

The American Society of Anesthesiologists Practice Guidelines for Obstetric Anesthesia

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This article analyzes the American Society of Anesthesiologists (ASA) Practice Guidelines for Obstetric Anesthesia, focusing on several controversial issues as: intrapartum platelet count, anesthetic choices for cesarean delivery, timing of neuraxial analgesia and outcome of labor, combined spinal–epidural analgesia, anesthetic techniques for removal of retained placenta, and hypotension prevention and treatment after spinal anesthesia for cesarean delivery.

The process of developing the guidelines

The guidelines are developed by a seven step process.

The ASA appointed a Task Force of eleven members including anesthesiologists from academic and private practices, from various area of USA, plus two consulting methodologists from the ASA Committee on Standards and Practice Parameters (1).

1. Intrapartum platelet count

- *A routine intrapartum platelet count is not necessary in the healthy parturient.*
- *Order platelet count based on a patient's history, physical examination, and clinical signs.*
- *A specific platelet count predictive of neuraxial anesthetic complications has not been determined.*

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The process of developing the Practice Guidelines for Obstetric Anesthesia

Seven step process

Consensus on the criteria for evidence

Studies from peer-reviewed anesthesia journals were reviewed

The panel of consultants was asked to: participate in opinion surveys on the effectiveness of various peripartum management strategies and review on a draft of the Guidelines developed by the Task Force.

Opinions about the recommendations were solicited from active members of the ASA who provide obstetric anesthesia

The Task Force held open forums at 2 major national meetings to solicit input

The consultants were surveyed to assess their opinions on the feasibility of implementing the Guidelines

All available information was used to build consensus within the Task Force to finalize the Guidelines

Thrombocytopenia occurs in approximately 10% of pregnant women (2). The most common cause of thrombocytopenia is gestational or incidental thrombocytopenia. It occurs in 5–8% of all pregnant women and accounts for 75% of pregnancy-associated thrombocytopenia. Gestational thrombocytopenia may be related to hemodilution, accelerated platelet turnover with increased platelet production in the bone marrow, and increased trapping or destruction at the placenta (3). A survey of American anesthesiologists showed that 66% in academic practice and 55% in private practice would place an epidural when the platelet count is between 80.000 and 100.000 /mm³, while 16% in academic practice and 9% in private practice would place an epidural when the platelet count is between 50.000 – 79.000 /mm³ (4). It is important to ensure that there is no clinical evidence of bleeding and that the platelet count is not decreasing when epidural catheter placement is contemplated. A decreasing platelet count is considered a contraindication to neuraxial blockade, especially in dynamic conditions such as pre-eclampsia and idiopathic thrombocytopenic purpura. When considering regional anesthesia in patients with thrombocytopenia, spinal anesthesia may be safer. Careful monitoring of the patient in the postpartum period to detect early signs and symptoms of an epidural hematoma should be undertaken.

2. Anesthetic Choices for Cesarean Delivery

- *Neuraxial techniques are preferred to general anesthesia for most cesarean deliveries.*
- *General anesthesia may be the most appropriate choice in some circumstances (e.g., profound fetal bradycardia, ruptured uterus, severe hemorrhage, severe placental abruption)*

Today is widely accepted that regional anesthesia for Cesarean delivery is preferable to general anesthesia. Maternal mortality is 16.7 times greater with general anesthesia than regional anesthesia (5). Difficult or failed intubation following induction of general anesthesia for cesarean delivery remains the major contributory factor to anesthesia-related maternal complications (6). Spinal anesthesia is commonly considered safer, faster and more cost effective than other techniques for the mother, and is therefore widely used. However, spinal anesthesia for Caesarean delivery is associated with a greater degree of fetal metabolic acidosis than is either general or epidural anesthesia (7).

3. Timing of neuraxial analgesia and outcome of labor

- *Meta-analysis determined that the timing of neuraxial analgesia does not affect the frequency of cesarean delivery.*
- *Patients in early labor (i.e., 5 cm dilation) should be given the option of neuraxial analgesia.*
- *Neuraxial analgesia should not be withheld on the basis of achieving an arbitrary cervical dilation.*

Many centers avoid epidural analgesia until the patient reaches a cervical dilation of 4 cm. Some authors are concerned that the beneficial effects of epidural analgesia may be offset by detrimental effects on labor progress, to the newborn, and to the mother (8-10). However, recently, Wong et al. (11), concluded that epidural analgesia in early labor does not increase the rate of cesarean delivery, providing better analgesia and resulting in a shorter duration of labor than systemic analgesia. In this randomized controlled study including 750 primigravid women, neuraxial analgesia (intrathecal fentanyl) was administered at a mean cervical dilation of 2 cm versus a group where epidural analgesia was administered at roughly 4-5 cm. Similar results were obtained by Ohel et al (12), showing that initiation of epidural analgesia in early labor, following the first request for epidural, did not result in increased cesarean deliveries, instrumental vaginal deliveries, and other adverse effects; furthermore, it was associated with shorter duration of the first stage of labor and was clearly preferred by the women. Previous reports from Chestnut et al (13, 14) reached similar conclusions to these recent studies.

4. Early insertion of spinal or epidural catheter for complicated parturients

- *Early insertion of a spinal or epidural catheter for obstetric (e.g., twin gestation or preeclampsia) or anesthetic indications (e.g., anticipated difficult airway or obesity) should be considered to reduce the need for general anesthesia if an emergent procedure becomes necessary.*
- *In these cases, the insertion of a spinal or epidural catheter may precede the onset of labor or a patient's request for labor analgesia.*

The combination of epidural and spinal anesthesia into one technique (CSE), provides the advantages of a spinal (e.g., speed of onset) with the additional flexibility of renewal with an epidural catheter (15). Patients who will greatly benefit from this technique are parturients in early or late labor. The literature is equivocal regarding the impact of CSE versus epidural local anesthetics with opioids on maternal satisfaction with analgesia, mode of

delivery, hypotension, motor block, nausea, fetal heart rate changes, and Apgar scores. CSE analgesia is associated with more rapid cervical dilation in nulliparous women than is conventional epidural analgesia, although no difference in the rate of cesarean delivery was found (16).

5. Anesthetic techniques for removal of retained placenta

- *In general, there is no preferred anesthetic technique for removal of retained placenta; if an epidural catheter is in place and the patient is hemodynamically stable, epidural anesthesia is preferable.*
- *Sedation/analgesia should be titrated carefully due to the potential risks of respiratory depression and pulmonary aspiration during the immediate postpartum period.*
- *Nitroglycerin may be used as an alternative to terbutaline sulfate or general endotracheal anesthesia with halogenated agents for uterine relaxation during removal of retained placental tissue. Initiating treatment with incremental doses of intravenous or sublingual (i.e., metered dose spray) nitroglycerin may relax the uterus sufficiently while minimizing potential complications (e.g., hypotension).*

If general anesthesia is chosen, a rapid sequence induction should be performed following adequate pre-oxygenation.

Uterine relaxation is usually required to facilitate placental removal. The use of nitroglycerine was found to be efficacious for manual removal of placenta with minimal hemodynamic changes, avoiding the use (and associated risks) of general anesthesia for uterine relaxation.

The mechanism of actions seems to be via the release of nitric oxide (17). Nitroglycerine can be given by sublingual spray 800 micrograms = 2 (400 microgram puffs) or intravenous bolus 100 – 200 micrograms.

6. Hypotension prevention and treatment after spinal anesthesia for cesarean section

- *Intravenous fluid preloading may be used to reduce the frequency of maternal hypotension after spinal anesthesia for cesarean delivery.*
- *Initiation of spinal anesthesia should not be delayed to administer a fixed volume of intravenous fluid.*
- *Intravenous ephedrine and phenylephrine are both acceptable drugs for treating hypotension during neuraxial anesthesia.*
- *In the absence of maternal bradycardia, phenylephrine may be preferable because of improved fetal acid–base status in uncomplicated pregnancies.*

Hypotension during spinal anesthesia for cesarean delivery must be systematically detected, prevented and treated without delay. Maternal hypotension frequently follows spinal anesthesia for cesarean section and when severe and sustained can lead to maternal complications (nausea, dizziness, faintness) as well as impairment of the uterine and intervillous blood flow, with consecutive fetal hypoxia, acidosis, and neonatal depression (18). The role of crystalloid preloading to prevent hypotension associated with spinal anesthesia in parturients during cesarean delivery has been challenged. Although controversy still exists, there is accumulating evidence that crystalloid solutions are particularly ineffective in preventing hypotension after extensive sympathetic blockade associated with spinal anesthesia. One reason crystalloid solutions may not be effective is their short intravascular half-life. Rout et al. (18) found the incidence of hypotension to be 71% in a group without preload compared with 55% in a group receiving crystalloid 20 ml/kg (18). When time allows moderate hydration with 1000 – 1500 ml crystalloids is recommended, however in an emergency situation initiation of spinal anesthesia should not be delayed to administer intravenous fluid. Colloid solutions, such as 5% albumin, 6% hydroxyethylstarch (HES), and gelatin, are also used for preventing the hypotension associated with spinal anesthesia and seem to be preferable to crystalloid solutions for preloading, but are very expensive. Early, aggressive pharmacologic treatment of hypotension with either ephedrine or phenylephrine is recommended. Ephedrine has been recommended as the best vasopressor in obstetrics because animal studies showed it caused less reduction in uterine blood flow compared with alpha-agonists. Recent clinical evidence, however, suggests that this is not as important as initially thought. Advantages of phenylephrine include high efficacy, ease of titration and the ability to use liberal doses to maintain maternal blood pressure near normal. Combination of a phenylephrine infusion and rapid crystalloid cohydration is the first method described that reliably prevents hypotension (20). It seems that phenylephrine is the vasopressor that most closely meets the criteria for the best vasopressor in obstetrics (21). However, a Cochrane review concluded that none of these techniques alone was effective in eliminating hypotension and suggested that future research be directed toward investigation of combinations of interventions (22).

In conclusion: those are recommendations made by the American Society of Anesthesiologists that *assist* the practitioner and patient in making decisions.

As clearly stated in the article: "these recommendations may be adopted, modified, or rejected according to clinical needs and constraints and are not intended to replace local institutional policies (1).

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