

Rare Complication Of Lumbar Disc Surgery: Arachnoid-Lined Cyst Outlined By Thinned Posterior Lumbar Vertebra Elements

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Citation

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Abstract

Pseudomeningocele is a rare complication of lumbar disc surgery. Arachnoid-lined pseudomeningoceles are also very rare, and only a few reports of pseudomeningocele ossification exist. In this case report, a patient is presented who developed a lumbar arachnoid-lined pseudomeningocele postoperatively. This was outlined by thinned bone posteriorly at the L5-S1 level, rather than ossification of the pseudomeningocele itself. The repeated pulsation of the cyst may have resulted in this unique distortion of the posterior lumbar vertebra.

INTRODUCTION

Pseudomeningocele has an incidence of only 0.068% after lumbar disc surgery (1). Arachnoid-lined cysts and ossified pseudomeningoceles are very rare, only three cases ossified pseudomeningoceles having been reported in the literature (2,3). In this case report, we discuss a patient with an arachnoid-lined pseudomeningocele, which was not ossified, but was outlined by the thinned bone of the posterior elements of the lumbar vertebra.

CASE REPORT

A 39 year-old female patient presented with complaints of back and left leg pain. She had undergone a L5-S1 disc operation due to right leg pain three years previously. She had been well until one month prior to this presentation, when she began to experience back and left leg pain. This pain progressively worsened. Radiologic examinations revealed a pseudomeningocele formation at the level of the previous operation. CT scan showed a pseudomeningocele outlined by thinned posterior bony elements at the L5-S1 level (Figure 1). Magnetic resonance imaging (MRI) also demonstrated pseudomeningocele formation (Figure 2).

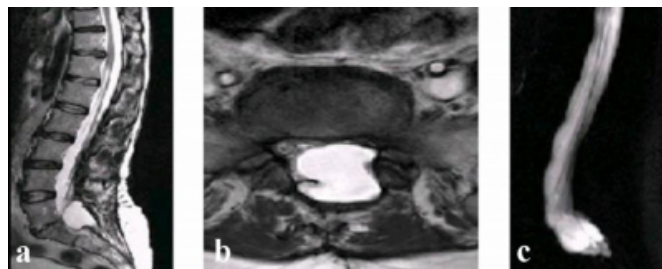
Figure 1

Figure 1: Axial CT scans (a and b) reveal thinning of posterior lumbar vertebra elements due to pseudomeningocele



Figure 2

Figure 2: T2 weighted sagittal (a) and axial MR (b) scans and MR myelography (c) shows enlarged bony spinal canal and thinned posterior lumbar vertebra elements due to pulsation of arachnoid lined cyst



Because of the patient's progressive symptoms and X-ray findings, operative treatment was indicated. Through an initial midline lumbar incision, the cyst was exposed. It was large and distorted, and lined by very thin bone posteriorly. The extradural pseudomeningocele cyst was removed, along

with the surrounding thin bone. Communication of the cyst through a hiatus with the dural sac was seen and this dural defect was closed by primary suturing. We also performed a L5-S1 fusion using pedicle screw fixation to prevent instability because of the distorted and also extensively removed posterior elements at the operation.

Postoperatively, she improved and the radicular pain completely disappeared. Postoperative MRI (Figures 3) revealed excision of the cyst and reconstruction of the dural borders. The patient had no complaints on two year follow-up.

Figure 3

Figure 3: Postoperative sagittal T2 weighted MRI (a) showing reconstruction of dural sac and lateral (b) and AP (c) plain radiographies demonstrating stabilization.



DISCUSSION

Extradural pseudomeningoceles can be congenital or acquired after trauma or operative procedures. Postoperative pseudomeningoceles are rare, and are thought to be formed in one of two ways. In one, a tear occurs in both the dura and arachnoid, and chronic CSF leakage leads to the development of a pseudocyst from abnormal connective tissue reaction in the paraspinal region. In another, intact arachnoid herniates through a dural defect created at the time of operation and causes formation of an arachnoid-lined pseudomeningocele. The first mechanism is largely responsible for the formation of pseudomeningoceles, the second mechanism, with an arachnoid-lined pseudomeningocele, is rare (3).

An ossified pseudomeningocele is also very rare, only three cases having been reported (2,3). Bony outlining of pseudomeningocele with thinned posterior vertebral elements instead of ossification of the cyst wall has not been mentioned previously in the literature. Expansion of the arachnoid-lined cyst in this patient thinned the posterior lumbar vertebral elements and enlarged the spinal canal. Had the arachnoid not been intact, CSF would have leaked into the paraspinal region to create a cyst there, instead of enlarging the spinal canal. Whether the ossified meningoceles in the literature were formed by ossification of the cyst wall or thinning posterior lumbar vertebral elements due to pulsation of the arachnoid is not clear.

A lumbar pseudomeningocele may present with recurrent radicular pain, because of compression of a nerve root, or entrapment of the nerve root in the neck of the cyst. (3,4) Our patient's symptoms were probably due to compression because no nerve root entrapment was found upon operation. Excision of the cyst and repair of the dural defect results in symptom improvement and a good prognosis. In our patient, we chose to use pedicle screws for stabilization instead of excision and repair because of the extensive distortion and removal of the posterior lumbar vertebral elements.

CONCLUSION

An arachnoid-lined pseudomeningocele is a rare complication of lumbar disc surgery. The cyst can distort surrounding bony structures, and pulsation by the arachnoid can result in thinned posterior lumbar elements outlining the pseudomeningocele. Surgical excision of the cyst and repair of the dural defect results in a good prognosis.

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