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Case Report

Surgical management of an ossified giant lumbar pseudomeningocele: A case report

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ABSTRACT

Background: Pseudomeningoceles (PMs) are infrequent complications of spine surgery resulting from incidental durotomy and subsequent extravasation of cerebrospinal fluid. Giant PMs (GPMs), defined as ≥8 cm in major diameter, are rarely reported in the literature and present a challenge due to a lack of clear guidelines for surgical management.

Case Description: Here, the authors discuss the successful surgical management of a 25.3 cm lumbar GPM that became calcified 3 years following an initial T10-S2 laminectomy with instrumented fusion performed at an outside-hospital.

Conclusion: This report focuses on the successful 3-year delayed surgical intervention for the management of an ossified GPM.

Keywords: Durotomy, Giant, Ossification, Pseudomeningocele

INTRODUCTION

Pseudomeningocele (PM) is an uncommon complication of spine surgery (0.07–2%) attributed to an iatrogenic durotomy that results in the extradural accumulation of cerebrospinal fluid (CSF).[8] Patients with PM often present with symptoms including postural headache, nausea, and vomiting, with or without accompanying radiculopathy due to nerve entrapment.[1,2] PM >5 cm in major diameter is considered "large" while those ≥8 cm are classified as "giant;" there are rare reports in the literature of >20 cm PM with/without ossification.[3,8,6] Here, a 76-year-old male presented with a 25 cm calcified giant PM (GPM) that was successfully repaired 3 years following prior a T10-S2 laminectomy with instrumentation.

CASE SUMMARY

History

A 76-year-old Caucasian male presented with chronic back pain following a T10-S2 laminectomy with instrumentation and L6-S1 fusion performed at outside-hospital 3 years ago. Notably, the PM was noted soon after surgery, but no surgery was performed. The patient complained of

worsening "positional" back pain and a "clicking" sensation while walking, accompanied by the right lower extremity radiculopathy (paresthesias in right foot) but with an intact neurological examination.

Diagnostic electromyographies (EMGs) and magnetic resonance (MR) studies

The EMGs showed bilateral denervation in the L3/L4 nerve root distributions, while MR/computed tomography studies showed a large posterior fluid collection with calcified margins [Figure 1].

Surgery and postoperative outcome

Through a midline lumbar incision, a large calcified cystic mass was encountered that drained clear yellow fluid. There was marked calcification encompassing the instrumentation that was previously placed T10-S2; notably, the rods at L4-5 had hairline fractures without displacement. All instrumentation was removed. An extensive calcified membrane covered the prior laminectomy site from T11 to L4; while from L5 – distally, a thick fibrous scar covered the dura. Finally, the thoracolumbar sacral fascia was reapproximated with interrupted 0 Vicryl sutures followed by superficial layer closures using inverted vertical mattress 2-0 Vicryl and 3-0 Vicryl sutures; the skin was approximated with stainless steel clips. Postoperatively, the patient was neurologically intact within 135 days; his pain was well-controlled (i.e., without paresthesias), he had no residual motor deficit, and radiographically, PM did not reaccumulate [Figures 2 and 3].

DISCUSSION

Incidental durotomy is one of the most common complications of spine surgery, (3–5% in primary 7–17% in revision surgery). PM may develop postoperatively due to the continued accumulation of CSF in the extrathecal space; some may spontaneously resolve, while others continue to accumulate CSF potentially resulting in GPM.

Calcification of PMs is a rarely reported event, reportedly occurring up to 10.3 years after surgery.[4,5,7] Guidelines for the surgical management of GPMs large typically include surgical exploration for occlusion of the fistula tract, utilizing direct surgical repair of the defect, patch techniques, and CSF diversion through shunting or subarachnoid drain.[8] Here, our 76-year-old patient presented, 3 years following a T11-L4 laminectomy/instrumented fusion with a 25.3 cm calcified lumbar GPM causing postural hypotension and lumbar

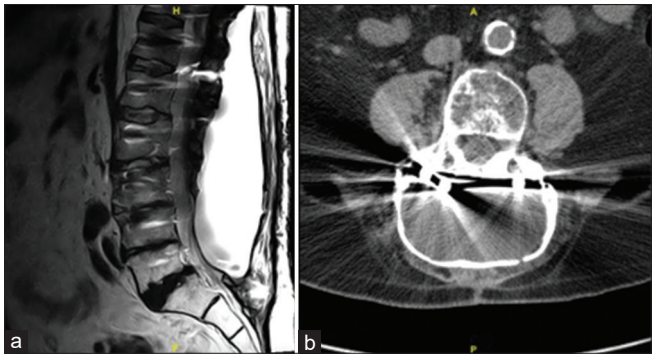

Figure 1: (a) T2-weighted magnetic resonance image. (b) Computed tomography without contrast at the L4 vertebral body. In largest dimension, the fluid collection was 8.2 × 5.2 × 25.3 cm.

Figure 2: Lateral thoracolumbar X-ray of the spine taken on postoperative day 6 showing removal of the giant pseudomeningocele and hardware without reaccumulation of cerebrospinal fluid.

Figure 3: Lateral thoracolumbar X-ray of the spine taken 4 months after giant pseudomeningocele removal.

radiculopathy. Following surgical occlusion of the persistent CSF fistula, the patient's symptoms largely resolved.

CONCLUSION

Here, a 76-year-old male underwent successful repair of a 25.3 cm lumbar GPM that developed and ossified following a T11-L4 laminectomy with instrumented fusion 3 years prior.

Declaration of patient consent

Patient's consent not required as patient's identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

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