

Combined Spinal-Epidural Versus Epidural Analgesia for Labor and Delivery

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KEYWORDS

• Epidural • Combined spinal-epidural • Labor analgesia

KEY POINTS

- Combined spinal-epidural (CSE) analgesia produces more rapid onset of effective analgesia compared with epidural alone, with an average onset difference of approximately 5 minutes.
- There is no difference between epidural and CSE techniques on the progress of labor or risk for instrumented or cesarean delivery.
- Catheters placed with a standard epidural technique have a greater failure rate for labor analgesia, but similar intervention rate for rescue analgesia and similar failure rate for conversion to anesthesia for cesarean delivery.
- CSE results in a greater incidence of dose-related maternal pruritus, maternal hypotension, and fetal bradycardia.
- There is no difference between epidural and CSE techniques in the rates of postdural puncture headache and neuraxial infection.

INTRODUCTION

Labor is considered to be one of the most painful experiences a woman can endure. Furthermore, the anticipation of pain felt during labor and delivery may be a cause of significant anxiety and stress for many women. A variety of factors such as personal expectations, cultural differences, and the relationship with a health care provider may affect a woman's choice of analgesia during labor. Although some women choose to deliver using nonpharmacologic methods, most laboring mothers in the United States will request a neuraxial analgesic technique at some point during labor and delivery.¹

Neuraxial techniques have been shown to provide labor analgesia superior to that achieved with nonpharmacologic methods.² However, the rationale for choosing the

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Clin Perinatol 40 (2013) 373–384

<http://dx.doi.org/10.1016/j.clp.2013.05.010>

perinatology.theclinics.com

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best neuraxial technique (epidural vs combined spinal-epidural [CSE]) for the initiation of labor analgesia varies widely among anesthesia providers and is usually tailored to the provider, the patient, and the clinical scenario. Dating back to the 1950s, epidural analgesia is considered the gold-standard technique for labor. CSE, also known as a walking epidural, was first described in the early 1990s as an alternative neuraxial technique for labor and cesarean delivery,^{3,4} and rapidly became popular for several reasons:

- More rapid onset of analgesia using intrathecal injection techniques
- Potential for decreased motor block
- Presence of an indwelling epidural catheter that could be used once spinal analgesia subsided or for cesarean delivery

The rapid onset of analgesia and improved mobility with CSE techniques has been associated with a higher degree of maternal satisfaction compared with conventional epidural analgesia.⁵ However, controversy exists that initiation of labor analgesia with a CSE may be associated with an increased risk for nonreassuring fetal status (ie, fetal bradycardia), and a subsequent need for emergent cesarean delivery.² Regardless of the choice of analgesic technique, the perinatal team's primary concern is always the welfare of the mother and fetus.

When evaluating literature comparing traditional epidural techniques with CSE, it is important to be cognizant of the doses and concentrations of medications being used and defined as "traditional" or "conventional" regimens of care. For example, a large body of literature defines traditional epidural analgesia as using bupivacaine 0.25% versus "low-dose" techniques using bupivacaine 0.125% or lower concentrations, with the inclusion of low-dose opioid (eg, fentanyl 2 μ g/mL). Because of the significant differences consistently demonstrated in maternal outcomes (eg, mobility, maternal satisfaction, rate of instrumented delivery) with the use of low-dose versus traditional epidural techniques,^{6,7} many would argue that a paradigm shift has occurred in modern practice whereby the previous definition of low-dose analgesia has become the new traditional dose used in most labor and delivery units.

INDICATIONS AND CONTRAINDICATIONS

The single greatest indication for neuraxial labor analgesia is maternal request. In the absence of maternal request, establishing early effective neuraxial analgesia may be warranted in some high-risk patients to potentially reduce the need for emergent general anesthesia when such anesthesia might be especially hazardous. Neuraxial analgesia may also be indicated, or strongly recommended, for patients with risk factors that increase the likelihood of either an operative (ie, cesarean) or instrumented vaginal delivery (**Box 1**).

The contraindications to neuraxial labor analgesia are similar to those for any regional anesthetic technique (**Box 2**).

TECHNIQUE AND PROCEDURE

The patient is positioned in the sitting or lateral decubitus position. After sterile skin preparation and draping, a large-bore (17- or 18-gauge) epidural needle is slowly advanced through the skin, subcutaneous tissue, and supraspinous and interspinous ligaments until a loss of resistance is felt in the plunger of a near-frictionless syringe as the needle tip passes through the ligamentum flavum. During conventional epidural placement, a 19- or 20-gauge catheter is advanced through the needle 3 to 5 cm into the epidural space (**Fig. 1**, upper panels). By contrast, during a CSE, a small-bore

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