Case Report

Case of the Week: Preoperative MR/CT Diagnosis of Left L2-L3 Disc Surgically Documented As Massive Synovial Cyst

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INTRODUCTION

Prior to surgery, lumbar herniated discs are frequently diagnosed on MR/CT studies as accompanying spinal stenosis. Here, a 77-year-old female with the classical preoperative diagnosis of a left-sided L2-L3 herniated disc accompanied by L2-S1 lumbar stenosis was found at surgery to have a massive left L2-L3 synovial cyst. In older patients, there should be a greater anticipation that synovial cysts rather than disc herniations may accompany degenerative lumbar disease/stenosis.
CASE

A 77-year-old female, followed by pain management, presented with 6 months of proximal left lower extremity pain, weakness, and numbness. The 6-month old MR demonstrated significant lumbar stenosis L2-S1, and was interpreted as showing a large left L2-L3 disc herniation with marked inferior migration to the left L3 mid-pedicular level. Two months prior to presentation, she had undergone two epidural steroid injections. When she was finally seen by neurosurgery, she had significant left iliopsoas/quadriceps weakness (2/5), absent lower extremity reflexes, and profound pin loss in the left L2-L3 distributions. The follow-up MR and new CT studies were similarly interpreted as showing L2-S1 stenosis and a left-sided L2-L3 disc. However, when she underwent a L2-S1 laminectomy, the left L2-L3 lesion proved to be a massive synovial cyst [Figs. 1, 2]. Postoperatively, the patient’s symptoms immediately resolved, and she remained neurologically intact 6 months later.

DISCUSSION

Etiology and Location of Synovial Cysts

In 2004, Epstein noted synovial cysts occur as the result of arthrotic disruption of the facet joint. With degenerative spondylolisthesis (DS), synovial cysts may occur in up to 40% of cases. Most patients with synovial cysts are in their mid-60's, and the majority of these lesions occur at the following levels (descending order): L4-L5, L5-S1, L3-L4, and L2-L3.

Myth of Successful Synovial Cyst Aspiration

Synovial cysts are typically tough, firm, and tenacious, with large fibrous capsules adherent to surrounding dura/nerve roots. They contain just small amounts of gelatinous tissue and/or thick crank-case fluid. It is, therefore, no surprise that multiple studies reviewed in 2012 by Epstein and Baisden documented a 50-100% failure rate for attempts at percutaneously aspirating these lesions by “pain management specialists” under fluoroscopic or CT-guidance. Rather, surgical excision results in excellent resolution of back and radicular pain (e.g. 91.6-92.5% and 91.1-91.9% recovery respectively).

Efficacy of Laminectomy Alone for Treatment of Lumbar Synovial Cysts

Multiple studies have documented the efficacy of laminectomy alone for the treatment of lumbar synovial cysts, without the need for fusion. Siu and Stoodley (2018) advocated laminectomy alone for 46 patients with lumbar synovial cysts who were followed an average of 43 mos. (1 month-13 years); only 2 (4.3%) later required fusions. In 2018, Epstein successfully treated an elderly male with large bilateral L3-L4 synovial cysts filling the canal, along with grade I L3-L4 spondylolisthesis (static on dynamic X-rays), and L2-L4 stenosis; this was successfully treated with L2-L4 laminectomy for decompression of stenosis and bilateral L3-L4 synovial cyst excision without fusion. When Hohenberger et al. (2019) evaluated 5313 patients undergoing decompressive surgery (e.g. laminotomy (93.4%) or hemilaminectomy (6.6%)) for degenerative spinal disease, 61 patients (1.14%) had symptomatic synovial cysts (SCC): notably, 86.9% were located in the lumbar spine. Postoperatively, 94.4% of patients fully recovered, and only 6 patients (9.8%) later developed postoperative instability warranting fusion.
Few MR Studies Misdiagnose Lumbar Discs As Synovial Cysts or Tumors

Few MR studies have misdiagnosed lumbar disc herniations as synovial cysts or tumors. In 2010, Teufack et al. treated a 49-year-old male whose enhanced MR scan showed a dorsolateral peripherally enhancing epidural lesion resulting in marked dural compression.[7] Although the preoperative differential diagnoses included hematoma, synovial cyst, and epidural abscess, at surgery, this proved to be a large herniated disc. Out of a series of 1153 surgical procedures performed for supposed lumbar disc herniations (2006-2016), Alfonso et al. (2018) found that 2 lesions were misdiagnosed on preoperative MR scans as a (1) pseudotumor and (2) meningioma respectively. In the case presented here, the patient had a large left L2-L3 extruded lesion with inferior migration that was originally misdiagnosed as a lumbar disc, but proved intraoperatively to be a massive synovial cyst.[1]

CONCLUSION

On rare occasion, lumbar synovial cysts may mimic herniated lumbar discs that have extruded dorsolaterally [Figs. 1, 2]. Intraoperative confirmation of the correct level of the synovial cyst extrusion may help differentiate this from disc, and avoid additional unnecessary discectomy.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Alfonso MA, Sierra MO, Del Corral GSOL, Lopez VAJ, Gonzalez-Quarante LH, Vendrell SE, et al. Misdiagnosis of posterior suquestrated lumbar disc herniation: report of three cases and review of the literature. Spinal Cord Se Cases, 2018; 4: 61.
2. Epstein NE1. Lumbar synovial cysts: a review of diagnosis, surgical management, and outcome assessment. J Spinal Disord Tech. 2004 Aug;17(4):321-5.
3. Epstein NE1, Baisden J. The diagnosis and management of synovial cysts: Efficacy of surgery versus cyst aspiration. Surg Neurol Int. 2012;3(Suppl 3):S157-66.
4. Epstein NE1,2. Spinal case of the month with short perspective: How would you treat this L3-L4 synovial cyst? Surg Neurol Int. 2018 Mar 7;9:56.
5. Hohenberger C1, Brawanski A2, Ullrich OW2, Höhne J1, Zeman F3, Schebesch KM2. Degenerative symptomatic spinal synovial cysts: Clinical presentation and functional outcome. J Clin Neurosci. 2019 Apr;62:112-116.
6. Siu KC1, Stoodley MA2. Decompressive laminectomy without fusion for lumbar facet joint cysts. J Clin Neurosci. 2018 Dec;58:113-116.
7. Teufack SG1, Singh H, Harrop J, Ratliiff J. Dorsal epidural intervertebral disk herniation with atypical radiographic findings: case report and literature review,2010;33(3):268-71.

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