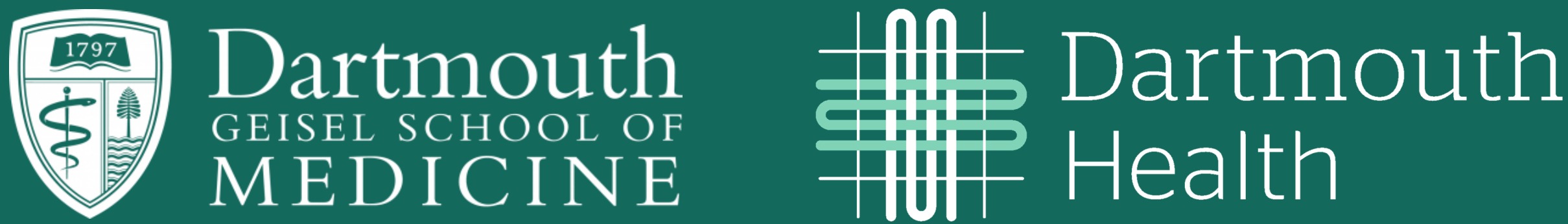


FLUOROSCOPIC EVIDENCE OF RETROGRADE CONTRAST SPREAD FROM THE EPIDURAL TO SUBARACHNOID SPACE DURING AN EPIDURAL BLOOD PATCH IN AN OBSTETRIC PATIENT: Background

Charlotte E. Bloom DO¹, Simran Sehgal MS², Johanna G. Cobb MD¹
¹Department of Anesthesiology, Dartmouth-Hitchcock Medical Center, ²Geisel School of Medicine at Dartmouth



Background: A Review of Post-Dural Puncture Headaches (PDPH)

MECHANISM & INCIDENCE

- CSF leakage through dural puncture → intracranial hypotension
- ~1.5% of parturients who receive neuraxial blocks; 50-80% after accidental dural puncture¹

CLINICAL PRESENTATION

- Symptoms: positional headache, nausea, neck stiffness, photophobia, auditory changes
- Complications: chronic head/neck pain, cranial nerve dysfunction, cerebral venous thrombosis, subdural hematoma

RISK FACTORS²

PATIENT-RELATED

Young (<40 years old)
Female sex
History of headache
Pushing during labor
History of PDPH
Lower BMI

PROCEDURE-RELATED

Needle size
Direction of bevel
Spinal needle design
Multiple dural punctures



The Epidural Blood Patch (EBP): Gold Standard, But Not Without Risks

HOW EBP WORKS

- Autologous blood injected into the epidural space increases intrathecal pressure, promotes fibrin clot formation over dural defect³
- Gold standard for moderate-to-severe PDPH, effective but invasive procedure

RISK: BLOOD IN INTRATHECAL SPACE

- Epidural blood can track into the subarachnoid space
- Hemoglobin breakdown products → free radical damage → arachnoiditis
- Direct blood contact with CSF → chemical meningitis^{4,5}

RISK THEORIZED BUT NEVER VISUALIZED

- The mechanism of EBP complications has never been directly visualized – existing literature relies on MRI findings suspicious for blood, not real-time imaging⁶

OUR CASE

First fluoroscopic documentation of retrograde spread from the epidural to subarachnoid space during EBP for PDPH, providing evidence of a potential mechanism for serious but poorly understood EBP complications



References

📍 Society for Obstetric Anesthesia and Perinatology Annual Meeting, Montreal 2026

✉ charlotte.e.bloom@hitchcock.org

FLUOROSCOPIC EVIDENCE OF RETROGRADE CONTRAST SPREAD FROM THE EPIDURAL TO SUBARACHNOID SPACE DURING AN EPIDURAL BLOOD PATCH IN AN OBSTETRIC PATIENT: The Case

Charlotte E. Bloom DO¹, Simran Sehgal MS², Johanna G. Cobb MD¹
¹Department of Anesthesiology, Dartmouth-Hitchcock Medical Center, ²Geisel School of Medicine at Dartmouth



The Case

THE PATIENT

- 39-year-old female, G5P4 at 37w4d, current twin pregnancy with cephalic presenting twin and breech following twin, presented for induction of labor

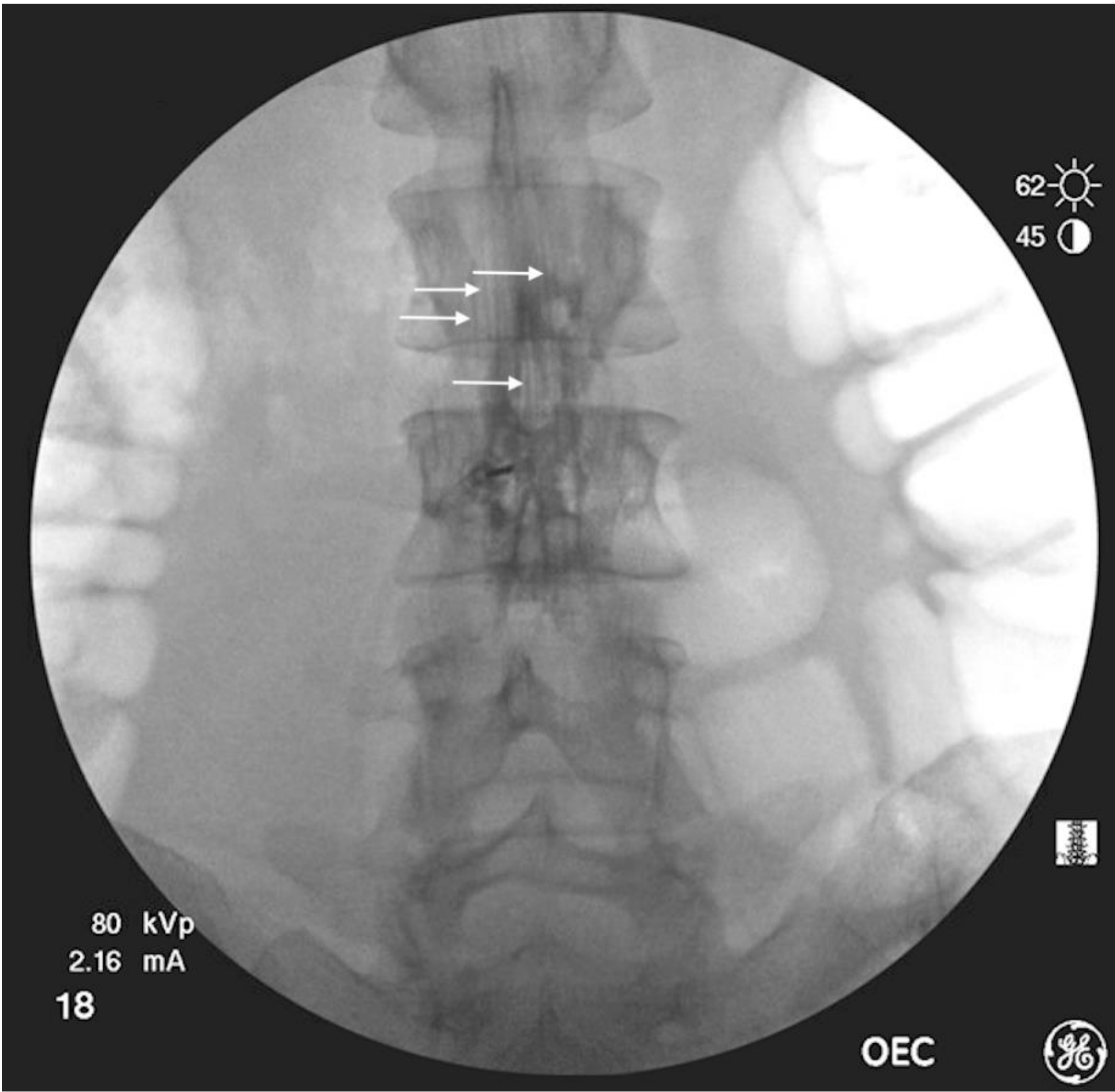
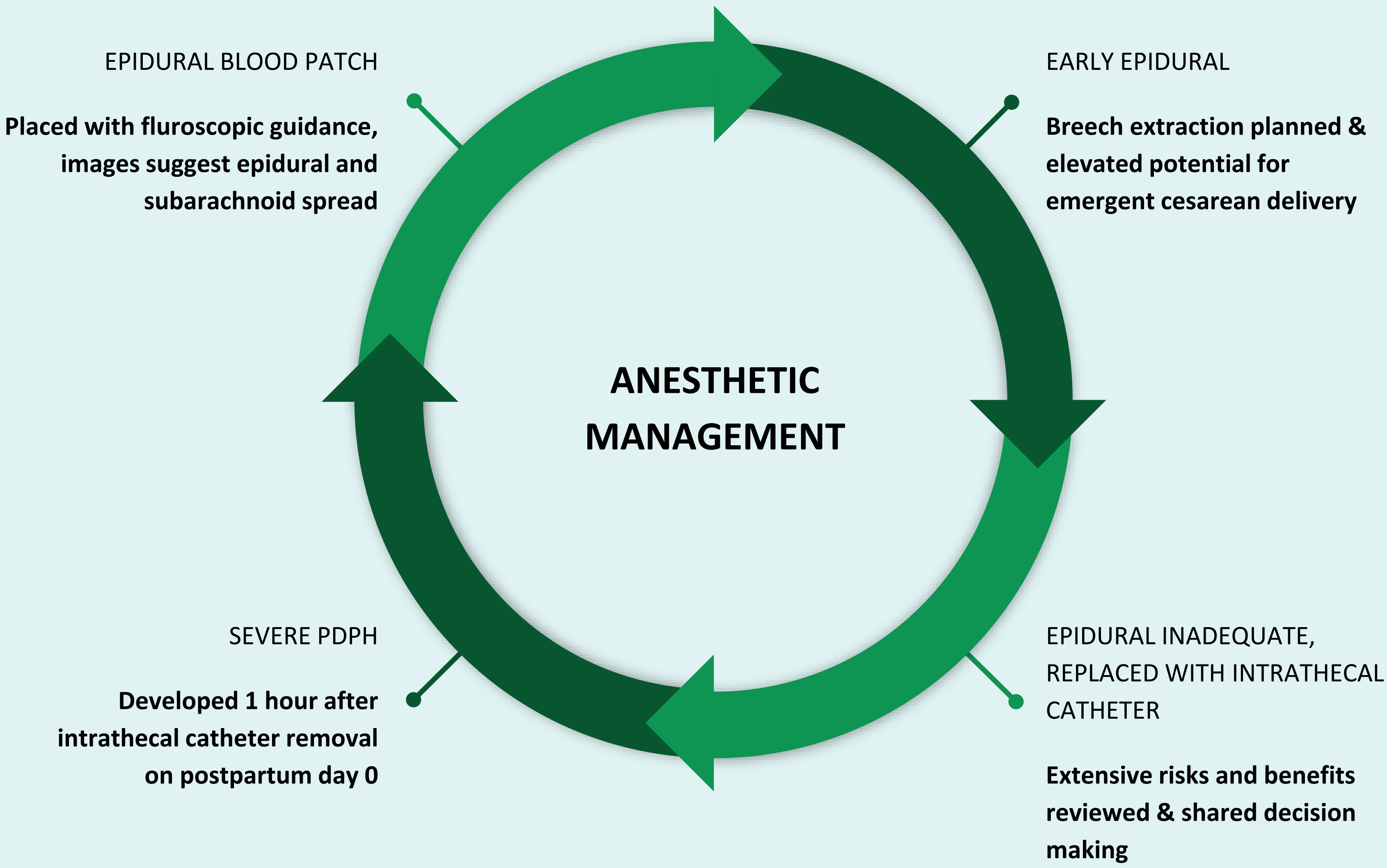


FIGURE 1: Posterior-anterior lumbar epidurogram demonstrating both epidural and subarachnoid contrast spread. White arrows highlight contrast enhancement of lumbar nerve rootlets in the intrathecal space.

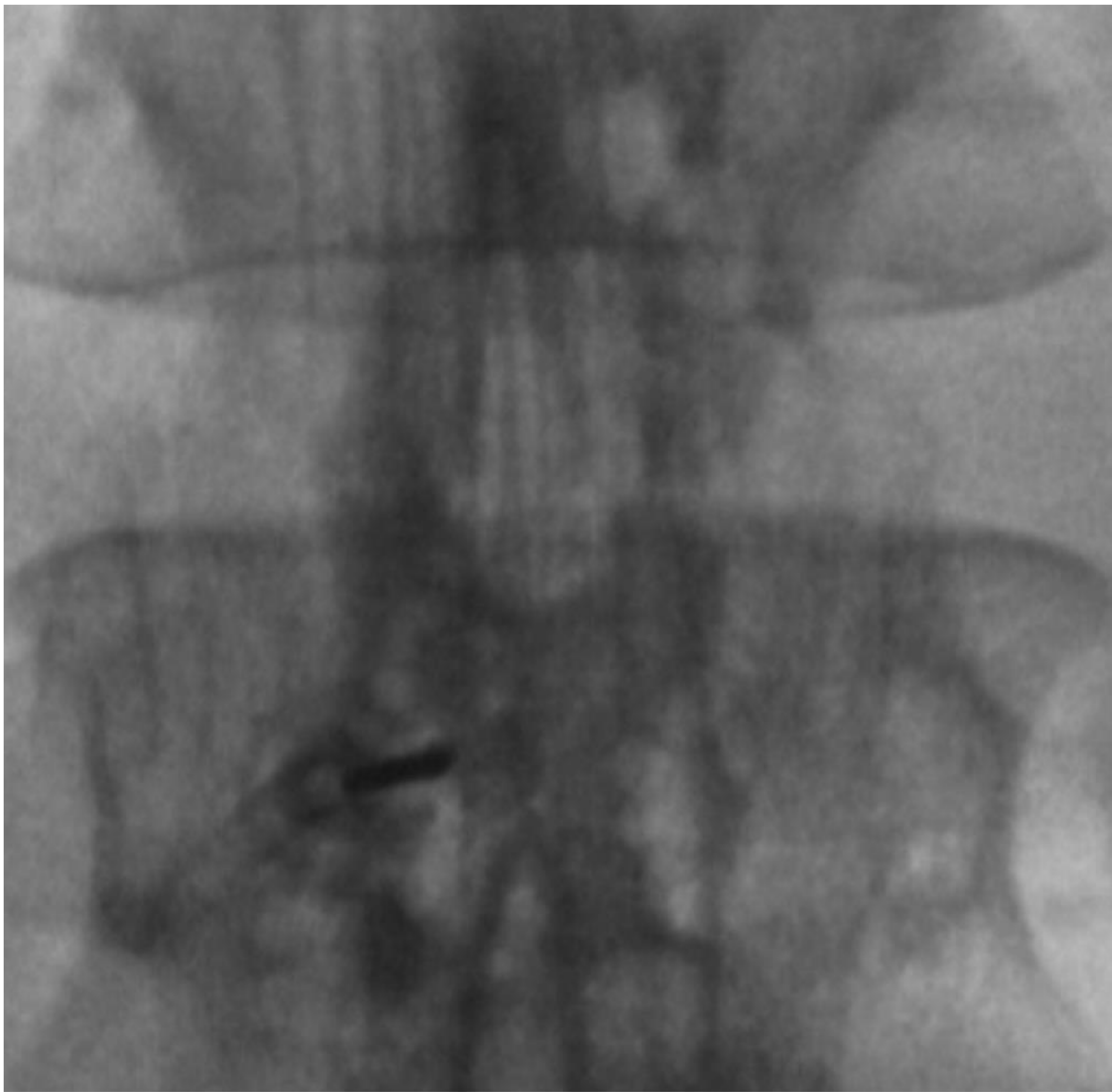


FIGURE 2: Magnified posterior-anterior lumbar epidurogram with contrast-enhanced cauda equina visible.

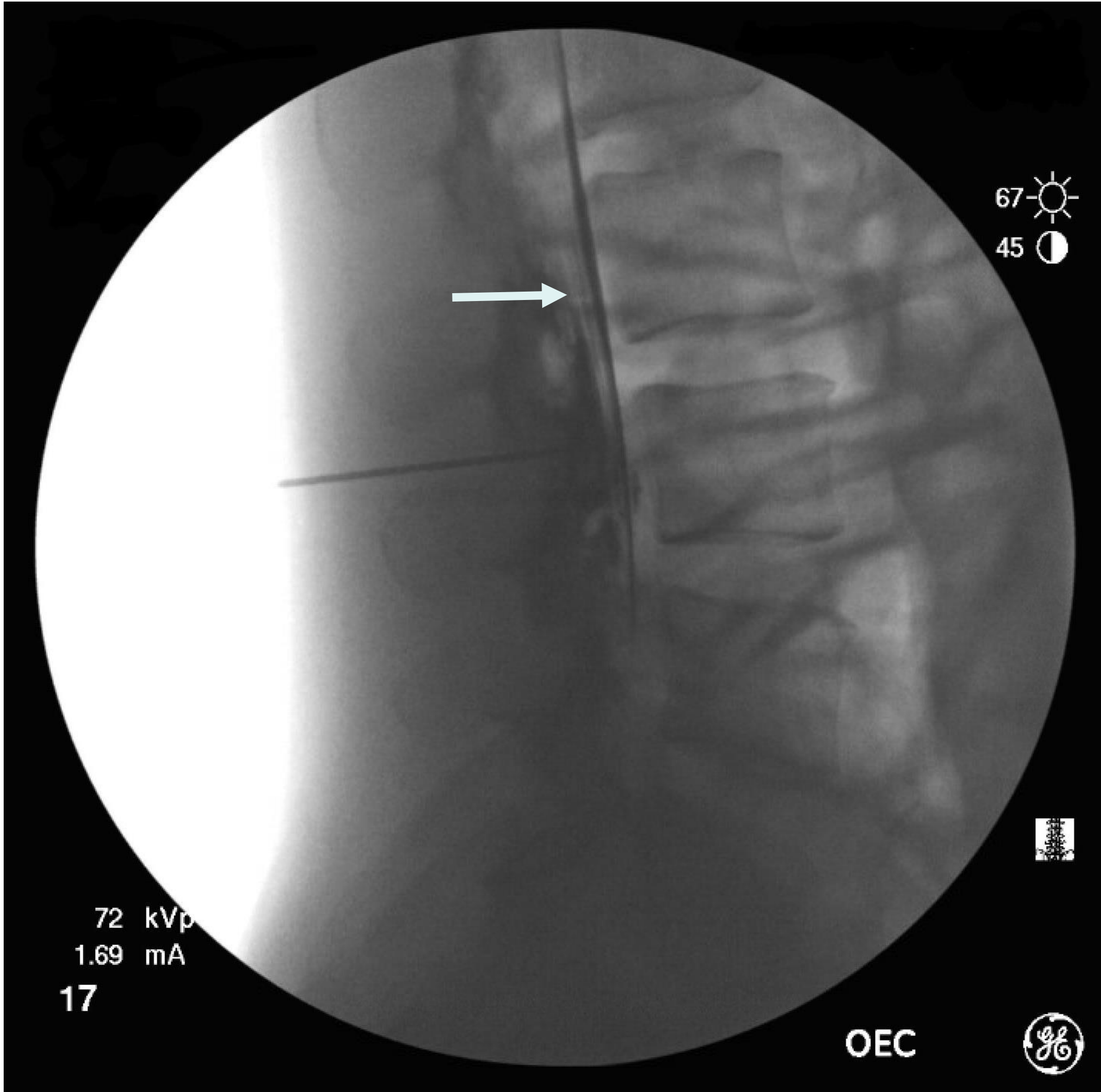


FIGURE 3: Lateral lumbar epidurogram with contrast spread to the epidural space and enhancement of cauda equina (arrow).



FLUOROSCOPIC EVIDENCE OF RETROGRADE CONTRAST SPREAD FROM THE EPIDURAL TO SUBARACHNOID SPACE DURING AN EPIDURAL BLOOD PATCH IN AN OBSTETRIC PATIENT: Teaching Points

Charlotte E. Bloom DO¹, Simran Sehgal MS², Johanna G. Cobb MD¹
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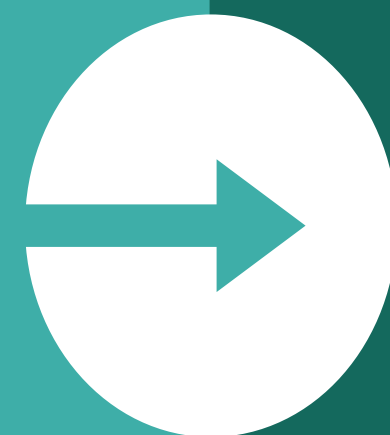
Novel Fluoroscopic Finding

- First reported fluoroscopic evidence of retrograde contrast spread from epidural to subarachnoid space
- Patient had complete symptom resolution with no further complications



Clinical Implications

- Intrathecal blood exposure provides a mechanistic basis for arachnoiditis, chemical meningitis, and intrathecal hematoma — complications currently cited without explanation in most EBP consent discussions^{4,5}
- Fluoroscopic guidance and standardized post-procedure neurological monitoring should be considered in high-risk patients, particularly those with prior dural puncture or intrathecal catheter



Shared Decision Making

- Individualized risk-benefit discussion is essential: in this case, PDPH severity, patient preference, and fluoroscopic availability supported proceeding
- Evolving evidence base warrants updated counseling practices and fluoroscopy may be a meaningful safety tool in high-risk EBP cases¹

Bottom line: This case provides the first visual evidence how epidural blood can reach the intrathecal space – lending clinical plausibility to theorized EBP complications



References