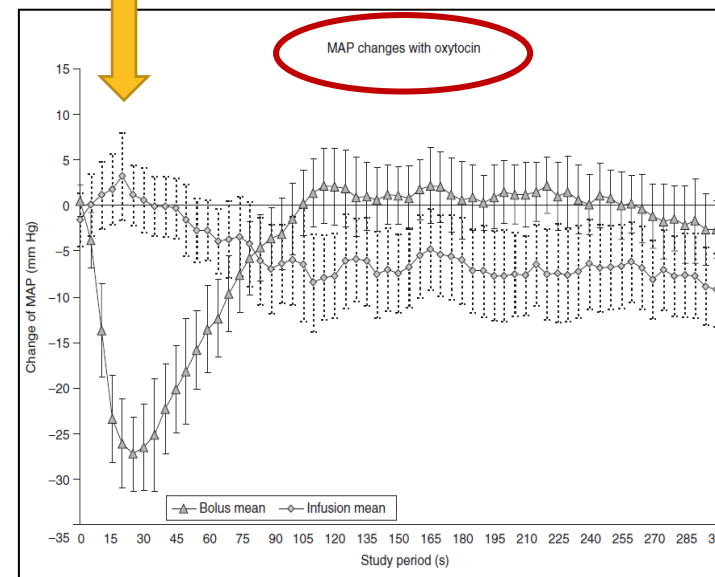
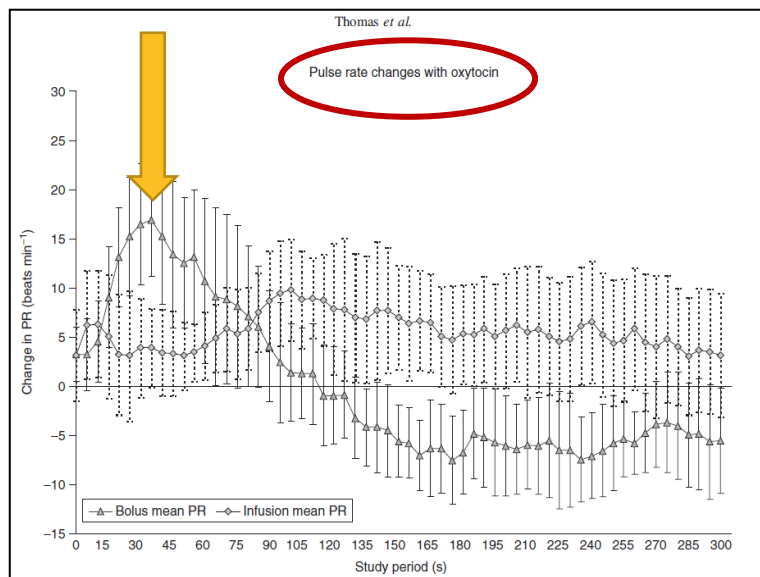
BJA

Haemodynamic effects of oxytocin given as i.v. bolus or infusion on women undergoing Caesarean section

J. S. Thomas*, S. H. Koh and G. M. Cooper



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Guidelines

International consensus statement on the use of uterotonic agents during caesarean section

M. Heesen,¹ B. Carvalho,² J. C. A. Carvalho,³ J. J. Duvékot,⁴ R. A. Dyer,⁵ D. N. Lucas,⁶ N. McDonnell,⁷ S. Orbach-Zinger⁸ and S. M. Kinsella⁹

Summary

It is routine to give a uterotonic drug following delivery of the neonate during caesarean section. However, there is much heterogeneity in the relevant research, which has largely been performed in low-risk elective cases or women with uncomplicated labour. This is reflected in considerable variation in clinical practice. There are significant differences between dose requirements during elective and intrapartum caesarean section.

Standard recommended doses are higher than required, with the potential for acute cardiovascular adverse effects. We recommend a small initial bolus dose of oxytocin, followed by a titrated infusion. The recommended doses of oxytocin may have to be increased in women with risk factors for uterine atony. Carbetocin at equipotent doses to oxytocin has similar actions, while avoiding the requirement for a continuous infusion after the initial dose and reducing the need for additional uterotonics. As with oxytocin, carbetocin dose requirements are higher for intrapartum caesarean sections. A second-line agent should be considered early if oxytocin/carbetocin fails to produce good uterine tone. Women with cardiac disease may be very sensitive to the adverse effects of oxytocin and other uterotonics, and their management needs to be individualised.

Oxytocin pomalý bolus,
malá dávka

Box 1 Suggested dose regimens for uterotonic administration at low-risk elective caesarean section, and caesarean section in labouring women. N.B. take account of national drug license restrictions. See text for further information.

First-line drugs

Oxytocin

Elective caesarean section	Intrapartum caesarean section
Bolus 1 IU oxytocin; start oxytocin infusion at 2.5–7.5 IU.h ⁻¹ (0.04–0.125 IU.min ⁻¹)	3 IU oxytocin over ≥ 30 s; start oxytocin infusion at 7.5–15 IU.h ⁻¹ (0.125–0.25 IU.min ⁻¹).
If required after 2 min, give a further dose of 3 IU over ≥ 30 s.	

Consider second-line agent early in the event of failure of this regimen to produce sustained uterine tone.

Review the patient's clinical condition before discontinuing the infusion; this will usually be between 2 h and 4 h after commencement.

Alternative – carbetocin

Elective caesarean section	Intrapartum caesarean section
100 µg over ≥ 30 s.	100 µg over ≥ 30 s.
Smaller doses (as low as 20 µg) may be sufficient; in this case, doses can be repeated if required, up to 100 µg.	Do not exceed 100 µg – if required move to second-line drug.
Do not exceed 100 µg – if required move to second-line drug.	

Second-line drugs

These drugs should be considered for both prophylaxis and treatment of postpartum haemorrhage.

Consider early use in the event of failure of first-line drugs to produce sustained uterine tone.

Depending on local availability, the following drugs can be used:

- 1 Ergometrine (ergonovine) 200–500 µg/methylergometrine (methylergonovine) 200 µg: i.m., or slow i.v. in exceptional circumstances; may be repeated after 2 h.
- 2 Misoprostol 400–600 µg: sublingual, rectal, vaginal, oral; repeat after 15 min if required, maximum dose 800 µg.
- 3 Carboprost 250 µg: i.m. or intramyometrial (contraindicated i.v.); up to every 15 min if required, maximum eight doses.
- 4 Sulprostone 500 µg: i.v. at 100 µg.h⁻¹; maximum dose 1500 µg.

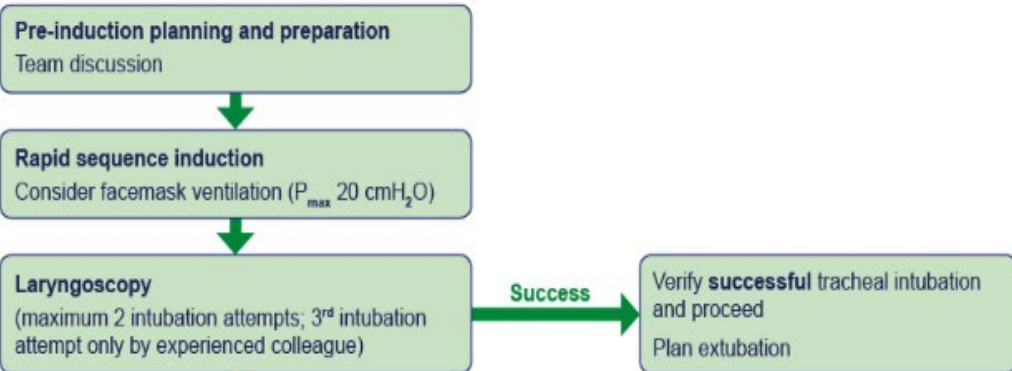
Consider early use of adjunctive medication to counter adverse effects, for example, antiemetics.

Further uterotonic administration (third-line drugs) should be considered within a multimodal postpartum haemorrhage regimen (pharmacology/haematology and antifibrinolysis/surgery/interventional radiology).

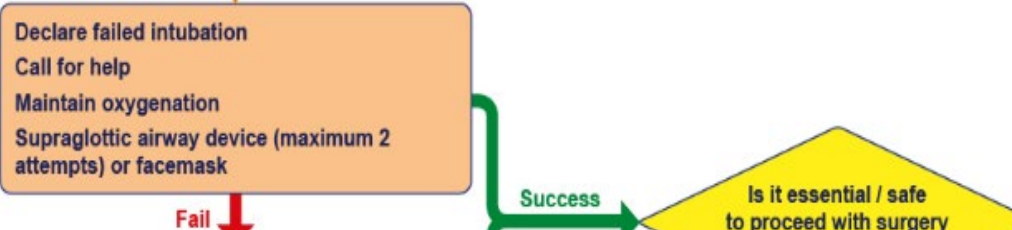


Master algorithm – obstetric general anaesthesia and failed tracheal intubation

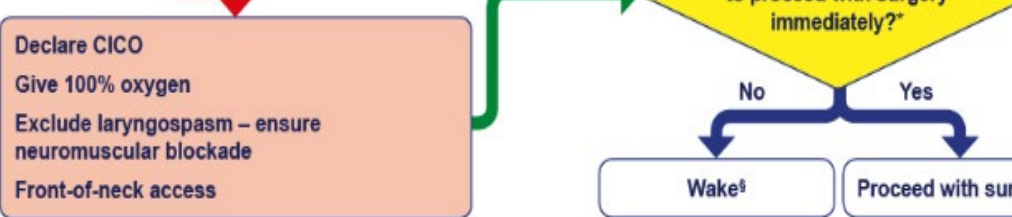
Algorithm 1 Safe obstetric general anaesthesia



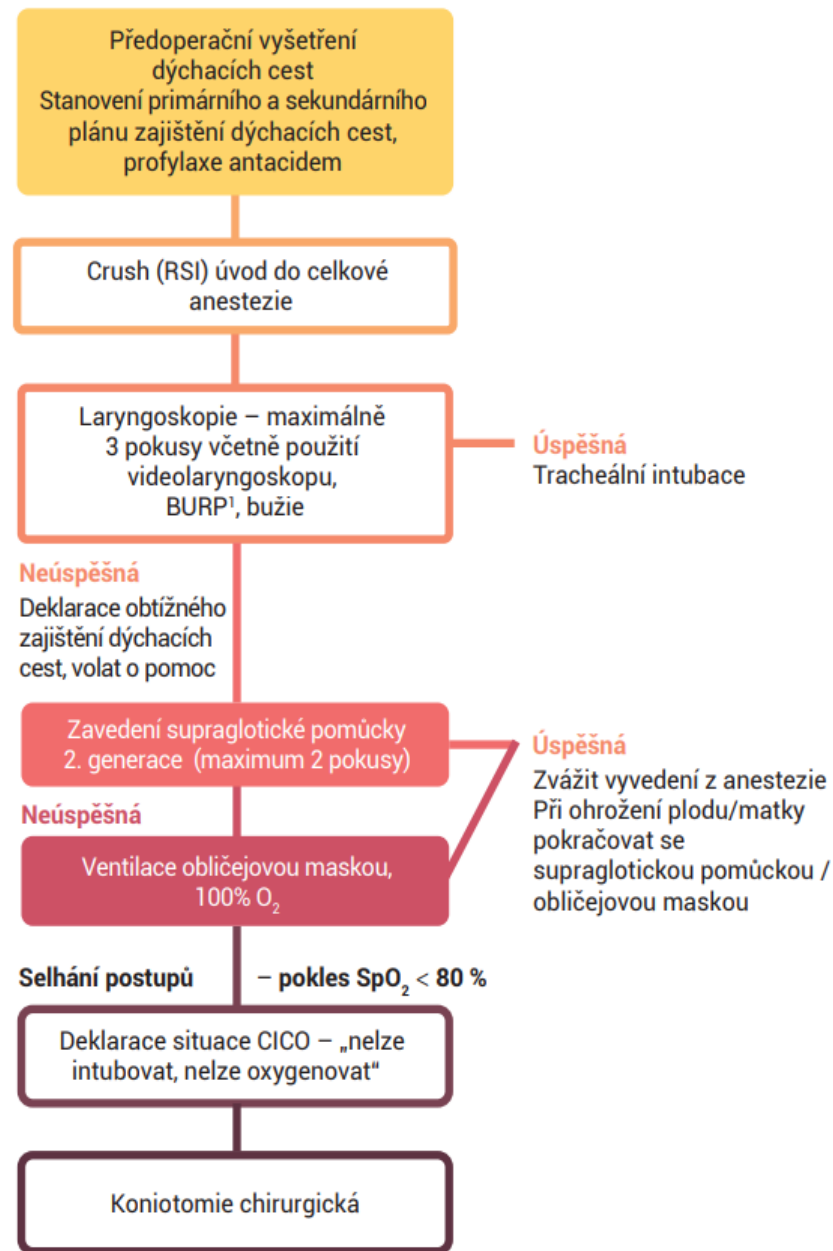
Algorithm 2 Obstetric failed tracheal intubation



Algorithm 3 Can't intubate, can't oxygenate



2 vs 3



*See Table 1, §See Table 2



Remifentanil při úvodu do CA u SC

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Remifentanil a kazuistiky

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Review Article

Maternal and foetal effects of remifentanil for general anaesthesia in parturients undergoing caesarean section: a systematic review and meta-analysis

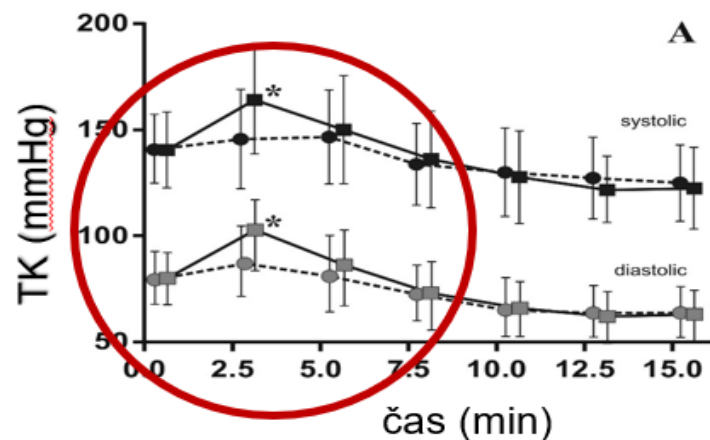
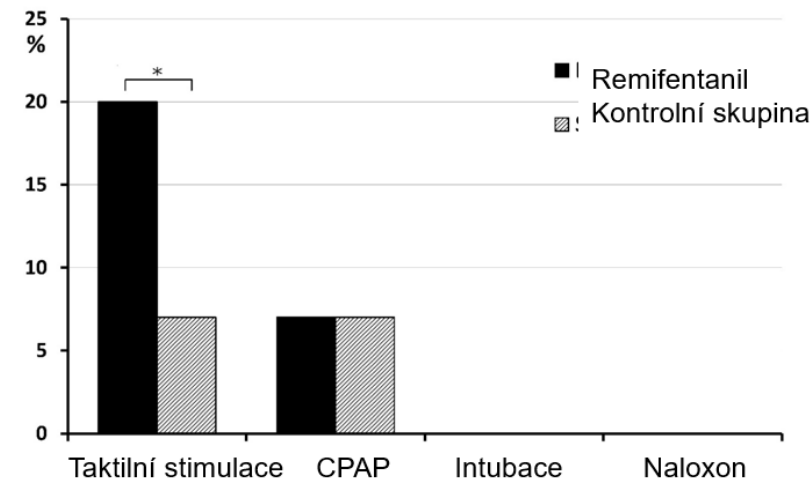
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RESEARCH ARTICLE

Open Access

Neonatal effect of remifentanyl in general anaesthesia for caesarean section: a randomized trial

Pavlina Noskova^{1†}, Jan Blaha^{1††}, Hana Bakhouché², Jana Kubatová¹, Jitka Ulrichová¹, Patricia Marusicová¹, Jan Smisek³, Antonin Parížek⁴, Ondrej Slanar² and Pavel Michálek¹



	Čas min	RMF skupina (76)	Kontrolní skupina (75)	P value
Apgar skóre	1	8,1 ± 2,0	8,9 ± 1,4	0,005
	5	9,2 ± 1,1	9,6 ± 0,8	0,022
Apgar skóre 0 - 7	10	9,8 ± 0,5	9,8 ± 0,4	0,198
	1	19 (25%)	7 (9,3%)	0,017
	5	5 (6,6%)	2 (2,7%)	0,442
	10	0 (0%)	0 (0%)	-



Hodnota trombocytů

Obstetric Anesthesiology

■ SPECIAL ARTICLE

The Society for Obstetric Anesthesia and Perinatology Interdisciplinary Consensus Statement on Neuraxial Procedures in Obstetric Patients With Thrombocytopenia

Melissa E. Bauer, DO,* Katherine Arendt, MD,† Yaakov Beilin, MD,‡ Terry Gernsheimer, MD,§ Juliana Perez Botero, MD,|| Andra H. James, MD,¶ Edward Yaghmour, MD,# Roulhac D. Toledano, MD, PhD,** Mark Turrentine, MD,†† Timothy Houle, PhD,‡‡ Mark MacEachern, MLIS,§§ Hannah Madden, BS,‡‡ Anita Rajasekhar, MD, MS,||| Scott Segal, MD,¶¶ Christopher Wu, MD,## Jason P. Cooper, MD, PhD,§ Ruth Landau, MD,*** and Lisa Leffert, MD‡‡

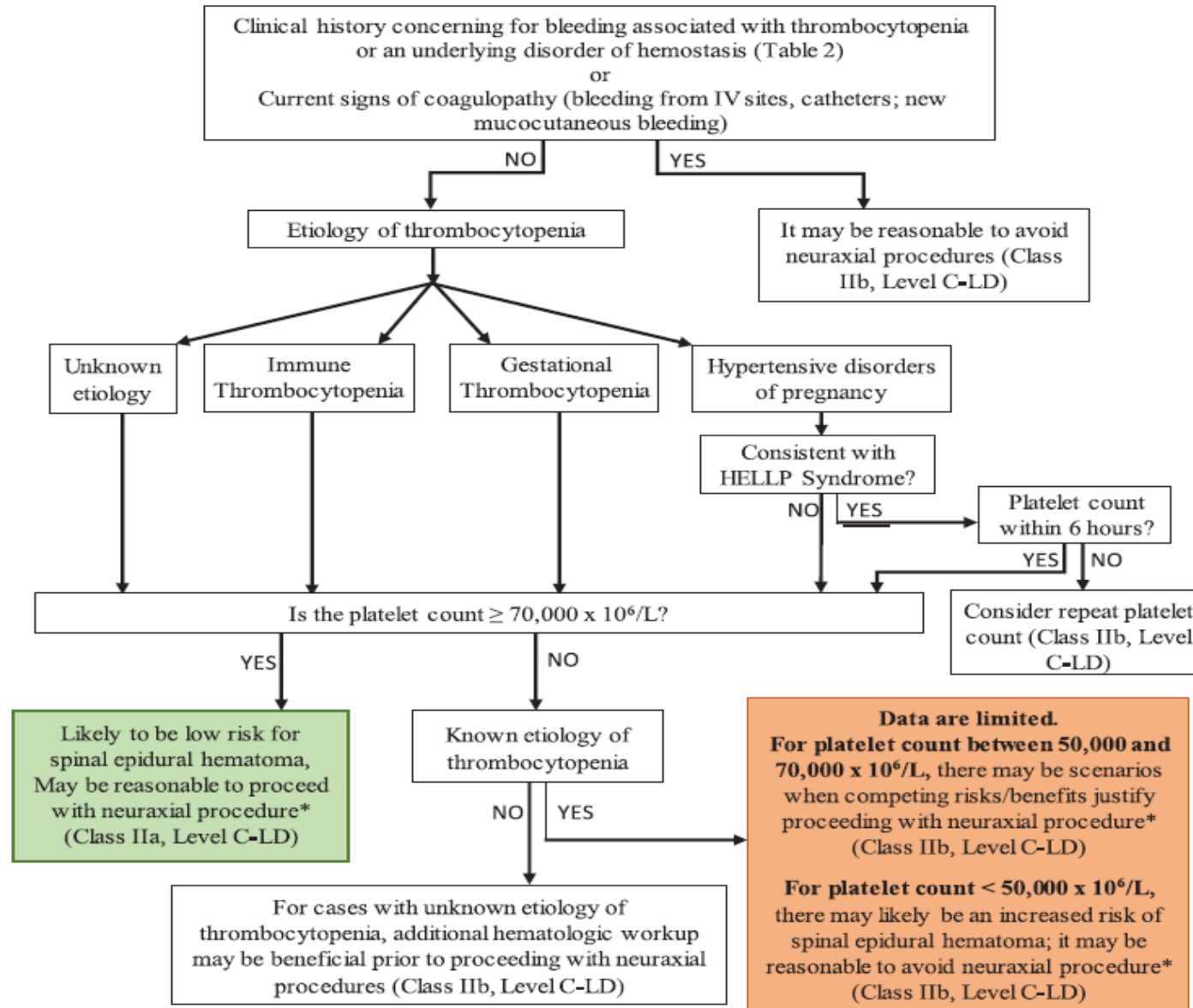
See Article, p 1527

Because up to 12% of obstetric patients meet criteria for the diagnosis of thrombocytopenia in pregnancy, it is not infrequent that the anesthesiologist must decide whether to proceed with a neuraxial procedure in an affected patient. Given the potential morbidity associated with general anesthesia for cesarean delivery, thoughtful consideration of which patients with thrombocytopenia are likely to have an increased risk of spinal epidural hematoma with neuraxial procedures, and when these risks outweigh the relative benefits is important to consider and to inform shared decision making with patients. Because there are substantial risks associated with withholding a neuraxial analgesic/anesthetic procedure in obstetric patients, every effort should be made to perform a bleeding history assessment and determine the thrombocytopenia etiology before admission for delivery. Whereas multiple other professional societies (obstetric, interventional pain, and hematologic) have published guidelines addressing platelet thresholds for safe neuraxial procedures, the US anesthesia professional societies have been silent on this topic. Despite a paucity of high-quality data, there are now meta-analyses that provide better estimations of risks. An interdisciplinary taskforce was convened to unite the relevant professional societies, synthesize the data, and provide a practical decision algorithm to help inform risk-benefit discussions and shared decision making with patients. Through a systematic review and modified Delphi process, the taskforce concluded that the best available evidence indicates the risk of spinal epidural hematoma associated with a platelet count $\geq 70,000 \times 10^9/L$ is likely to be very low in obstetric patients with thrombocytopenia secondary to gestational thrombocytopenia, immune thrombocytopenia (ITP), and hypertensive disorders of pregnancy in the absence of other risk factors. Ultimately, the decision of whether to proceed with a neuraxial procedure in an obstetric patient with thrombocytopenia occurs within a clinical context. Potentially relevant factors include, but are not limited to, patient comorbidities, obstetric risk factors, airway examination, available airway equipment, risk of general anesthesia, and patient preference. **Endorsed by the American Society of Regional Anesthesia and Pain Medicine (ASRA), American College of Obstetricians and Gynecologists (ACOG), and the Society for Maternal-Fetal Medicine (SMFM).** (Anesth Analg 2021;132:1531–44)

Celková?
Regionální ?

Spinální
hematom?
Aspirace?





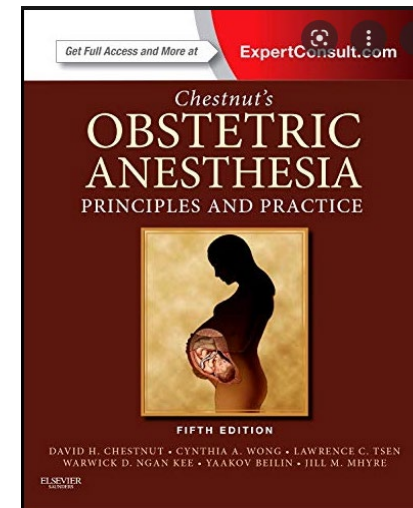
≥ 70 : NAB
 $50-70$: risk vs benefit
 ≤ 50 : CA



Morfin intrathékálně

Society for Obstetric Anesthesia and Perinatology Consensus Statement: Monitoring Recommendations for Prevention and Detection of Respiratory Depression Associated With Administration of Neuraxial Morphine for Cesarean Delivery Analgesia

Jeanette R. Bauchat, MD, MS,* Carolyn F. Weiniger, MBChB,†
Pervez Sultan, MBChB, FRCA, MD,‡ Ashraf S. Habib, MBBCh, MSc, MHSc, FRCA,§
Kazuo Ando, MD, PhD,|| John J. Kowalczyk, MD,¶ Rie Kato, MD, DPhil,#
Ronald B. George, MD, FRCPC,** Craig M. Palmer, MD,†† and Brendan Carvalho, MBBCh, FRCA‡‡



(Anesth Analg 2019;129:458–74)

Author, Year	Cohort Size	Retrospective/ Prospective	Definition of Respiratory Depression	IT Dose (mg)	EPI Dose (mg)	Other Opioids	Incidence (%)
Kato et al, ⁴³ 2008	1915	Retrospective	Bradypnea = RR < 10/min Severe RD = Naloxone	0.15		Y	Bradypnea: 0.26 Severe RD: 0.052
Abouleish et al, ⁴⁴ 1991	856	Prospective	SpO ₂ ≤ 85% or RR ≤ 10/min	0.2		Y	0.9
Fuller et al, ⁴⁵ 1990	4880	Retrospective	RR < 10/min		2–5	Y	0.25
Kotelko et al, ⁴⁶ 1984	276	Prospective	RR < 10/min		5	Y	0
Crowley et al, ⁴⁷ 2013	5036	Retrospective	Need for naloxone or rapid response team for respiratory events	0.15	3	Y	0
Bauchat et al, ³⁹ 2017	120	Prospective	Hypercapnic episode > 50 mm Hg for 2 min	0.15		Y	32
Ladha et al, ⁴⁰ 2017	721	Prospective	Hypoxemia Mild SpO ₂ < 90% Severe SpO ₂ < 85% for 30 s	0.15		N	Mild RD: 23 Severe RD: 4
Weiniger et al, ⁴¹ 2018	74	Prospective	“Apnea alert event” (EtcO ₂ < 5 mm Hg for 30–120 s)	0.15		Y	53% had apnea alert event

Abbreviations: EtcO₂, end-tidal carbon dioxide, using capnography; EPI, epidural; IT, intrathecal; N, no; RD, respiratory depression; RR, respiratory rate; SpO₂, oxygen saturation; Y, yes.

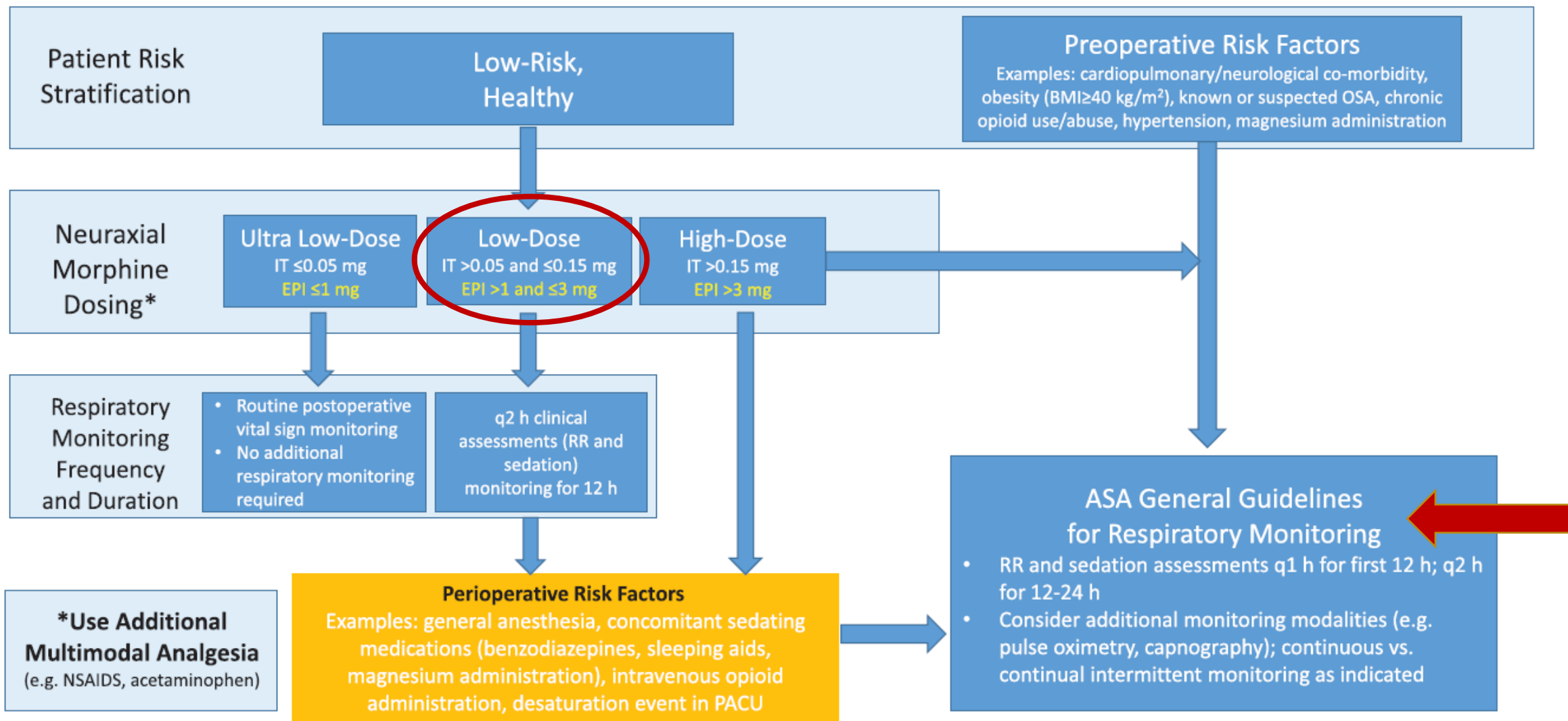


Figure. Respiratory monitoring algorithm following neuraxial morphine administration for postcesarean delivery analgesia. BMI indicates body mass index; EPI, epidural; IT, intrathecal; Mg, magnesium; NSAIDs, nonsteroidal anti-inflammatory drugs; OSA, obstructive sleep apnea; PACU, postoperative anesthesia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



Pooperační analgezie po SC 2009, 2021

Anaesthesia 2021, 76 (Suppl. 1), 136-147

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Review Article

Regional anaesthesia for labour, operative vaginal delivery and caesarean delivery: a narrative review

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Summary

This narrative review discusses recent evidence surrounding the use of regional anaesthesia in the obstetric setting, including intrapartum techniques for labour and operative vaginal delivery, and caesarean delivery. Pudendal nerve blockade, ideally administered by an obstetrician, should be considered for operative vaginal delivery if neuraxial analgesia is contraindicated. Regional techniques are increasingly utilised in clinical practice for caesarean delivery to minimise opioid consumption, reduce pain, improve postpartum recovery and facilitate earlier discharge as part of enhanced recovery protocols. The evidence surrounding transversus abdominis plane and quadratus lumborum blockade supports their use when: long-acting neuraxial opioids cannot be administered due to contraindications; if emergency delivery necessitates general anaesthesia; or as a postoperative rescue technique. Current data suggest quadratus lumborum blockade is no more effective than transversus abdominis plane blockade after caesarean delivery. Transversus abdominis plane blockade, wound catheter insertion and single shot wound infiltration are all effective techniques for reducing postoperative opioid consumption, with transversus abdominis plane blockade favoured, followed by wound catheters and then wound infiltration. Ilio-inguinal and iliohypogastric, erector spinae plane and rectus sheath blockade all require further studies to determine their efficacy for caesarean delivery in the presence or absence of long-acting neuraxial opioids. Future studies are needed to: compare approaches for individual techniques; determine which combinations of techniques and dosing regimens result in optimal analgesic and recovery outcomes following delivery; and elucidate the populations that benefit most from regional anaesthesia in the obstetric setting.

Review > Cochrane Database Syst Rev. 2009 Jul 8;(3):CD006954.

doi: 10.1002/14651858.CD006954.pub2.

Local anaesthetic wound infiltration and abdominal nerves block during caesarean section for postoperative pain relief

Anthony A Bamigboye¹, G Justus Hofmeyr

Affiliations + expand

PMID: 19588413 DOI: 10.1002/14651858.CD006954.pub2



TAP blok Quadratus lumborum blok

Table 1 Summary of meta-analyses performed evaluating the use of transverse abdominis plane and quadratus lumborum blockade in the caesarean delivery setting.

	Number of included studies	Population of included patients	Primary outcome	Main findings
Abdallah et al. [32]	5	312 patients from randomised controlled trials where TAP blockade was compared with placebo.	Postoperative intravenous morphine consumption in the first 24 h.	Transversus abdominis plane blockade reduced the mean 24-h intravenous morphine consumption by 24 mg (95%CI -39.65 to -7.78) when spinal morphine was not used.
Mishriky et al. [33]*	9	512 patients from randomised controlled trials where TAP blockade was compared with placebo.	Pain scores and opioid consumption.	Transversus abdominis plane block significantly improved postoperative analgesia in women undergoing caesarean delivery who did not receive intrathecal morphine, but showed no improvement in those who received intrathecal morphine. Intrathecal morphine was associated with improved analgesia compared with TAP block alone at the expense of an increased incidence of side-effects.
Champaneria et al. [34]	20	1353 patients included in randomised controlled trials that assessed the effectiveness of TAP blocks following caesarean delivery	Pain score at rest.	Transversus abdominis plane blockade provides effective analgesia after caesarean delivery, however, additional benefits are more difficult to demonstrate when long-acting intrathecal opioids are administered.
Ng et al. [35]	14	770 patients included in randomised controlled trials examining the analgesic efficacy of TAP blocks vs. control after caesarean delivery.	Opioid consumption.	Low-dose TAP blocks for caesarean delivery provide analgesia and opioid-sparing effects comparable with the high-dose blocks. This suggests that lower doses can be used to reduce local anaesthetic toxicity risk without compromising the analgesic efficacy.
Xu et al. [51]	12	904 patients included in randomised controlled trials examining the analgesic efficacy of QLB blocks vs. control after caesarean delivery.	Opioid consumption.	Opioid consumption was significantly reduced with QLB when compared with placebo or no block during the first 24 h by 14.1 mg (95%CI -20.8 to -7.5 mg) and 48 h by 20.8 mg (95%CI -33.1 to -8.5 mg). Additionally, QLB significantly reduced 12-h pain scores at rest and during movement. However, this difference disappeared at 24 and 48 h. There was insufficient evidence regarding postoperative opioid use or pain scores with the use of QLB compared with intrathecal morphine.

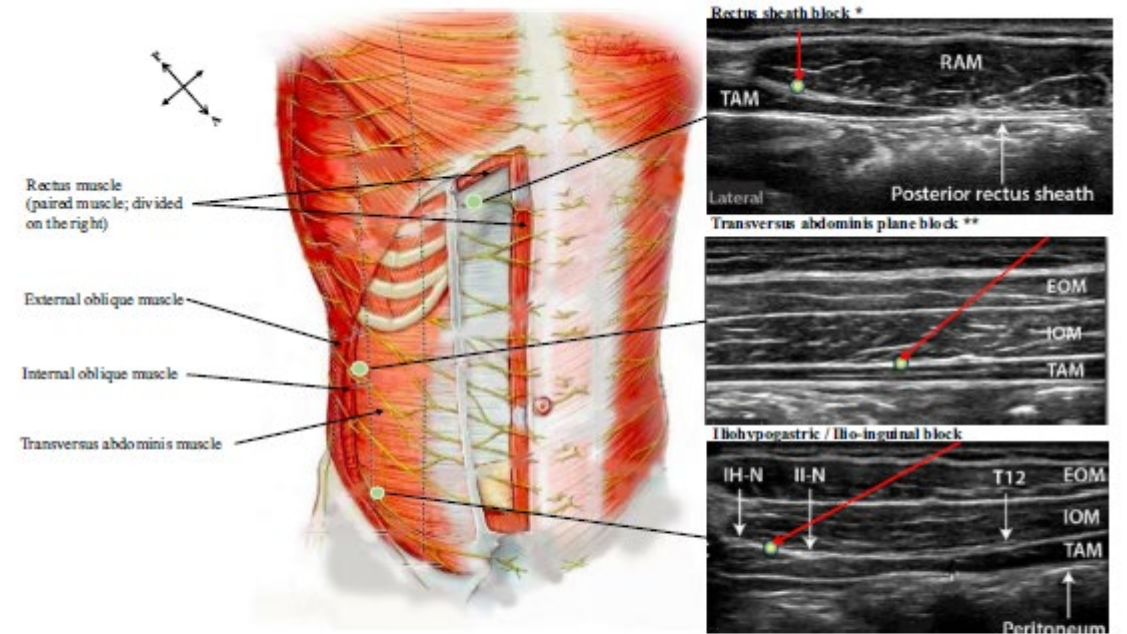


Figure 3 Anatomical and ultrasound representations of injection sites for rectus sheath, transversus abdominis plane and iliohypogastric and ilioinguinal nerve blocks. Green dot represents site for optimal placement of local anaesthetic; red arrows in ultrasound images indicate possible needle path to desired target; *paired muscle therefore bilateral injections required; **denotes correct plane however posterior injection at the origin of the EOM and IOM muscles provides more complete coverage; RAM, rectus abdominis muscle; TAM, transversus abdominis muscle; EOM, external oblique muscle; IOM, internal oblique muscle; IH-N, iliohypogastric nerve; II-N, ilioinguinal nerve; reproduced with permission from *Regional Anaesthesia and Pain Medicine Journal*. P, posterior; A, anterior.



Postpunkční syndrom

Treatment of obstetric post-dural puncture headache

Obstetric Anaesthetists' Association



December 2018

PubMed, EMBASE, Ovid Medline, Cochrane 1960-2017



CONSERVATIVE TREATMENT

Bed rest

Although most women gain some relief from obstetric post-dural puncture headache when supine, the effect may be transient. **Prolonged bed rest is not recommended** as it may increase the risk of thromboembolic complications.

Oral fluids

Normal hydration should be maintained but there is no evidence of benefit from excessive fluid administration in the treatment of obstetric post-dural puncture headache.

Intravenous fluids

In the treatment of obstetric post-dural puncture headache, intravenous fluids need only be used to prevent dehydration when adequate fluid cannot be taken orally.

Abdominal binders

There is currently insufficient evidence to recommend the use of abdominal binders in the treatment of obstetric post-dural puncture headache.



PHARMACOLOGICAL MANAGEMENT

Simple oral analgesia

Regular oral analgesia should be offered to women with postnatal headache.

Opioid analgesia

Opioid analgesia may be offered to women with obstetric post-dural puncture headache if simple oral analgesia is ineffective but long-term therapy is not recommended.

Caffeine

There is limited evidence to support the use of caffeine in the treatment of obstetric post-dural puncture headache. If used, treatment with caffeine should not exceed 24 hours, oral therapy is preferred and doses should not exceed 300 mg with a maximum of 900 mg in 24 hours. A lower maximum dose of 200 mg in 24 hours should be considered for women who are breastfeeding particularly those with low birth weight or premature infants. Women receiving caffeine therapy should have their intake of caffeinated drinks monitored and the recommended daily dose should not be exceeded.

Other theophyllines

There is currently insufficient evidence to recommend the use of theophylline or aminophylline in the treatment of obstetric post-dural puncture headache.

Paralen extra
1 tbl = 65 mg
kofeinu



ACTH and analogues

There is currently **insufficient evidence** to recommend the use of ACTH and its analogues in the treatment of obstetric post-dural puncture headache.

Steroids

There is currently **insufficient evidence** to recommend the use of hydrocortisone, dexamethasone or methylprednisolone in the treatment of obstetric post-dural puncture headache.

Triptans

There is currently **insufficient evidence** to recommend the use of triptans in the treatment of obstetric post-dural puncture headache.

Gabapentinoids

There is currently **insufficient evidence** to recommend the use of gabapentinoids in the treatment of obstetric post-dural puncture headache.

Other medications

There is currently **insufficient evidence** to recommend the use of desmopressin, methylergonovine, ondansetron or neostigmine and atropine in the treatment of obstetric post-dural puncture headache.

Gabapentinoidy
další studie



APPENDIX C

Checklist for performing an epidural blood patch

Pre EBP procedure checklist

- Give patient written information to aid consent process (e.g. OAA headache after an epidural leaflet [http://www.labourpains.com/assets/managed/cms/files/Headache after epidural.pdf](http://www.labourpains.com/assets/managed/cms/files/Headache%20after%20epidural.pdf)).
- Check when the last dose of anticoagulant was given.
- Check for evidence of maternal systemic infection.
- Check for the absence of 'red-flag' symptoms suggesting a different diagnosis e.g. change in the nature of headache, development of focal neurological signs, reduced conscious level and atypical headaches.

Consent

Written consent should be obtained and the following may be discussed:

Benefits of EBP

- Efficacy: complete relief of symptoms following a single epidural blood patch is likely to occur in up to one third of cases. Complete or partial relief may be seen 50-80%. In cases of partial or no relief, a second epidural blood patch may be performed after consideration of other causes of headache.

Risks and Side effects

- Repeat dural puncture.
- Back pain during and for several days after EBP is common and can be significant.
- Rare complications include nerve damage, bleeding and infection.

24 hod
farmakoterapie

48 hodin
od punkce



Post EBP procedure management

Guidance on the management of obstetric patients immediately following an EBP is lacking. The following is suggested:

- Keep patients in the supine position for 1-2 h.
- Regular observations of maternal pulse, blood pressure and temperature may be made following the procedure. The frequency and duration of these observations should be decided by individual units and must take into account maternal health.
- Consider prescribing laxatives to avoid constipation and advising patients to avoid twisting, bending and straining.
- Women should be reviewed by an anaesthetist within 4 h of the procedure. The effect on headache and presence of side effects should be documented. After the initial review, women may mobilise and, where appropriate, they may be discharged home. Those women who remain in hospital should be reviewed daily until discharge or until symptoms resolve.
- For further review and follow-up procedures see Appendix B.

EBP je
standardní
metoda



Prevence PDPH-katetr intrathékálně 2008



ELSEVIER

International Journal of Obstetric Anesthesia

Volume 17, Issue 4, October 2008, Pages 329-335



Original Article

Ten years of experience with accidental dural puncture and post-dural puncture headache in a tertiary obstetric anaesthesia department

M. Van de Velde , R. Schepers, N. Berends, E. Vandermeersch, F. De Buck

Table 2 Published reports on the effect insertion of an epidural catheter into the subarachnoid space after inadvertent dural puncture on the incidence of PDPH and blood patch

STUDY (reference)		Number of patients	PDPH n (%)	Blood patch n (%)
Cohen et al. Anesthesiology 1989 ⁴⁰	IC	10	2 (20)	1 (10)
	EA	0	–	–
Norris et al. Reg Anesth 1990 ⁴⁴	IC	35	19 (54)	4 (11)
	EA	21	11 (52)	4 (19)
Blaise et al. Can J Anaesth 1992 ⁴³	IC	15	6 (40)	3 (20)
	EA	17	6 (35)	5 (29)
Cohen et al. Acta Anaesth Scand 1994 ³⁷	IC	13	0 (0) ^a	0 (0) ^a
	EA	32	13 (41)	8 (25)
Dennehy et al. Can J Anaesth 1998 ³⁸	IC	3	0 (0)	0 (0)
	EA	0	–	–
Segal et al. Anesthesiology 1999 ³⁹	IC	39	22 (57)	11 (28) ^a
	EA	58	46 (79)	36 (62)
Spiegel et al. Anesthesiology 2001 ⁴⁵	IC	102	71 (70)	54 (53)
	EA	52	42 (81)	32 (62)
Hall et al. Anaesthesia 1999 ⁴¹	IC	1	0 (0)	0 (0)
	EA	0	–	–
Rutter et al. Int J Obstet Anesth 2001 ²⁵	IC	34	24 (71)	17 (50)
	EA	37	30 (81)	27 (73)
Kuczkowski et al. Acta Anaesth Scand 2003 ⁴²	IC	7	1 (14)	1 (14)
	EA	0	–	–
Ayad et al. Reg Anesth Pain Med 2003 ³⁶	IC	31	2 (6) ^a	1 (3) ^a
	EA	37	35 (91)	30 (81)
Van de Velde et al. 2007 (present study)	IC	27	14 (52)	12 (44)
	EA	28	17 (61)	14 (50)
ALL STUDIES COMBINED	IC	317	161 (51)	104 (33)
	EA	282	187 (66)	166 (59)

IC: Epidural catheter is threaded intrathecally; EA: Epidural catheter is re-sited at another lumbar interspace.

^a Statistically significantly different from the epidural re-sited group of patients in the individual study.



Prevence PDPH-katetr intrathékálně 2021

Anaesthesia

Peri-operative medicine, critical care and pain



Association
of Anaesthetists

Review Article

Intrathecal catheter use after accidental dural puncture in obstetric patients: literature review and clinical management recommendations

S. Orbach-Zinger ✉, A. Jadon, D. N. Lucas, A. T. Sia, L. C. Tsen, M. Van de Velde, M. Heesen

First published: 21 January 2021 | <https://doi.org/10.1111/anae.15390>



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Max 24 hod, spinální top-up anestezie k SC
periporodní analgezie, nejasnost ve výskytu PDPH, studie



Tetování a riziko arachnoiditidy 2009

Tattooing and various piercing: anaesthetic considerations

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Current Opinion in Anaesthesiology 2009,
22:436–441

Purpose of review

Body art is increasing since the 1990s. Anaesthesiologists would be more and more confronted to patient with tattooing or piercing, or both. This review discusses the anaesthetic potential risks and complications observed with tattooing and piercing, their management and prevention.

Recent findings

Airway management during anaesthesia is of particular interest with oral jewellery. Patients often refuse to remove their piercing for fear of tract closure. There are no serious complications reported after epidural puncture through a tattoo, although any long-term consequence cannot be discarded yet. Even theoretical concerns are more and more debated.

Summary

Oral and nasal piercing is of particular concern because of the risks of swallowing and aspiration. Consequently, patients should be advised to remove piercing before anaesthesia. Emergency situations are especially risky and anaesthesiologists should be aware of the piercing removal techniques. In case of piercing loss, radiographies and fiberoptic endoscopy of the upper airways and digestive tracts should be performed to eliminate aspiration or swallowing of the foreign body. Epidurals should not be denied to parturients with lumbar tattooing. However, it seems still prudent to avoid direct tattoo puncture or when unavoidable, to nick the skin prior to inserting the needle through the tattoo.

Keywords


complications, general anaesthesia, piercing, regional anaesthesia, tattoo


Vyhnout se
tetování nebo
incize

Tetování a riziko arachnoiditidy 2020

Presse Med 49 (2020) 104050

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Quarterly Medical Review
Tattoos

Tattoo and epidural analgesia: Rise and fall of a myth

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ABSTRACT

Since 2002, it has been unclear whether epidural analgesia (EA) could safe through a lower back tattoo. Theoretical risks of pigment tissue coring have led to precautionary measures and misconception that EA should be excluded. We reviewed chronologically the 18 years of medical literature summarizing the so-called risks of EA through lower back tattoo in parturient women. To date, no convincing complication has been ever reported after an EA through a tattoo. We hope this review will bring a closure to a 18-year-old “non-issue” that has poisoned and stressed unnecessarily a generation of parturient.

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Plně zahojené
tetování bez zn
zánětu → není
nutná incize



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The Obstetric Anaesthetists' Association provides education and training for anaesthetists, midwives and other practitioners involved in caring for pregnant women in the UK and overseas. It produces free, evidence based information for the public about epidurals and other forms of labour pain relief and anaesthesia for caesarean section. A key objective is promoting safety in maternity care.



Děkuji za pozornost

