

Cervical juxtafacet cyst

Epidemiology

A literature review till 2010 described only 28 symptomatic cervical synovial cyst cases ¹⁾

A literature review till 2013 identified 35 studies with 89 previously reported cases of surgically treated subaxial [juxtafacet cysts](#) (JFCs) ²⁾.

Attwell et al. presented an unusual case of acute symptomatology secondary to spontaneous haemorrhage into a cervical facet joint cyst ³⁾

Sasamori et al. report a case of cervical juxtafacet cyst with extensive rim enhancement on magnetic resonance imaging ⁴⁾.

see [atlantoaxial juxtafacet cyst](#)

Pathophysiology

[Juxtafacet cysts](#) (JFCs) seem to be a degenerative change of the cervical spine rather than a traumatic event. Similar to their counterparts in the lumbar spine, they tend to arise in segments with increased mobility.

Sivakumar et al. have reported on the development of JFCs adjacent to anterior cervical fusion constructs, and consideration of JFCs as a form of adjacent level disease (ALD) has been hypothesized ⁵⁾.

Moon et al. reported one patient that developed a C5/6 JFC 20 months after C4/5 anterior fusion and C5/6 anterior foraminotomy. In this case, despite progressive subluxation at C5/6 and solid C4/5 fusion demonstrated on flexion films 20 months after the original surgery, the patient underwent partial hemilaminectomy alone for cyst decompression. Outcome was favorable at 4 months follow-up ⁶⁾

Trauma

After a cervical spine fracture and, hence, was probably related to trauma. Surgical therapy resulted in a satisfactory recovery ⁷⁾.

Clinical Features

Chronic expansion of the extradural mass may lead to compression of the nerve root, thecal sac, or both, and may follow long periods of axial back pain without neurological deficit ⁸⁾.

They are rare causes of neurological deficits. Their imaging characteristics, relationship to segmental instability, and potential for inducing acute symptomatic deterioration have only been described in a

few case reports and small case series ⁹⁾.

Less commonly, neurological deterioration has been attributed to rapid cystic growth with hemorrhage ^{10) 11)}

Attwell et al., reported acute symptomatology secondary to spontaneous haemorrhage into a cervical facet joint cyst ¹²⁾.

Combination with discal herniation and spina bifida occulta was diagnosed with computed tomography (CT) and magnetic resonance imaging (MRI) in one case ¹³⁾.

Myelopathy

In the series of Christophis all cervico-thoracic or thoracic cysts presented myelopathy ¹⁴⁾.

Till 1999 there have been only two previously reported cases of subaxial degenerative synovial cysts of the cervical spine in patients who presented with a clinical picture of spinal cord compression. Cudlip et al. report three additional patients treated for degenerative cervical synovial cysts who presented with myelopathy. In all three patients the cyst was successfully excised and a good clinical outcome achieved ¹⁵⁾.

Cho et al. describe a case of an 80-year-old man with a gradual weakness of the lower extremities not linked to any known traumatic episode over the 2 weeks before admission. CT scan and MRI of the spine revealed a cystic formation, measuring about 1 cm in diameter, at C7-T1 at the left posterolateral site at the level of the articular facet. During surgery, the mass appeared to be in the ligamentum flavum at the level of the articular facet and was in contact with the dura mater. After the removal of the mass, there was an immediate and significant improvement of the patient's symptoms. Histopathologic examination showed the cyst to be composed of nonspecific degenerative fibrous tissue with mild inflammatory change and confirmed the cyst as a synovial cyst. Synovial cyst in the cervical region is a very rare lesion causing myelopathy. Surgical removal of the cyst and decompression of the spinal cord results in good neurological recovery ¹⁶⁾.

Brown-Sequard syndrome

Cheng et al. published a rare case of a patient with a ganglion cyst of the lower cervical spine presenting with acute Brown-Sequard syndrome. The patient had no history of trauma. Magnetic resonance imaging of the cervical spine showed a cystic lesion connecting to the synovial joint C6-7 and compressing the posterior aspect of the spinal cord. The patient underwent emergent C6-7 laminectomy with total removal of the cyst. Neurological function recovered completely 4 months after operation ¹⁷⁾.

Diagnosis

Magnetic resonance imaging reveal an intraspinal extradural cystic lesion in contact with the facet joint. The spinal cord can severely compressed by this lesion which is hypointense on T1-weighted imaging and hyperintense on T2-weighted imaging and short T1 inversion recovery. The cyst wall can strongly enhance after contrast injection ¹⁸⁾.

Sasamori et al. report a case of cervical juxtafacet cyst with extensive rim enhancement on gadolinium-diethylenetriamine pentaacid magnetic resonance imaging.

Operative finding revealed the epidural space around the mass filled with abundant venous plexus. Histological examination demonstrated that cyst wall was composed of the well-vascularized fibrous connective tissue with some inflammatory changes. They speculate that extensive rim enhancement of juxtafacet cyst may be attributed not only to the chronic inflammatory changes of cyst wall, but to engorged venous plexus within the widened epidural space ¹⁹⁾

Treatment

Surgical treatment is effective ²⁰⁾.

Colen and Rengachary report a spontaneous resolution of a cervical synovial cyst ²¹⁾

Technique

The head is positioned in Mayfield pins under gentle capital flexion, and the patient was positioned prone on gel rolls. Dissection proceeded in the subperiosteal plane, either unilaterally (e.g., hemilaminectomy) or bilaterally, depending on the goals of the decompression and the extent of spinal canal compromise. During resection of the lesion, the lateral facet and capsule were preserved as much as possible. When deemed necessary for complete decompression or visualization of the lesion, the laminectomy was extended to include a conservative medial facetectomy on the affected side.

The putative medial facet joint is carefully cauterized to minimize risk of cyst regrowth.

Instrumentation and fusion can be performed at the discretion of the operating surgeon. Loss of cervical lordosis, spondylolisthesis, hypermobility, index level neck pain, and iatrogenic instability following decompression are each relative indications for fusion.

Fixation can be accomplished using bilateral lateral mass/pedicle screw and rod constructs. Fusion can be augmented with morselized local autograft, with or without bone allograft.

Case series

2013

12 consecutive patients (mean age 63.4 years, range 52-83 years) harboring 14 JFCs treated across 9 years was retrospectively reviewed. Clinical history, neurological status, preoperative imaging, operative findings, pathology, and postoperative outcomes were obtained from medical records. The mean follow up was 9.2 ± 7.8 months.

Most JFCs in this series involved the C7/T1 level. Nine patients reported axial neck pain, 12 patients had radicular symptoms, four patients had myelopathy, and one patient experienced rapid neurological decline attributable to cystic hemorrhage. Cyst expansion without hemorrhage caused subacute deterioration in one patient. All patients experienced sensory and/or motor improvement

following surgical decompression. Preoperative axial neck pain improved in eight of nine patients (89 %). Seven out of 12 patients (58 %) underwent fusion either at the time of decompression (six patients) or at a delayed timepoint within the follow-up period (one patient). Prior history of cervical instrumentation, hypermobility on dynamic imaging, and other risk factors for segmental instability were more common in this series than in previous reports ²²⁾.

1988

13 patients with synovial or ganglion cysts of the spinal facet joints causing nerve root compression. These cysts were found in both the cervical and the lumbar spine, and the anatomical location of each cyst corresponded to the patient's signs and symptoms. In no case was there evidence of intervertebral disc abnormality found at operation. The patients ranged from 49 to 77 years of age and included 4 men and 9 women. Radiographic evidence of facet degenerative change and degenerative spondylolisthesis was frequently but not invariably noted. The extradural defects defined with positive contrast myelography or postmyelography computed tomographic scanning were usually posterior or posterolateral to the common dural sac and were misinterpreted as extruded discs in the majority of cases. Treatment consisted of laminectomy and surgical excision of cysts. All patients reported improvement or resolution of their presenting symptoms ²³⁾.

Case reports

Chun et al. described an interesting case of cervical juxtafacet that developed outside the intervertebral foramen, compressing the cervical medial branch and causing neuropathic pain in the posterior inferior neck pain. A 61-year-old woman visited a local pain clinic due to neuropathic pain with a tingling and burning nature (numeric rating scale [NRS]: 5 out of 10) on the left posterior inferior neck area for 4 months. Paresthesia was observed in the left posterior inferior neck area. On cervical radiography, segmental instability was observed at the C3-4 and C4-5 levels. Moreover, on the magnetic resonance imaging (MRI) of the cervical spine, a cyst (size: 1.3 cm × 0.7 cm × 1 cm) was outside the intervertebral foramen, contacting the left C4-5 facet joint and left C5 articular pillar. We thought that compression of the left C5 medial branch by the cyst could cause the patient's pain. We conducted computed tomography (CT)-guided percutaneous needle aspiration of a cervical juxtafacet cyst. An 18-gauge needle was advanced under the guidance of CT into the largest portion of the cyst through a posterolateral oblique approach. Gelatinous mucoid fluid (approximately 0.5 cc) was aspirated. Immediately after the aspiration, 80% of the patient's pain was disappeared, and dysesthesia was completely disappeared. At the 1-, 3-, and 6-month follow-ups, the patient reported slight pain (NRS: 1) on the left posterior inferior neck. Cervical juxtafacet cysts can develop outside of the intervertebral foramen and spinal canal. Percutaneous needle aspiration can be a useful therapeutic tool for the treatment of such cysts ²⁴⁾

Third reported case of a degenerative articular cyst of the upper cervical spine, involving the quadrate ligament of the odontoid process. Magnetic resonance examination reveals typical images. A new, more general terminology is proposed ²⁵⁾.

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