Case Report

Iatrogenic lumbar giant pseudomeningocele: A report of two cases

Abolfazl Rahimizadeh, Nima Mohsenikabir, Naser Asgari

Pars Advanced and Minimally Invasive Medical Manners Research Center, Pars Hospital, Iran University of Medical Sciences, Tehran, Iran.

E-mail: Abolfazl Rahimizadeh - a_rahimizadeh@hotmail.com; Nima Mohsenikabir - nmohseni790@gmail.com; Naser Asgari - nvasgari@gmail.com

*Corresponding author:
Nima Mohsenikabir,
Pars Advanced and Minimally Invasive Medical Manners Research Center, Num. 10, Rastak St., Keshawarz Blvd., Tehran, Iran.
nmohseni790@gmail.com

Received : 14 September 19
Accepted : 26 September 19
Published : 01 November 19

DOI
10.25259/SNI_478_2019

Quick Response Code:

ABSTRACT

Background: Iatrogenic lumbar pseudomeningoceles are an uncommon complication of lumbar spinal surgeries. This pathology is an extradural, encapsulated, and cerebrospinal fluid collection which develops as a consequence of an inadvertent, unrepaired dural tear. If a pseudomeningocele grows beyond 8 cm in length, it may be classified as “giant.”

Case Description: Two adult females with giant pseudomeningoceles due to remote lumbar laminectomy were presented. Both patients were surgically managed.

Conclusion: Iatrogenic lumbar giant pseudomeningocele is rare. Notably, their surgical management is similar to that utilized to treat routine pseudomeningoceles.

Keywords: Complication, Dural tear, Giant pseudocyst, Iatrogenic pseudomeningocele, Incidental durotomy, Lumbar discectomy, Lumbar laminectomy

INTRODUCTION

Iatrogenic pseudomeningocele following spinal surgery is defined as an extradural cystic collection of cerebrospinal fluid (CSF) without a dural covering that results from a breach in the dural-arachnoid layer.[2,3,5,8] This complication mostly occurs in the lumbar followed by the cervical and thoracic spine.[4,6] In the lumbar region, it is mostly seen following laminectomy for a disc herniation or stenosis.

Size of pseudomeningoceles

Most lumbar pseudomeningoceles are below 5 cm in size, but rarely, they may become “giant” when over 8 cm.[2,5,8] Hyndman and Gerber, in 1946, reported the first case of an iatrogenic lumbar pseudomeningocele; since then, there have been 63 additional cases. However, only five giant pseudomeningocele subtypes have been cited. Here, add two additional cases of such giant iatrogenic pseudomeningoceles.[2,8]

CASE DESCRIPTION

Case 1

A 30-year-old female had a lumbar laminectomy for a left-sided L5-S1 disc herniation. One year later, she developed recurrent lumbar complaints thought to be due to a recurrent disc
herniation. However, the preoperative magnetic resonance imaging (MRI) showed a large/giant pseudomeningocele that extended from L4 to S2 (e.g., total length of 8.9 cm) [Figure 1]. At surgery, the pseudomeningocele sac had an abnormally thick wall that was widely opened [Figure 2a]. After CSF was drained, a protruding rootlet at the depth of the cavity was dissected and maneuvered back into the thecal sac, following by closure of the dural defect [Figure 2b and c]. The patient's complaints fully resolved within 1 month, and the MR performed 5 months later demonstrated full resolution of the pseudomeningocele [Figure 3].

Case 2

A 51-year-old female originally had a multilevel laminectomy for lumbar stenosis. Eighteen months later, she presented with a history of 3 months of intractable lower back pain and right L4. The lumbar MRI showed a giant pseudomeningocele extending from L2 to L5; it was 12 cm in length, arising from a defect at the L3-L4 level [Figure 4]. At surgery, the giant sac was opened [Figure 5]. At the depth of the sac, two nerve roots were protruding through a dural defect. The rootlets were replaced within the thecal sac, and the defect was appropriately closed. Postoperatively, the symptoms/signs fully resolved.

DISCUSSION

Unnoticed dural tears with an intact arachnoid which possess a ball valve mechanism will result in the development of a true cyst lined with arachnoid tissue; this iatrogenic cyst is a “true meningocele.”\cite{2,3,5,7,8} The surrounding connective tissue often reinforces the arachnoid capsule overtime. Such unrepaired small dural tears with an arachnoid breach may result in one-way CSF flow, often leading to the formation of a fibrous capsule and pseudomeningocele.\cite{2,3,5,7,8} These pseudomeningoceles, occurring at the site of an untreated dural tear, are rare (e.g., incidence from 0.07% to 2%).\cite{3} A few months to a few years after a laminectomy with a dural breach, such pseudomeningocele may become symptomatic and reach considerable size. Symptomatically, patients may complain of low back pain (LBP) aggravated with straining and/or Valsalva maneuvers.\cite{2,3,5,7,8} In addition, if a rootlet is extruded through the breach and trapped, patients may

Figure 1: T2-weighted magnetic resonance imaging, (a and b) sagittal image showing a high-intensity cyst extending from L4 to S2, (c) axial view demonstrates that the cyst is multilobulated.

Figure 2: Intraoperative photographs, (a) a large pseudomeningocele measuring 8.8 in length, (b) the large defect, (c) tight closure of the defect.
Rahimizadeh, et al.: Iathrogenic giant pseudomeningocele

present with quite similar to that seen with recurrent lumbar disc herniations.[5]

Imaging

In plain radiographs, erosion of the surrounding bones might be seen for long-standing cases. Rarely, the wall of the cyst may undergo ossification.[1] MRI remains the study of choice for the demonstrating such giant pseudomeningoceles; they reveal a low intensity on T1- and a high signal intensity on T2-weighted MR images. In general, the CSF-containing mass is located posterior to the dural sac although it might rarely grow into the intervertebral disc space.[5]

Management

For asymptomatic cases, one may wait for spontaneous resolution of the pseudomeningoceles; this may occur within 3 months to a few years following the diagnosis.[7] Solomon et al. noted that healing of the dural defect with the gradual resorption of the CSF may occur, thus resulting in spontaneous resolution of these collections.[7] Alternatively, surgery for symptomatic lumbar pseudomeningoceles may require broad opening of the “cyst” and careful closure of the dural breach with delivery of entrapped nerve roots back into the spinal canal/dural sac.[2,3,5,7,8]

CONCLUSION

Incidental dural tears with CSF leakage during lumbar laminectomy should be properly addressed, as if ignored or not found, they may result in the formation of a pseudomeningocele. Lumbar pseudomeningoceles may become symptomatic years later (e.g., LBP/radiculopathy) and warrant appropriate lumbar surgical intervention consisting of localization of the nerve roots extruding from the dural sac, delivery of the roots intradurally, and closure of the dural defect.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Al-Edrus SA, Mohamed Mukari SA, Ganesan D, Ramli N. Ossified lumbar pseudomeningocele: Imaging findings. Spine J 2011;11:796-7.
2. Enke O, Dannaway J, Tait M, New CH. Giant lumbar pseudomeningocele after revision lumbar laminectomy: A case report and review of the literature. Spinal Cord Ser Cases 2018;4:82.

3. Hyndman OR, Gerber WF. Spinal extradural cysts, congenital and acquired; report of cases. J Neurosurg 1946;3:474-86.

4. Macki M, Lo SF, Bydon M, Kaloostian P, Bydon A. Postsurgical thoracic pseudomeningocele causing spinal cord compression. J Clin Neurosci 2014;21:367-72.

5. Rahimizadeh A, Kaghazchi M, Rahimizadeh A. Post-laminectomy pseudomeningocele: Report of three cases and review of the literature. World Spinal Column J 2014;4:103-8.

6. Rahimizadeh A, Soufiani H, Rahimizadeh S. Remote cervical pseudomeningocele following anterior cervical corpectomy and fusion: Report of a case and review of the literature. Int J Spine Surg 2016;10:36.

7. Solomon P, Sekharappa V, Krishnan V, David KS. Spontaneous resolution of postoperative lumbar pseudomeningoceles: A report of four cases. Indian J Orthop 2013;47:417-21.

8. Weng YJ, Cheng CC, Li YY, Huang TJ, Hsu RW. Management of giant pseudomeningoceles after spinal surgery. BMC Musculoskelet Disord 2010;11:53.

How to cite this article: Rahimizadeh A, Mohsenikabir N, Asgari N. Iatrogenic lumbar giant pseudomeningocele: A report of two cases. Surg Neurol Int 2019;10:213.