

What's new in anesthetic management for OB-GYN patients

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Disclosures

I have no commercial interests or other financial disclosures

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Learning Objectives

- Evaluate the benefits and drawbacks of labor epidurals
- Understand various pain management techniques for cesarean delivery
- Analyze current perioperative pregnancy testing and breastfeeding recommendations after anesthesia exposure
- Review recent anesthetic management recommendations for second trimester abortions

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Epidural Analgesia for Labor: Benefits and Drawbacks

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Birth International Home Events Products Articles **7 8 Increase**

One of the most common complications of labor is a decrease in the amount of amniotic fluid around the baby. This is often caused by a decrease in the amount of prostaglandin (PGF2) in the amniotic fluid. Epidural analgesia can cause a decrease in PGF2, which can lead to this complication.

Many observational studies have found an association between epidural use and bleeding after birth (postpartum hemorrhage).⁴⁸⁻⁵³ For example, a large UK study found that women were twice as likely to experience postpartum hemorrhaging when they used an epidural in labor.⁵⁴ This may be related to the increase in instrumental births and perineal trauma (causing bleeding), or may reflect some of the hormonal disruptions mentioned above, including increased risks of exposure to synthetic oxytocin.

Some epidural causes: The epidural can cause a decrease in the amount of prostaglandin (PGF2) in the amniotic fluid, which can lead to a decrease in the amount of amniotic fluid around the baby. This is often caused by a decrease in the amount of prostaglandin (PGF2) in the amniotic fluid. Epidural analgesia can cause a decrease in PGF2, which can lead to this complication.

More serious side effects are rare. If the epidural drugs are inadvertently injected into the bloodstream, local anesthetics can cause toxic effects such as slurred speech, drowsiness, and, at high doses, convulsions. This occurs in around one in 2,800 epidural insertions.⁵⁵ Overall, life-threatening reactions occur for around one in 4,000 women.⁴⁸⁻⁵³ Death associated with an obstetric epidural is very rare,⁵⁶ but can be caused by cardiac or respiratory arrest, or by an epidural abscess that develops days or weeks afterward.

place. This is significant because instrumental deliveries can increase the

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And TikTok?

POPSUGAR 7/17/23: What exactly is an epidural?

TikTok recently went viral for a post in which she expresses her shock at learning what's actually involved in an epidural.

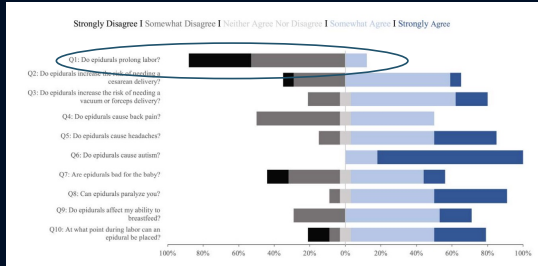
'Finding out that the epidural isn't a shot, it's a tube that stays in your back for your entire labor' she wrote over video of her mouth hanging open. 'I have no words'....

"They really don't tell us anything on purpose" one person wrote.

"Wait, I thought it was a pill" someone else said.

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What does ChatGPT say?



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ORIGINAL ARTICLE

Effects of epidural analgesia at 1 cm cervical dilatation on labor interventions in full-term primigravida: A retrospective cohort study

Shanika Chen | Nijing Ye | Chenhui Wu | Xiaohang Hu | Songmei Li | Xiaomai Zeng

1000 term Nulliparous patients:

- Divided into early (1cm) or late (greater than 1cm).
- There were no significant differences in the median time to latent phase of labor, active phase of labor, second, and third stages of labor ($p > 0.05$).
- There were no significant differences in maternal and neonatal outcomes.

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Obstetric Anesthesiology

ORIGINAL CLINICAL RESEARCH REPORT

Labor Neuraxial Analgesia and Its Association With Perinatal Outcomes in China in 2015–2016: A Propensity Score–Matched Analysis

Xi Meng, MS,* Jiangfeng Ye, PhD,* Qing Qiao, MD, PhD,† Tai Ren, MD, PhD,* Qing Liu, MS,‡ Lingqun Hu, MD,§ and Jun Zhang, PhD*†

- 2015–2016: 51,000 patients, multicenter
- Neuraxial analgesia resulted in:
 - Reduced cesarean deliveries: OR 0.68
 - Maternal request for intrapartum cesarean without medical indication decreased from 11.6% to 3.3% with the use of neuraxial analgesia ($p < .0001$)
 - 3rd/4th degree lacerations: OR 0.36
 - 5-minute Apgar: OR 0.15

Xi Meng, Anesth Analg 2023

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Expert Review ajog.org

Modern labor epidural analgesia: implications for labor outcomes and maternal-fetal health

Elbert C. Callahan, MD; Woo Lee, MD; Prabhu Akshay, MD; Ronald B. George, MD, FRCPC; MAY 2023 American Journal of Obstetrics & Gynecology

- Clinically negligible prolongation of labor
- No increased risk of assisted vaginal or cesarean delivery.
- Transient hypotension on initiation is not associated with adverse outcomes if treated with fluids and/or pressors.
- Infants have a better acid-base status at delivery compared with systemic opioid analgesia.
- There is ↑ incidence of non-infectious fever that has not been shown to affect neonates; its cause is unknown.

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Epidural-related maternal fever: incidence, pathophysiology, outcomes, and management

Selina Patel, MBBS, FRCA; Sarah Cichonowicz, BMBCh, MRes, FRCA; Yair F. Blumentfeld, MD; Pervez Sahlan, MRCGB, FRCA, MD (Res)

- 20% of OB patients who receive neuraxial analgesia will have fever regardless of the medication concentration or rate.
- Etiology is unknown but it is non-infectious.
- It may be caused by:
 - Sterile inflammation involving reduced activation of caspase-1.
 - Thermoregulatory mechanisms due to neuraxial local anesthetic may contribute.

FIGURE 1
Proposed mechanisms of sterile inflammation resulting in epidural-related maternal fever

FIGURE 2
Proposed mechanisms of epidural-related maternal fever secondary to altered thermoregulation

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ANESTHESIOLOGY

Association of Labor Neuraxial Analgesia with Maternal Blood Transfusion

Jean Gajjarhroff, M.D., Ph.D., Ruth Landau, M.D., Janine Slep, Ph.D., Alexander M. Friedman, M.D., M.P.H., Gordon Li, M.D., D.P.M.; ANESTHESIOLOGY, OCT 2023, 1:39-154-45

https://www.blood.ca/sites

- 12,503,042 U.S. deliveries from 2015-2018
- 9,479,291 (75.82%) were with neuraxial analgesia
- 42,485 (0.34%) involved maternal blood transfusion
- Propensity matching with 2,589,493 patients in each group
- All deliveries: OR 0.87
- Cesarean deliveries: OR 0.55
- Vaginal deliveries: OR 0.93

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TO EAT or NOT TO EAT...

ANESTHESIOLOGY

Pregnancy and Labor Epidural Effects on Gastric Emptying: A Prospective Comparative Study

Loiret Rivard, M.D., Ph.D., Thomas Schatz, M.D., Fabrice Pons, M.D., Francis Perrot, Christophe Nioz, Ph.D., Dominique Chassard, M.D., Ph.D., Anesthesiology 2022; 73:542-50

"Gastric emptying in parturients after a light meal was delayed, and labor epidural analgesia seems not to worsen but facilitates gastric emptying."

- 40 parturients
- Semi-solid carbohydrate drink
- Clears
- No difference in gastric emptying at 2 hours

Ultrasound evaluation of gastric emptying of high-energy semifluid solid beverage in parturients during labor at term: a randomized controlled trial

Xiu Ni¹, Jiang Li¹, Qi-Wu Wu¹, Shuang-qiong Zhou², Zhen-Dong Xu³, Zhi-Qiang Liu¹

Received: 29 September 2022 / Accepted: 29 September 2023 / Published online: 26 October 2023
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OBSTETRICS

Labor epidural analgesia and subsequent risk of offspring autism spectrum disorder and attention-deficit/hyperactivity disorder: a cross-national cohort study of 4.5 million individuals and their siblings

- 24% were exposed to epidural analgesia during labor, 1.2% were diagnosed with ASD and 4% with ADHD.
- On a population level there was a significant association with epidural, but when controlling for maternal anxiety or depression & using siblings not exposed to epidural as the control group, there was no significant association.
- Conclusion:
 "In this large cross-national study, we found no support for the hypothesis that exposure to labor epidural analgesia causes either offspring autism spectrum disorder or attention-deficit/hyperactivity disorder."

Am J Obstet Gynecol 2023;228:23

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OBSTETRICS

Fentanyl in the labor epidural impacts the results of intrapartum and postpartum maternal and neonatal toxicology tests

- Prospective cohort study used urine samples before and after initiation of neuraxial analgesia plus at intervals during labor and up to 4 times postpartum + a neonatal urine sample.
- 33 maternal-infant dyads yielded a total of 178 urine specimens.
- No specimens were + before neuraxial.
- Intrapartum 77% had + mass spec and 40% had + immunoassay.
- Postpartum 91% had + mass spec and 62% had + immunoassay.
- Neonatal samples were + in 77%.

Am J Obstet Gynecol 2023;228:741

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Anaesthesia Peri-operative medicine, critical care and pain Association of Anaesthetists

Analgesia after cesarean section - what is new? Hedrun Leimböck^{1,2*} and Thierry Givert³

Correspondence: [Free Access](#)


PROSPECT guideline for elective caesarean section: an update
L. Boothroyd, G. P. Jorri, N. Rasool, M. Van de Velde on behalf of the PROSPECT Working Group of the European Society of Regional Anaesthesia and Pain Therapy

Multi-modal regimens are underused and should be standard.

- Neuraxial morphine should be utilized if possible (150mcg spinal or 3mg epidural).
- NSAIDs and acetaminophen should be scheduled and given together.
- Intravenous dexamethasone 8-10 mg is opioid-sparing.
- Truncal blocks or local infiltration helpful if neuraxial morphine not utilized.

ORIGINAL CLINICAL RESEARCH REPORT
Outpatient Treatment With Gabapentin in Women With Severe Acute Pain After Cesarean Delivery Is Ineffective: A Randomized, Double-Blind, Placebo-Controlled Trial
Dustin Taylor, MD, PhD, Qing W. Chu, MD, Ben Guo, PhD, Anwarul H. Anwar, MD, Steven L. Shabat, MD, and Pamela S. Douglas

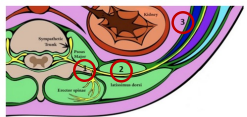
- Avoid gabapentin; limited analgesia and excess side effects.



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Regional Analgesia for Cesarean Delivery: A Narrative Review Toward Enhancing Outcomes in Parturients

Matthew Silverman¹, Nicholas Zwolinski¹, Ethan Wang², Nishita Lockwood¹, Michael Ancuta¹, Evan Jui¹, Jintae Lee¹



- Neuraxial morphine continues to be the gold standard.
- If neuraxial morphine cannot/is not provided: overwhelming evidence that regional anesthetic techniques improve post-cesarean section analgesia and decrease post-operative opioid use.
- All provide analgesic benefit.
- More data is accumulating that QL and ESP blocks may provide improved analgesia.


1. Erector Spinae Plane block (ESP)
2. Quadratus Lumborum block (QL)
3. Transversus abdominal plane block (TAP)

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JAMA Network Open
 Original Investigation | Obstetrics and Gynecology
Noninvasive Bioelectronic Treatment of Postcesarean Pain
 A Randomized Clinical Trial

Wang L, Gao S, Ma H, Wang M, Guo C, et al. *JAMA*. 2023;329(10):900-908. doi:10.1001/jama.2023.10000

- Blinded comparison of a functional or sham TENS device
- Each group received 3 treatments (real or sham) at the incision site:
 - Within 2 hours postop
 - 12 hours after first application
 - 12 hours after second application
- 47% less opioid while inpatient
- Prescribed less at discharge (MME 82.5mg v 90mg, $p < 0.001$)
- No opiates at discharge (10% v 25%, $p = 0.03$)




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Research article
Effect of chamomile aromatherapy with and without oxygen on pain of women in post cesarean section with spinal anesthesia: A randomized clinical trial

Hajar Zamani Habibabad¹, Ardashir Afrasiabifar², Afshin Mansourian³, Mahboubeh Mansourian⁴, Nazafarin Hosseini^{5,6}

- Decrease in pain scores at 6h (9 vs 8), not clinically significant
- Decrease in pain scores at 12 h (8.5 vs 6) and 18h (7.5 vs. 4.5) postoperatively ($p < 0.001$)



Chamomile Essential Oil Research & Therapeutic Treatment | ScienceDirect

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Perioperative pregnancy testing and breastfeeding after anesthesia

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Ethical Principles Do Not Support Mandatory Preanesthesia Pregnancy Screening Tests: A Narrative Review

Stephen Jackson, MD,* James Hunter, MD,† and Gail A. Van Norman, MD‡

- Mandatory routine non-consented preop pregnancy testing does not respect patient autonomy.
- It can be coercive, e.g. if canceling surgery is the option.
- It can cause harm socially, medically (by delaying needed treatments), and financially (insurance implications).
- Not performing a test does not have medicolegal issues for anesthesiologists.

Anesth Analg 2023


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American Society of Anesthesiologists

Pregnancy Testing Prior to Anesthesia and Surgery

Downloaded By: Committee on Quality Management and Departmental Administration
Last Accessed: October 13, 2023, original approval: October 26, 2016.

- Informed consent or assent of the risks, benefits, and alternatives related to preoperative pregnancy testing.
- Shared decision-making between patients and providers.
- Preanesthetic educational materials should include information about false positives and negatives of pregnancy testing and effects of anesthesia.
- Pregnancy testing may be offered to female sex patients of childbearing age and for whom the result would alter the patient's management, but testing should not be mandatory.



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INTERIM UPDATE

The American College of Obstetricians and Gynecologists | American Society of Anesthesiologists

ACOG COMMITTEE OPINION SUMMARY

Number 775 | Obstet Gynecol Clin North Am 38(4): April 2013

For a comprehensive overview of these recommendations, the full text version of this Committee Opinion is available at <http://dx.doi.org/10.1097/A0G.0000000000000174>.

Committee on Obstetric Practice
American Society of Anesthesiologists

This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Committee on Obstetric Practice and the American Society of Anesthesiologists.

INTERIM UPDATE: The content on nonobstetric surgery in this Committee Opinion has been updated to reflect a limited, focused change in the language regarding sedative drugs, medically necessary surgery, anesthesia certification, and rescue team responsibilities. For complete details on these updates, please see the full text version.

Nonobstetric Surgery During Pregnancy

"No currently used anesthetic agents have been shown to have any teratogenic effects in humans when using standard concentrations at any gestational age."

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anaesthesia 2023, 78, 159-169 doi:10.1111/anae.15884

Original Article

Neurodevelopmental outcomes after prenatal exposure to anaesthesia for maternal surgery: a propensity-score weighted bidirectional cohort study

F. Bleeser,¹ S. Devroe,² N. Lucas,¹ T. Debels,¹ M. Van de Velde,¹ J. Lemiere,¹ J. Deprest¹ and S. Reek¹

A cohort study of children who had received prenatal anaesthesia during maternal surgery (N=129) vs unexposed.

- Single exposure, short duration
- Excluded fetal surgery
- No difference in the global executive composite of the behavior rating inventory of executive function score.
- No difference in problems from the child behavior checklist, psychiatric diagnoses or learning disorders.

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Breastfeeding after Anesthesia

- Relative infant dose (RID)
- Accounts for maternal and infant weight + concentration of drug in breastmilk
- RID levels less than 10% are generally considered safe
- Codeine or tramadol
 - CYP2D6 metabolism
 - “ultra-metabolizer” patient breastfeeds a “slow metabolizer” neonate

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Relative Infant Dose for Common Anesthesia Medications

| Medication Class (Drug) | Mean RID (%) ^a |
|--|---|
| Anesthetics (propofol) | Unknown; generally considered safe with single systemic or epidural dosing |
| Anesthetics (sevoflurane, desflurane, isoflurane, nitrous oxide) | 0.1 |
| Antiemetics (ondansetron, granisetron) | 0.1 |
| Anticonvulsants (phenytoin, valproic acid) | Unknown; considered safe due to lack of sedating side effects |
| Cardiovascular (fentanyl, propofol) | 0.1 |
| Local Anesthetics (bupivacaine, ropivacaine, articaine) | 0.1 |
| Local Anesthetics (propofol, ketamine) | 0.1 |
| Local Anesthetics (propofol, ketamine) | Unknown; recommended only if medically necessary |
| Local Anesthetics (propofol) | 0.1 |
| Local Anesthetics (bupivacaine, ropivacaine, articaine) | 0.1 |
| Narcotics | |
| Fentanyl | 1 |
| Hydrocodone | 3 |
| Hydroxyzine | 2 |
| Morphine | 9 |
| Opioids | 1 (maximum daily dose 10mg) |
| Propofol | 1 (Unknown; considered safe secondary to short half-life) |
| Codeine/Tramadol | Avoid FDA warning against use in women with a CYP2D6 mutation |
| Non-narcotic Analgesics | |
| Acetaminophen | 4 (maximum daily dose = 3gm) |
| Ibuprofen | 0.5 |
| Ketorolac | 0.3 |
| Miscellaneous | |
| Gabapentin | 3 |
| Decongestants | Unknown; considered safe (may cause temporary loss of milk secondary to a prolactin level) |
| Diphenhydramine | Unknown; generally considered safe |
| Volatile Gases | Unknown; considered safe secondary to rapid excretion post-breastability and OR scavenging of gases |

^aMean RID is an estimated average from multiple sources reviewed.
¹US Food & Drug Administration, US National Library of Medicine, NIH, HHS, Bethesda, MD. Accessed at: <https://www.accessdata.fda.gov/drugsatfda/drugs/inf/rid/>


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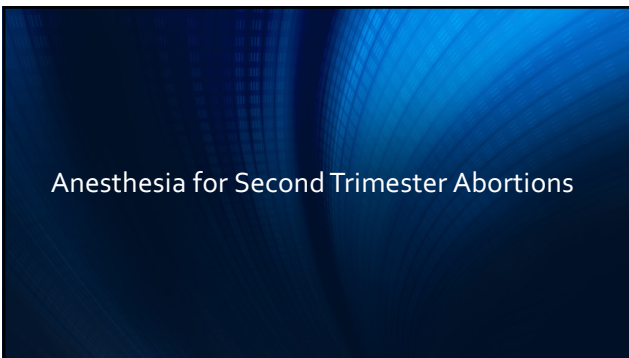
Statement on Resuming Breastfeeding after Anesthesia

Developed by Committee on Obstetric Anesthesia
Approved: October 23, 2019

- Patients should resume breastfeeding as soon as possible after surgery because anesthetic drugs appear in such low levels in breastmilk.
- Because pain interferes with successful breastfeeding, pregnant patients should not avoid pain medicines after surgery.
- Pain meds such as oxycodone can and should be given in PACU as needed and should not delay breast-feeding.
- It is not recommended that patients "pump and dump."



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Anesthesia for Second Trimester Abortions

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Anesthetic Considerations for Second-Trimester Surgical Abortions

Elizabeth Ozery, MD,* Jessica Ansari, MD,* Simranvir Kaur, MD,† Kate A. Shaw, MD, MS,† and Andrea Henkel, MD, MS†

- Abortion is safer than carrying a pregnancy to term: the estimated fatality rate is 0.41 deaths per 100,000 vs 17.4 per 100,000 in term birth resulting in a 42-fold increase in risk of death for pregnancy compared to abortion. (Obstet Gynecol. 2021;137:763-771)
- 5579 pregnant people receiving abortion care in an outpatient setting (31% in second trimester) with IV moderate or deep sedation without endotracheal intubation.
 - There were no incidents of pulmonary complications or anesthesia-related adverse events with BMI up to 40.
- Deep sedation or monitored anesthesia care should routinely be considered as the default anesthetic modality for patients undergoing D&E.

Anesth Analg. 2023 Aug 1;137(2):345-353.

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Summary

- Many misconceptions about labor epidurals
- Labor epidurals
 - Do NOT slow down labor progression
 - Reduce patient requested cesarean
 - Reduce 3rd and 4th degree lacerations
 - Reduce blood transfusions, esp in CD
 - Improve gastric emptying
 - Increase incidence of noninfectious fevers
 - Neuraxial opiates found in maternal urine and neonatal meconium
- Cesarean analgesia
 - ERAC protocols
 - Truncal blocks if no neuraxial morphine
 - Consider non-pharmacologic options (TENS, aromatherapy)
- Perioperative Pregnancy Testing: Offered but not mandatory
- Breastfeeding After Anesthesia: No Pump and Dump
- Anesthesia for Second Trimester Abortions: Sedation is a safe option

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Thank you!



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