

Iatrogenic intradural spinal arachnoid cyst as a complication of lumbar spine surgery

Report of 2 cases

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Iatrogenic spinal arachnoid cysts are rare, but have been described as a complication of spinal injection and lumbar puncture procedures. The authors describe 2 cases of iatrogenic spinal arachnoid cyst formation that occurred after incidental durotomy during lumbar spine surgery. In both cases, postoperative MR imaging revealed compression of the cauda equina by an intradural arachnoid cyst. Intradural exploration and fenestration of the arachnoid cyst was accomplished in each case. This entity should be considered in the differential diagnosis of a patient experiencing symptoms of neurological compression after a lumbar surgery complicated by incidental durotomy. (DOI: 10.3171/2009.3.SPINE08844)

KEY WORDS • spinal arachnoid cyst • iatrogenic • durotomy • complication

INTRADURAL spinal arachnoid cysts are relatively uncommon spinal lesions. Nonacquired spinal arachnoid cysts can be congenital or idiopathic.^{7,11} Causes of acquired spinal arachnoid cysts include trauma, infection, inflammation, and hemorrhage.^{1,4,6,9} Iatrogenic causes of acquired spinal arachnoid cysts are rare, but have been reported following spinal injections, lumbar puncture, and even skull base surgery.^{2,3,5,8} We report 2 cases of iatrogenic spinal arachnoid cyst formation that occurred after incidental durotomy during lumbar spine surgery.

Case Reports

Case 1

History and Examination. This 79-year-old female underwent extension of her L5–S1 fusion to the L-3 level secondary to symptomatic adjacent segment stenosis. Preoperative MR imaging revealed no evidence of a spinal arachnoid cyst. Intraoperatively, a small dural tear occurred in the axilla of the right L-3 nerve root with a minimal amount of CSF leakage. The leak was primarily repaired. Two weeks after surgery the patient complained of progressive right lower-extremity pain. Magnetic resonance imaging revealed no extradural compression, but did show intradural compression of the cauda equina,

possibly related to arachnoid cyst formation anterior and posterior to the nerve rootlets (Fig. 1). Computed tomographic myelography revealed that the arachnoid cyst extended to her lower thoracic spine (Fig. 2).

Operation. The patient underwent intradural exploration at the L-4 level. A large arachnoid cyst was noted. As the cyst was fenestrated, a large gush of CSF was released with resultant decompression of the cauda equina.

Postoperative Course. At the 3-month follow-up, the patient's leg pain was improved and MR imaging revealed no evidence of the arachnoid cyst (Fig. 3). The patient did have some persistent lower-extremity pain 6 months postoperatively. Because she lived out of state she did not return for an appointment, but did send an outside MR imaging study which revealed no recurrence of the arachnoid cyst.

Case 2

History and Examination. This 67-year-old female presented with a chief complaint of positional headache with nausea and vomiting 2 weeks after an L4–5 lumbar laminectomy, which was complicated by a dural tear. Magnetic resonance imaging revealed pseudomeningocele and intradural compression of the cauda equina by an arachnoid cyst (Fig. 4).

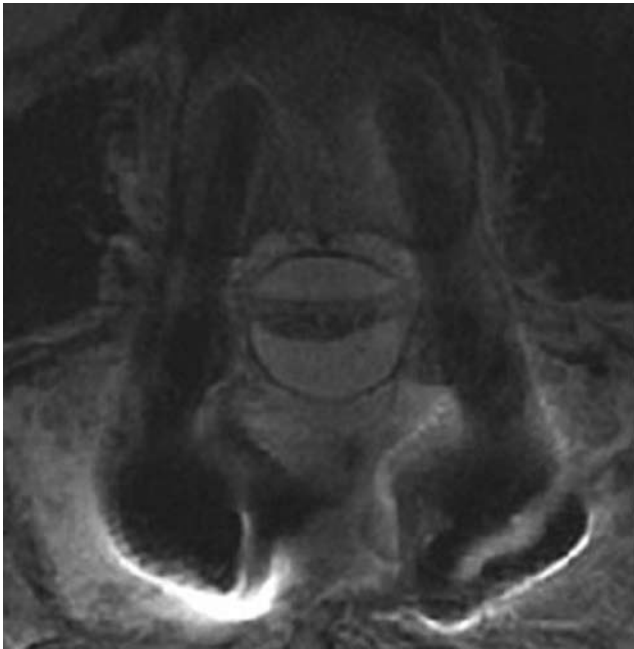


FIG. 1. Case 1. Axial MR image showing intradural compression of the cauda equina from an iatrogenic arachnoid cyst.

Operation. The patient underwent repair of the pseudomeningocele. Although she was not symptomatic due to the cauda equina compression, the decision was made to also perform intradural exploration at the L4–5 level with prophylactic fenestration of the arachnoid cyst.

Postoperative Course. Postoperatively her symptoms abated. Magnetic resonance imaging performed at the 2-month follow-up revealed good intradural decompression of her cauda equina (Fig. 5). The patient was lost to further follow-up.

Discussion

Iatrogenic spinal arachnoid cysts are rare and of the few reported cases in the literature, none were associated

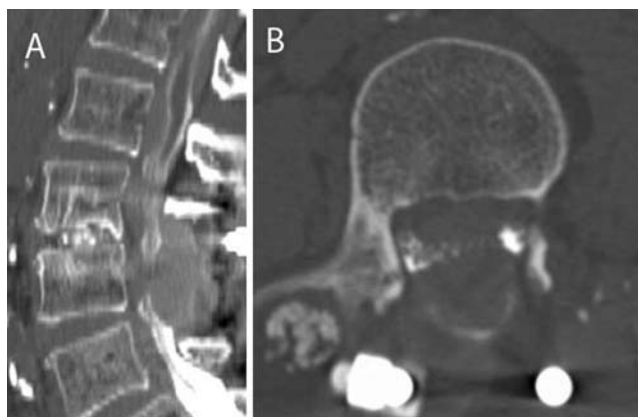


FIG. 2. Case 1. Sagittal (A) and axial (B) CT myelograms reveal an intradural compression of the neural elements by an arachnoid cyst, which extends up into the lower thoracic spine.

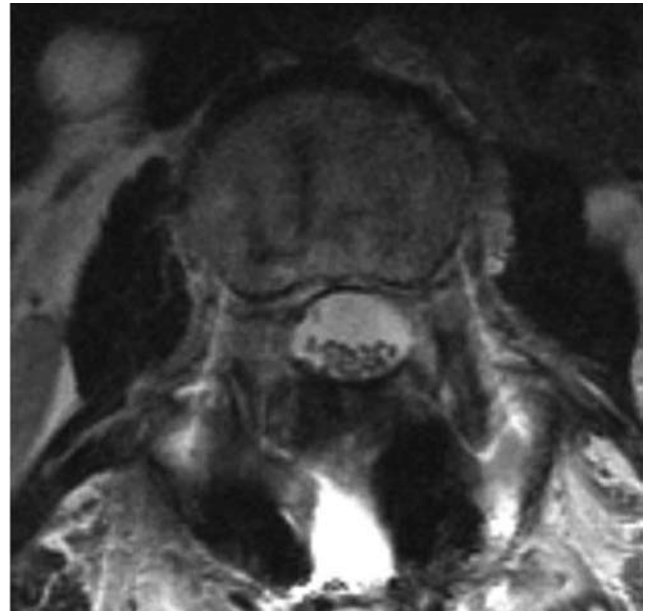


FIG. 3. Case 1. Postoperative axial MR image revealing no arachnoid cyst and good decompression of the cauda equina.

with lumbar surgery.^{2,3,5,8} Valls et al.¹⁰ did report on a case in which a thoracic arachnoid cyst became symptomatic after a lumbar laminectomy. However, in this case the cyst was not iatrogenic at the site of surgery as there was no dural violation during the lumbar laminectomy and the thoracic arachnoid cyst was believed to be preexisting. In our 2 reported cases, we believe the arachnoid violation that occurred during incidental durotomy resulted in a ball-valve type phenomenon that led to the entrapped CSF collections. This entity should be considered in the differential diagnosis of a patient experiencing symptoms of neurological compression after a lumbar surgery complicated by incidental durotomy.

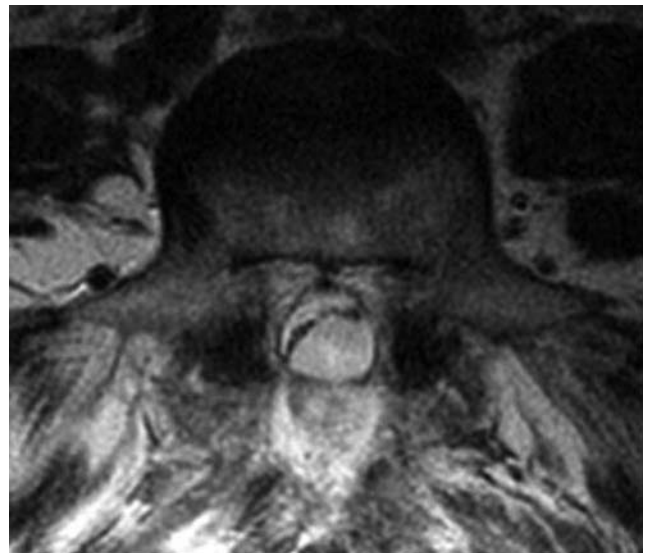


FIG. 4. Case 2. Axial MR image showing an arachnoid cyst causing intradural compression of the cauda equina.

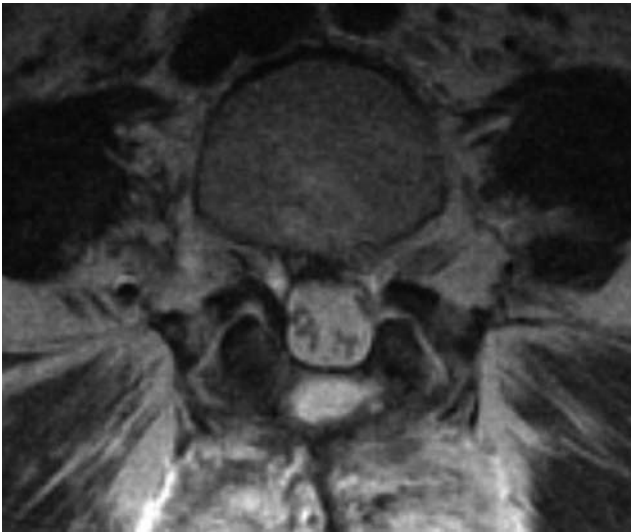


FIG. 5. Case 2. Postoperative axial MR image showing successful fenestration of an arachnoid cyst with good decompression of the cauda equina.

Disclaimer

The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper.

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