# Cerebrospinal Fluid Cutaneous Fistula Following Uncomplicated Neuraxial for Labor Analgesia: A Case Report

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## Background:

- CSF-cutaneous fistula is an exceedingly rare complication from neuraxial anesthesia. It occurs as a result of communication between the subarachnoid space and skin, at the neuraxial puncture site.
- Most CSF leaks are self resolving; rarely they form tracts leading to CSF-cutaneous fistulae
- **Mechanism:**
  - spinal or epidural needle placement into subarachnoid space
  - combined spinal-epidural (CSE) technique
  - catheter removal (epidural or intrathecal)
- **Clinical presentation:** Clear fluid leakage from puncture site
  - May be:
    - **Asymptomatic**
    - Associated with **intracranial hypotension**: postural headache, nausea, photophobia – similar to PDPH
- Severe complications: meningitis, subdural hematoma

**Case:**

- 25-year-old patient, G2P1, with a history of a prior uncomplicated epidural catheter placement, was admitted at 40 weeks and 2 days for labor induction.
- She underwent a routine epidural catheter insertion, which was uncomplicated, was placed by a single provider, and **no dural puncture was noted at time of placement**.
- The patient reported adequate analgesia from the epidural catheter, during her delivery.
- The catheter was removed 40 minutes after delivery. One hour later, the patient reported fluid leakage from the puncture site, which she noticed due to soilage of her clothes.
- The patient denied any headaches, photophobia, or neck stiffness. On physical exam, the nurse and anesthesia resident noted clear fluid leakage from the puncture site.
- An MRI of her lumbar spine revealed a 14cm subcutaneous fluid collection.
- After consulting with neurology, and discussing management options with the patient, the decision was made to suture the puncture site and apply a sterile dressing.
- The patient recovered without complications and was discharged home

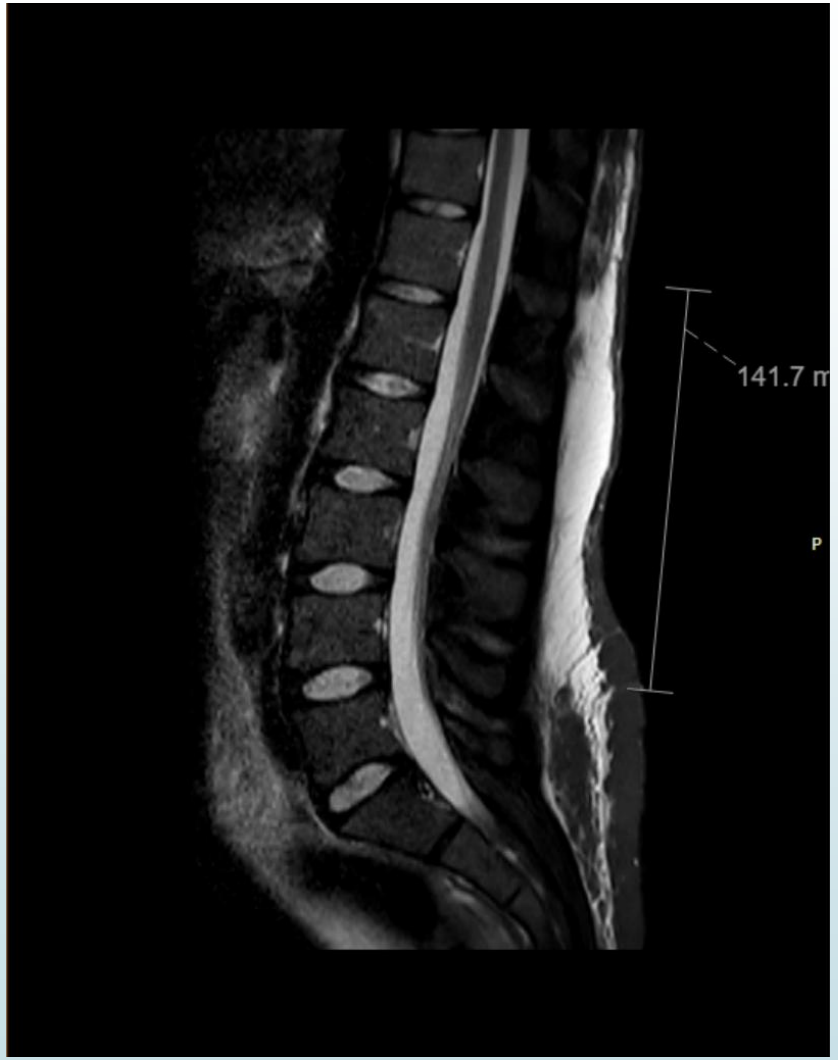


*Figure 1: Sagittal MRI image of patient's back, indicating a 14cm fluid collection in the subcutaneous tissue*

**Teaching Points:**

- Rare but significant complication of neuraxial anesthesia
- Suspect CSF fistula with any persistent clear leakage from puncture site
- Symptoms may be minimal or absent → don't rely on headache
- Early recognition is important to prevent complications including PDPH, meningitis, neurologic symptoms
- **Diagnosis:**
  - Clinical suspicion + **visible leakage**
  - Confirmation:
    - Glucose, protein, beta-2 transferrin**(most specific option, limited availability)**
    - Imaging – CT, MRI or **MR myelography**

- Management:
  - Conservative:
    - Pressure dressing, bed rest, skin adhesive, hydration.
    - Theoretically, antibiotics(for meningitis prevention), acetazolamide(to decrease CSF production)
  - Invasive
    - Skin suture, **epidural blood patch,** surgical intervention

## References:


- Sanha M, Vaz I, Barbosa H, et al. Cerebrospinal fluid cutaneous fistula following neuraxial anesthesia for cesarean delivery.
- Cureus. 2023;15(1):e32895.Gordon L, et al. Cerebrospinal fluid cutaneous fistula following neuraxial anesthesia: case report and review of management.