



Case Report

Intradural synovial cyst of the upper cervical spine: A rare cause of symptomatic cord compression

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ABSTRACT

Background: Synovial cysts are commonly observed soft-tissue masses of the spine, typically extradural and located in the lumbar region. We describe a very rare symptomatic case of a C1-C2 intradural synovial cyst.

Case Description: A 78-year-old female presented with progressive left side weakness, paresthesia, and hyperreflexia. The magnetic resonance imaging revealed a well-circumscribed, subtly enhancing lesion medial to the C1-2 facet, causing cord compression and edema. Using neurophysiological monitoring, surgery included a modified laminectomy of C2 with the removal of the C1 posterior arch. When the dura was opened, a sizable intradural extramedullary lesion was encountered, the cyst was successfully drained and partially resected. The histopathological diagnosis was consistent with a synovial cyst. Postoperatively, the patient's strength on the left side improved gradually until she was fully ambulatory. Postoperative imaging showed no recurrence at 8 months follow-up.

Conclusion: Synovial cysts should be considered among the differential diagnose of C1-2 cysts. They can occur intradurally and compress the spinal cord resulting in a significant neurological deficit. Cyst excision may be accomplished utilizing a limited laminectomy for cyst identification and drainage, accompanied by partial resection of the cyst wall. Such intervention can lead to good clinical outcomes.

Keywords: Atlantoaxial joint, Cervical cord compression, Intradural cystic lesion, Synovial cyst

BACKGROUND

Juxtafacet cysts are soft-tissue masses that arise from joints in the spine. They include synovial cysts – true cysts with a synovial lining – versus ganglion cysts which are actually pseudocystic histologically.^[3] These lesions can cause myelopathy and/or radiculopathy due to their mass effect. They most often occur in the lumbar region and are almost exclusively extradural,^[2] describe here a very rare case of a C1-C2 intradural synovial cyst.

CASE DESCRIPTION

A 78-year-old female presented with the left-sided weakness, paresthesia, and hyperreflexia. The preoperative magnetic resonance imaging (MRI) revealed a well-circumscribed, homogenous, and subtly enhancing dorsolateral intradural lesion with diminished T1 signal and increased T2 signal. It arose from the region of the transverse ligament of the atlas and measuring 1.9 cm ×

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1.6 cm × 1.9 cm, where it contributed to dorsolateral cord compression. In addition, there was a subtle abnormal T2 increased signal within the cord reflecting edematous change at this level [Figure 1].

Utilizing intraoperative monitoring, the patient underwent a three-quarter laminectomy of C2, with complete removal of the left hemilamina, half of the right hemilamina, and the posterior arch of C1. Following the decompression, it was noted that the lateral aspect of the thecal sac and the exiting C2 nerve root was slightly thinned, but there was no extradural cyst.

When the dura was opened in a C-shaped fashion deep to several rootlets of the spinal accessory nerve, a sizable intradural extramedullary lesion pushing the spinal cord toward the right was evident. There was a plane between the spinal cord and the cystic lesion facilitating operative dissection. The wall of the cyst was opened and there was efflux of clear fluid with a small amount of calcified material [Figure 2]. Nevertheless, as part of the cyst wall was calcified and densely adherent to neural structures, it was left *in situ*.

Pathology

The analysis included periodic acid–Schiff and Gomori trichrome special stains as well as immunohistochemical markers including AE1/AE3, MIB-1, cluster of differentiation 68, and epithelial membrane antigen. The cyst was partially lined with meningotheelial cells; these findings were consistent with a synovial cyst.

Discharge and postoperative course

At the time of discharge 4 days later, the patient’s left-sided strength was significantly improved compared to preoperatively. At a 1-month, she was ambulating independently. Postoperative

imaging 8 months later (MR) showed no significant residual cyst nor spinal cord compression [Figure 3].

DISCUSSION

There are three case reports of the cervical extradural synovial cyst with small extension intradural.^[1,5,7] Hartmann *et al.* recently described the first exclusively intradural synovial cyst spanning from the clivus to C2 and causing headache, neck pain, gait disturbance, and progressive left-sided weakness in a 74-year-old male patient.^[4] The cyst, in our case, led to similar neurologic symptoms and likely arose at the transverse ligament in contact with the atlantodental joint, a true synovial joint, and potential source of a synovium-lined cystic growth.

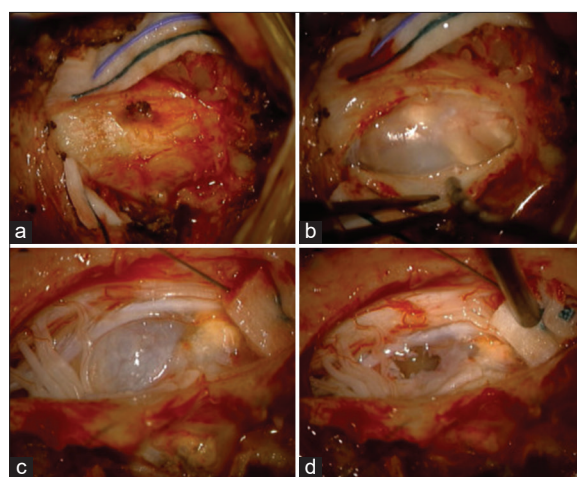


Figure 2: Intraoperative images of the intradural synovial cyst at C2 level, (a) image of dural sac before opening, (b) image taken following the dural opening, (c) image of cyst before decompression, and (d) image captured following decompression and drainage of the cyst.

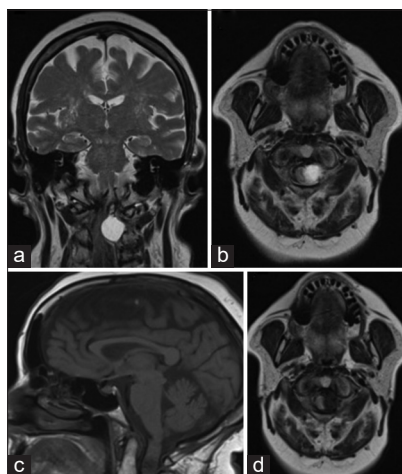


Figure 1: Preoperative magnetic resonance imaging brain and upper cervical findings; (a) coronal T2 sequence, (b) axial T2 sequence, (c) sagittal T1 sequence, and (d) axial flair sequence.

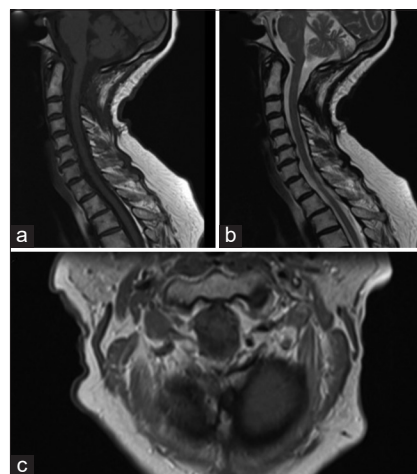


Figure 3: Eighth months postoperative cervical magnetic resonance imaging; (a) sagittal T1 sequence, (b) sagittal T2 sequence, and (c) axial T1 postcontrast sequence.

The diagnosis of initial MRI was uncertain; however, a ganglion or synovial cyst was considered a possibility. A cystic schwannoma or meningioma was also included in the differential diagnosis.

The age of this patient is in keeping with previously reported cases, which typically occur in those 60 years of age and older.^[6] It is uncommon for these cysts to cause myelopathic symptoms as in this patient; however, the surgical outcome was excellent and resulted in a steady improvement in strength following surgical treatment. Notably, the extent of surgical excision should be based on the adherence to underlying critical neural structures and leaving residual segments behind may result in excellent outcomes, as in this case.

CONCLUSION

Synovial cysts should be considered in the differential diagnosis of C1-2 cystic pathology causing spinal cord compression and neurological deficit. Limited laminectomy without fusion, drainage of intradural cyst, and partial resection of the wall can improve neurological function with minimal neurological risk.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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