

When Drains Go Wrong: A Case of Post Drain Spinal Hematoma

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Introduction

Spinal drains are lumbar cerebrospinal fluid drains that are utilized in repair of aortic aneurysms to help prevent and manage spinal cord ischemia. This is a case of an elderly female on aspirin and warfarin who presented for a complex abdominal aortic aneurysm repair via physician modified endovascular grafts (PMEG) and developed a hematoma after the removal of a spinal drain despite following ASRA coagulation guidelines.

Case report

A 73-year-old BMI 20.4 kg/m² female with a history of hypertension, hyperlipidemia, atrial fibrillation on warfarin, cigarette smoking, coronary artery disease s/p coronary stent on aspirin, and type 2 diabetes mellitus.

As part of the surgical plan, a spinal drain was placed preoperatively without complications. Warfarin was stopped for 7 days and ASA 81 mg for 5 days prior to day of surgery. INR 1.1 and platelets 189 prior to placement.

She underwent a four-vessel PMEG involving the SMA, bilateral renal and iliac artery stent placement. Intraoperatively, she received a total of 4000 units of heparin (final ACT 164, baseline 148) and reversed with 50 mg of protamine. A total of 38 mL of CSF was drained during the procedure.

The Big Idea

Spinal drains are crucial for preventing spinal cord ischemia by enhancing spinal cord perfusion pressure through CSF drainage. Alternatively, arterial pressure can be increased.

ASRA recommends stopping warfarin for 5 days, repeat INR to be <1.2 and continue aspirin before neuraxial placement.

ASRA also recommends stopping heparin 4-6 hours prior removal.

Despite following risk-mitigation guidelines for hematoma development, it still occurred in this patient. We should reconsider risk-to-benefit ratio before catheter placement in patients on warfarin.



Images 1 & 2: Initial MRI sequences demonstrating intrathecal lumbar hematomas, most pronounced at L3—5 and showing diffuse subarachnoid hemorrhage.



Upon ICU admission, the patient was considered high risk for spinal cord ischemia and managed with MAP goals >80 mmHg. She remained neurologically intact.

On POD1, the drain ceased functioning and was clamped. On POD2, it was removed. Eight hours after removal she developed acute, intense back pain without neurological deficits. MRI revealed lumbar subarachnoid hematomas. Neurosurgery deemed the findings nonoperative and pain was managed with a ketamine infusion and multimodal analgesia.

On POD 3, she developed new onset left lower extremity weakness. A repeat MRI showed an expanding intrathecal hematoma (from 4.7 cm to 6.0 cm), however, she remained nonoperative. Following treatment with methylprednisolone and mannitol, her neurological deficits improved.

Discussion

Prophylactic drains in thoracic endovascular aortic repair reduce spinal cord injury incidence to 1.3%. The risk of spinal hematoma post-drain placement ranges from 3.9% to 27% and is dependent on atraumatic placement and coagulation status.

This raises questions about the risk-to-benefit ratio of spinal drains with an expected duration under 48 hours regardless of careful selection of patients for perioperative spinal drain placement.