Lumbar ultrasound for neuraxial anesthesia in a parturient with Klippel–Trenaunay syndrome

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Background

- KTS Incidence 2-5/100.000; Classical triad + neuraxial anomalies and scoliosis may coexist.
- Pregnancy worsens venous engorgement and increases bleeding, thrombotic, and technical risks for labor neuraxial analgesia.
- MRI maps lumbar levels; preprocedural ultrasound confirms the safest bedside puncture site.

Can neuraxial labor analgesia be performed safely when imaging identifies one lesion-free interspace?

Why KTS is challenging for neuraxial anesthesia

Classical triad

Capillary/venous malformations
Tissue hypertrophy
Cutaneous hemangiomas

Pregnancy effect

High Risk of epidural hematoma, vascular puncture and difficult landmark palpation

Practical implication

Plan the puncture with imaging before labor

MRI + lumbar US

toward a safer, planned neuraxial strategy

References: Asghar et al. Cureus 2020; Teixeira et al. Braz J Anesthesiol 2018; Li et al. Curr Pain Headache Rep 2020.

The case

A single safe interspace identified on MRI and confirmed at bedside with ultrasound

1. **Patient**
   40 years, 37+5 weeks, KTS and scoliosis; prior intravascular epidural catheter placement and poor labor analgesia.
2. **MRI planning**
   MRI at 25 and 33 weeks: Anterior epidural vascular involvement from L4–S1; L2–L3 remained lesion-free and stable.
3. **Ultrasound check**
   Bedside lumbar ultrasound confirmed L2–L3 and a skin-to-epidural depth of 4.5 cm.
4. **Technique**
   CSE at L2–L3: bupivacaine 1.5 mg + fentanyl 20 µg; epidural catheter to 10 cm; PCEA with bupivacaine 0.1%.
5. **Outcome**
   Satisfactory labor analgesia with no vascular puncture or neurologic complication.

Lumbar MRI: anterior epidural involvement from L4–S1; L2–L3 selected as lesion-free.

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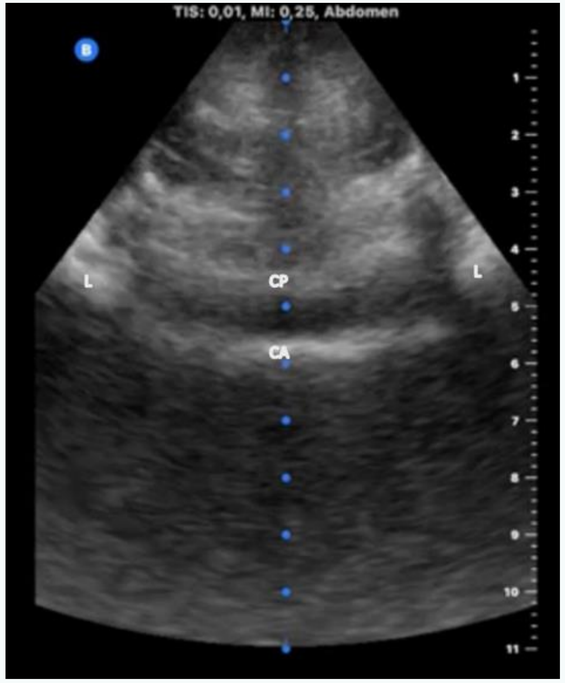

Lumbar ultrasound: level confirmation and depth estimate (4.5 cm).

Teaching points

Practical messages for anesthetic planning in obstetric patients with KTS

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1 Map before puncture
Use pre-labor MRI to identify unsafe lumbar levels and reveal a lesion free interspace

2 Use bedside ultrasound
Confirm level, depth, and needle trajectory; it complements, not replaces, MRI.

3 Choose the least traumatic approach
If a safe level exists, CSE provides rapid analgesia and may reduce epidural manipulation.

Take-home:
Anesthesia consultation+ combine mapping + bedside confirmation + backup planning.

Decision pathway

MRI mapping

↓

Lumbar ultrasound

↓

Safe level found → CSE

Back up plan

Single-shot spinal for Labour
or EV analgesia