

# POSTOPERATIVE PSEUDOMENINGOCELE: case report

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## ABSTRACT :

*In this article, a pseudomeningocele, which was diagnosed during the radiological work of a male 63 year old patient who had undergone multiple operations for lumbar disc disease and postoperative fibrosis, is presented as a case report. In our patient, the pseudomeningocele is formed by an expanding dural sac and contents with an intact arachnoid membrane, which is forced to bulge posteriorly by the pulsatile force of the CSF. The patient is operated basically for the associated lumbar spinal pathologies while the pseudomeningocele cyst is reduced by longitudinally placed sutures.*

*This topic is discussed along previous literature.*

**Key Words:** *Pseudomeningocele, lumbar spine surgery*

## INTRODUCTION

An incidence of 0.3–6% of dural laceration is reported during all kinds of spinal surgery being most frequent in the group of patients who have undergone more than one operation (9). When the arachnoid membrane is injured along with the dura and the defect is not considered for primary closure, the cerebrospinal fluid (CSF) finds its way through the paraspinal soft tissue and causes CSF fistulas through the surgical wound in the skin. In cases where the leaking CSF cannot find a way out, it is surrounded by a soft tissue reaction ending in a cyst formation (2, 6). These cysts are known as pseudomeningoceles, and although rare as to be reported as case reports, occurs most frequently after a laminectomy (1, 2).

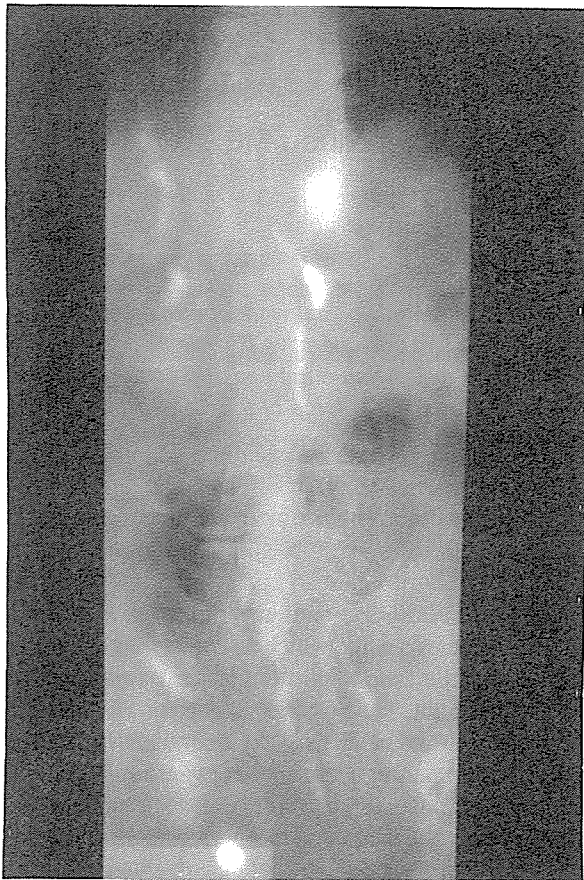
## CASE REPORT

The patient, who had initially presented with lumbar back pain and right sciatica and was diagnosed to have an L4–L5 herniated lumbar disc, underwent a percutaneous laser discectomy and two open discectomy operations. Unfortunately he had to look for medical help for the relentless pain complaint after his last operation. The control lumbar computerised tomography (CT) revealed epidural fibrosis in the L4–5 interspace and surgical intervention is considered. During the preoperative preparations, the

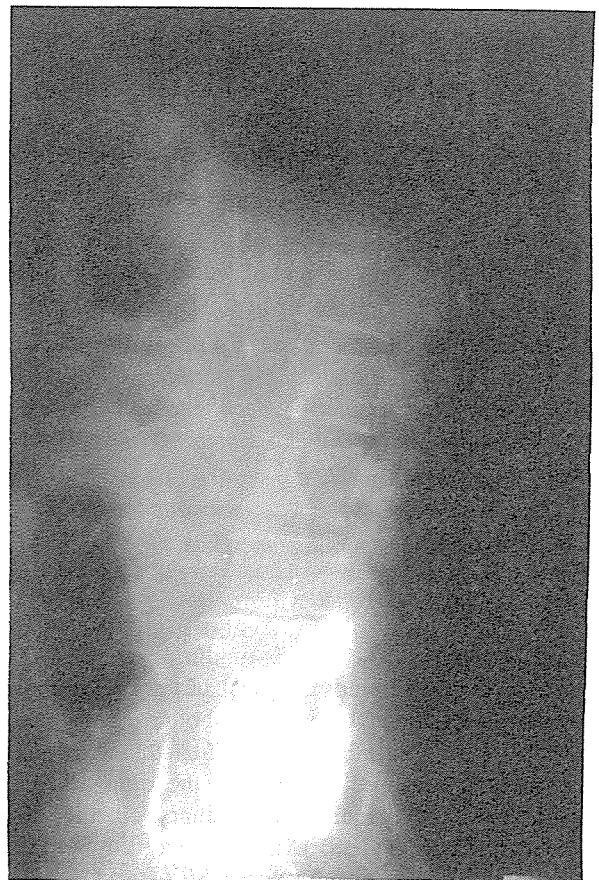
lumbar x-ray of the patient indicated a grade I spondylolisthesis after which a lumbar myelography along with the functional lumbosacral x-ray studies were carried out. The posterior expansion of the spinal canal as illustrated in Figure 1 and 2 raised a suspicion of a pseudomeningocele and it was confirmed by magnetic resonance imaging (MRI) (Figure 3). After the contrast enhancement the peridural fibrosis was detected in this region. The patient was then operated, and the pseudomeningocele cyst was reduced with constricting primary sutures along with the extirpation of the peridural scar tissue around the right L5 root and posterior stabilization of the L4 and L5 vertebrae with an Alici A4 system (Figure 4). A complete pain relief was achieved postoperatively. However a CSF fistula became evident, and despite all conservative measures, the leak did not stop and a revision operation was planned. During this surgery, a small defect was found on the dura and was repaired. One week afterwards, the patient was charged out with no pain and no wound problems. The sixth month control of the patient revealed a complete cure of this complex lumbar spinal problem.

## DISCUSSION

Pseudomeningoceles are rare complications of lumbar spinal surgery. They are defined as limited extradural collections of CSF (1, 2, 3, 4). Postlaminectomy pseudomeningocele term was first used by Hyndman and Gerber in 1946 and lumbar



**Figure 1:** Anteroposterior myelogram revealing the pseudomeningocele cyst bulging on the right side of the spinal canal.



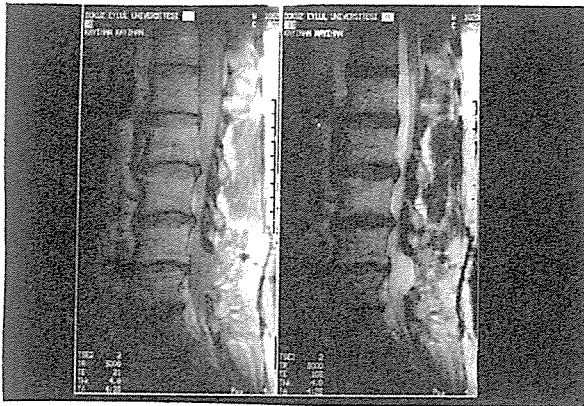
**Figure 2:** The spondylolisthesis between L4 and L5 and the pseudomeningocele cyst bulging posteriorly on the lateral lumbar myelogram.

discectomy related pseudomeningocele cases were initially reported by Swanson and Fincher in 1947 (1). Thereafter, the reports on these rare complication grew in number due to improvements in medical imaging and increased frequency of lumbar surgery. The incidence of pseudomeningocele largely varies, probably because of the asymptomatic course in most individuals. A ratio between 0.07% and 2% is obtained in most large series (1, 2, 3).

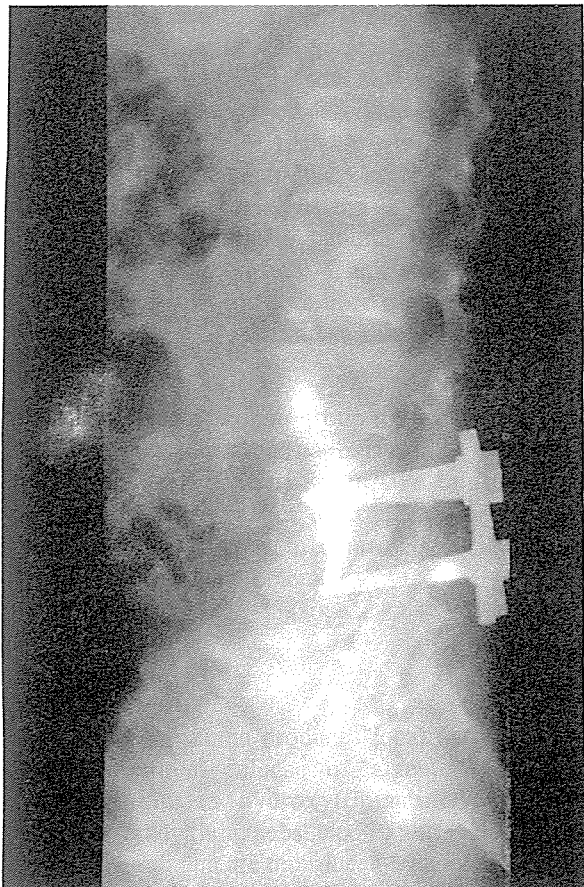
The formation of a pseudomeningocele starts with a dural tear with or without involved arachnoid membrane (6). Often, the leak is from an incompletely closed dural incision or an unrecognized tear. The released CSF then finds its way across the incised surgical planes, and eventually causes either a CSF fistula or a cyst which is encapsulated by surrounding tissue within the wound, most of the time herniating through a laminectomy defect (2, 8). Nearby nerve roots may be included in this sac, however neurologic

deficits or complaints should not be attributed solely to these entrapped neural structures (2, 8).

The symptoms alerting the physician of a pseudomeningocele are indistinguishable from those of the initial lumbar disorder. Nevertheless, the leg and back pain is usually found to be associated with the herniation of nerve roots into the meningocele cyst, since these radicular symptoms are well relieved by simply reducing the nerves into the spinal canal and excising the cyst. When the cyst bulges from a defect in the paraspinal superficial fascia, the main complaint and finding in the examination is a subcutaneous fluctuating mass (1, 2). Hosono et al reported an extraordinary case of cervical pseudomeningocele with herniation of the spinal cord (7). It should be kept in mind that these cysts also may extend into retroperitoneal area after the anterior spinal surgery (5). The best radiological studies demonstrating these lesions are axial CT or



**Figure 3:** Lumbar sagittal MRI sections (T1 and T2 weighted images) depicted the cyst and listhesis in more detail.



**Figure 4:** Postoperative lateral x-ray was obtained in order to check the configuration of the posterior stabilizing instrument.

multiplanar MRI because of the capability to delineate the communication of the cyst with the spinal canal, although the extent of the pseudomeningocele is readily seen on myelography (1, 2, 4, 5, 6, 7).

The treatment modalities for a pseudomeningocele is a debatable subject. While most of the cases were surgically explored in the past, there is a tendency to use more conservative means of therapy (3). Many authors worldwide agree upon doing nothing against an asymptomatic pseudomeningocele case (8). The cases having associated surgical lesions accompanying the cyst should undergo surgical repair of the cyst (1). When the pseudomeningocele cyst is believed to be causing symptoms and findings, there are several optional routes the physician may take. One of them, especially when there is an associated CSF fistula, is continuous closed subarachnoid drainage as advocated by Shapiro et al. This technique, although rather successful (18 of 19 patients had complete cure for the CSF fistula/pseudomeningocele), carries a high risk of serious infection of about 10% (3). Another measure is to use autologous blood patch to seal the dural breach. Patient's own blood is injected into the epidural space in an amount of 10–25 ml, thus the augmented clot formation, clot strength in the presence of CSF can seal most of the dural defects (2). However, when an obvious pseudomeningocele cyst with symptoms or neurological deficits is to be treated, the only definitive alternative is to surgically excise the cyst and repair the dural tear (1). Of course, in our opinion the best measure to take for the prevention of post-lumbar extradural surgery pseudomeningocele formation is to closely inspect for a CSF leak before the closure of the wound.

The point of interest in our case is the type of reduction of the pseudomeningocele cyst and closure of the dural defect. Instead of directly finding the communication of the cyst with the subarachnoid space and then totally removing it, we performed a more simplistic maneuver. Since the pseudomeningocele cyst in our case was a comparatively small one with a large neck, placing a few vertically arranged constricting sutures sufficed for the reduction of the cyst and repairment of the dural breach. We could not make sure if this pseudomeningocele cyst added anything to the patient's complaints, because we performed a quite deal of surgery for spinal stenosis, instability and peridural fibrosis.

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