

Neuraxial Anesthesia for Cesarean Delivery in a Parturient with Spinal Epidural Lipomatosis(SEL) and Chiari I Malformation: A Case Report

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Background

- **Spinal Epidural Lipomatosis (SEL)** – excessive adipose tissue deposition within epidural space → **anatomic distortion and spinal canal narrowing** – relative contraindication to neuraxial anesthesia
 - Associated with:
 - Obesity, chronic steroid use, endocrinopathies
 - Implications:
 - ↓ epidural space compliance
 - Distorted anatomy → technical difficulty
 - Potential for **unpredictable local anesthetic spread**
- **Chiari I Malformation** - cerebellar tonsillar herniation through foramen magnum
 - May impair CSF flow ± ↑ intracranial pressure (ICP)
 - Associated with:
 - Syringomyelia
 - Headache, neurologic symptoms
- **Shared Concern**
 - Altered CSF or epidural dynamics
 - Potential exaggerated cephalad spread of intrathecal medication
 - Altered CSF flow dynamics – potential worsening of existing neurologic symptoms



Case:

- 24-year-old G2P1 admitted for non-reassuring fetal testing and scheduled for cesarean delivery.
- The patient had a prior workup for headaches and visual changes that prompted an MRI
- The MRI demonstrated prominent epidural fat throughout the thoracic and lumbar spine with mild-to-moderate thecal sac narrowing extending from L2 to S1, consistent with SEL. A concurrent Chiari I malformation was also noted.
- Pre-procedural ultrasound was used to map spinal anatomy and identify interspaces.
- Combined spinal-epidural (CSE) technique was planned using a reduced intrathecal dose. Despite three distinct losses of resistance, CSF could not be obtained. Epidural catheter was threaded at the L3–4 level.
- A subsequent single-injection spinal was performed one level below (L4–5) with 1.6cc of hyperbaric 0.75% bupivacaine
- Surgical anesthesia was achieved with the spinal dose, supplemented with one epidural top-up (5 mL of 2% lidocaine with epinephrine and bicarbonate).
- The patient remained hemodynamically stable, and the intraoperative and postoperative courses were uneventful.

Teaching Points:

➤ Spinal Epidural Lipomatosis (SEL)

- No high-quality data → **case-by-case decision**
- Risks include unpredictable block height and possible worsening compression
- Consider:
 - Imaging review prior to neuraxial
 - Ultrasound use to delineate anatomy (midline)
 - Incremental dosing (epidural)
 - Low threshold for general anesthesia

➤ Chiari I Malformation

- Current evidence: **neuraxial generally safe in selected patients**
- Reasonable if:
 - No ↑ ICP
 - No progressive neurologic deficits
- Caution with:
 - Syringomyelia
 - Symptomatic patients – may lead to worsening of symptoms. Theoretical risk of worsening of cerebellar herniation

References:

1. Gelman S, et al. Management of anesthesia and delivery in women with Chiari I malformations. Anesth Analg. 2018;127(5):1187–1193. Patel R, et al.
2. Epidural analgesia in a patient with spinal epidural lipomatosis: a case report and review of the literature. A A Pract. 2019;13(5):147–150.