Cerebrospinal-cutaneous Fistula in a Parturient Following Neuraxial Blockade

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INTRODUCTION
Persistent cerebrospinal-cutaneous fistula is a complication of dural puncture from spinal or epidural anesthesia. There have been increased reports of persistent cerebrospinal fluid leak after combined spinal epidural (CSE) techniques in parturients.

CASE DESCRIPTION
A 26 year old, primigravida at 37 weeks, with a notable history of oxycodone abuse presented for a scheduled cesarean section. Intra-operative management included a single shot spinal combined with a lumbar epidural catheter.

Postoperatively, patient was noted to have an intrathecal-cutaneous fistula with persistent cerebrospinal fluid (CSF) leak. This fistula was initially observed for the first two days postoperatively with no resolution. A neurosurgical consult was obtained and the decision was made to suture the fistula closed at the skin.

The patient initially did not report any post dural puncture headache (PDPH) symptoms, but at six month follow up, reports chronic headaches.

REFERENCES

DISCUSSION
Intrathecal-cutaneous fistula is a rare pathology, but the incidence from a properly performed CSE is surprising. Prior reported cases of cerebrospinal-cutaneous fistula were after dural puncture with a 16 gauge needle, at our institution, we use an 18 gauge needle for epidurals and a 25 gauge pencil point for spinals. It is possible that cases of fistula status post CSE were from unintended dural puncture with a Touhy needle. A CSE typically deflects the spinal needle superiorly alongst the curved edge of the Touhy needle, this reduces overlap of dural & arachnoid puncture.

This fistula pathology was unintentionally detected at our institution due to a transparent occlusive dressing (Tegaderm ®) being placed over the needle insertion site, which allowed pooling of the CSF. The collected CSF was not tested at our institution, though prior case reports have tested for electrolyte, protein, glucose content and even performed a Beta-2 Transferrin immunofixation assay. Beta-2 Transferrin is a protein found almost exclusively in CSF and can be performed on minute samples of fluid (<0.1 mL), has historically been used for the detection of CSF rhinorhea.

Limited case reports regarding intrathecal-cutaneous fistula have yielded no episodes of meningism nor fever. Though, there have been incidences of PDPH presenting within a week of detection, which resolved spontaneously.

The fistula in the majority of case reports was closed with nylon suturing by the neurosurgery department though, there was one report of an epidural blood patch sealing the cutaneous fistula.

It has been postulated that the epidural catheter can impede the inflammatory response (thus inhibiting healing of the fistula), that injection of a large volume of epidural solution/lumbar edema can influence fistula formation, none of these claims have ever been proven.

CONCLUSION
Persistent cerebrospinal-cutaneous fistula is a rare complication of dural puncture from spinal or epidural anesthesia. The CSF can be lab tested for verification. Patients are typically asymptomatic, however the pathophysiology, optimal management and prognosis of the condition, remain to be determined.