

## PERCUTANEOUS TREATMENT OF LUMBAR SYNOVIAL CYST: A CASE REPORT

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### ABSTRACT

**Introduction and aims:** Synovial cysts are benign cystic lesions that form when the joint capsule is worn during joint movement and synovial fluid leaks out. Intraspinous synovial cysts in the lumbar region are generally diagnosed when investigating patients who complaints of back pain or other symptoms which could be attributed to radiculopathy. The aim of this paper is to present the use of the percutaneous needle aspiration method with tomography guidance to treat an L4-L5 synovial cyst causing radicular symptoms.

**Case report:** A 40-year old female, with a 5-year complaint of back pain, applied to our clinic with recent increase in existing complaints and the addition of left leg pain. Lumbar computed tomography and magnetic resonance imaging examinations showed at L4 vertebra corpus level in the spinal canal right posterolateral recess, neighboring the right L5 nerve root, a 9x7x4 mm T2 hyperintense, T1 hypointense nodular appearance. A percutaneous cyst aspiration was planned and after aseptic conditions were ensured, a 22 G spinal needle was used to aspire the fluid in the synovial cyst between L4-L5 guided by tomography images and 80 mg methyl prednisone with 6 ml 0.25% bupivacaine were injected into cyst and the procedure was completed.

**Discussion and conclusion:** In symptomatic lumbar synovial cyst cases percutaneous cyst aspiration, steroid injection or surgical resection may be chosen. However as percutaneous cyst aspiration has a lower rate of complications such as infection, bleeding, nerve damage and dural puncture compared to surgical treatment, it should be first choice.

**Key words:** Radiculopathy, synovial cyst, CT, intervention.

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### Introduction

Synovial cysts are benign cystic lesions that form when the joint capsule is worn during joint movement and synovial fluid seeps out. Synovial cysts are frequently seen in the extremity joints, especially knee, hip and wrist, but are more rarely found in the spinal canal or vertebral facet joints<sup>(1)</sup>. Synovial cysts result from the protrusion of synovial lining through a defect or rupture of degenerated facet joints. Theories the underlying cause include trauma, facet joint degeneration, spondylosis, and spondylolisthesis<sup>(2)</sup>. Intraspinous extradural synovial cysts are rooted in the zygapophyseal joint capsule and are called juxtafacet cysts. Intraspinous synovial cysts in the lumbar region are generally

diagnosed when investigating patients complaining of back pain or other symptoms which could be attributed to radiculopathy. They are most frequently observed at the L4-L5 interspinous space<sup>(3)</sup>.

The aim of this paper is to present the use of the percutaneous needle aspiration method with tomography guidance to treat an L4-L5 synovial cyst causing radicular symptoms.

### Case report

A 40-year old female, with a 5-year complaint of back pain, applied to our clinic with recent increase in existing complaints and the addition of left leg pain. On examination there was flexion limitation to the front and left side of lower back ROM

(range of motion). On lumbar CT (computed tomography) and magnetic resonance imaging examination attention was captured by the presence of a 9x7x4 mm T2 hyperintense, T1 hypointense nodular appearance at L4 vertebra corpus level in the spinal canal right posterolateral recess, neighboring the right L5 nerve root. On a series after IV (intravenous) administration of contrast medium, the lesion periphery showed contrast enhancement. Prediagnosis of synovial cyst from the facet joint was considered (Fig. 1 and 2). Percutaneous cyst aspiration under CT imaging guidance was planned.

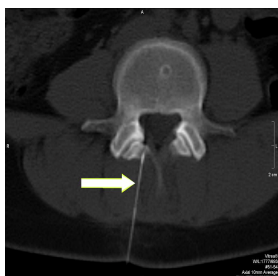


**Fig. 1:** Axial cross-sectional computed tomography image before the percutaneous aspiration.

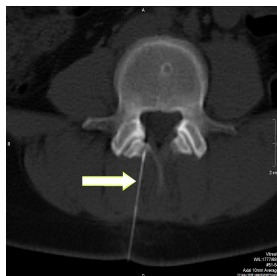


**Fig. 2:** Axial magnetic resonance image before the percutaneous aspiration.

The patient was settled in the tomography device and using tomography images the L4-L5 point was located. Aseptic conditions were ensured and lidocaine was used to locally anesthetize the entry point. A 22 G spinal needle was inserted according to accompanying tomography images and 2 ml of cystic fluid was aspirated. At the L4-L5 interval 80 mg methyl prednisone and 6 cc 0.25% bupivacaine injected in the cyst and the procedure ended (Fig. 3 and 4). The pathologic sample was reported as synovial cyst. At a check-up examination a week later the patient reported all complaints had resolved.



**Fig. 3:** Computed tomography image during the procedure.



**Fig. 4:** Axial cross-sectional computed tomography image after the percutaneous aspiration.

## Discussion

The most important cause of facet joint synovial cysts is the mechanical load on the spine. Synovial fluid leaks after degeneration and micro trauma rupture on the synovial membrane and mesenchymal non-specific cell proliferation, myxoid degeneration of collagen support tissues and increased hyaluronic acid production by fibroblasts play a role in the pathogenesis. In mechanical loading and degeneration cases according to the model, movement degree is mostly observed at L4-5 level, rarely in the cervical and thoracic regions. Synovial cyst that expands toward the neural foramen or spinal canal may cause radiculopathic symptoms, as in our case<sup>(4-7)</sup>.

For differential diagnosis of extramedullary spinal canal cysts, arachnoid cyst, sacral meningocele, perineural cyst or tarlov cyst, intradural meningeal cyst, synovial cyst, ganglion cyst, neuroenteric cyst, dermoid cyst, epidermoid cyst, sequestered disk fragments and cystic neurofibroma should be considered<sup>(8)</sup>.

While CT can provide information on facet joints and surrounding bone structures for diagnosis, magnetic resonance imaging is the chosen method to reveal mass location, size, and relationship to the spinal cord. For treatment of synovial cysts different methods such as bed rest, steroid injections into facet joints, and percutaneous cyst aspiration may be recommended, however the effective treatment is surgical excision of the cyst<sup>(9)</sup>.

The ideal treatment for lumbar synovial cysts is still a topic for debate and though there are some known cases of automatic resorption, generally conservative or surgical treatment is required. Conservative treatment methods include analgesic and anti-inflammatory medications, steroid injections and aspiration of the cyst<sup>(10)</sup>.

In a study of 30 patients with non-surgical treatment for synovial cyst after 6 months monitoring only 33% reported treatment efficiency whereas 47% of patients required surgical treatment<sup>(11)</sup>. Hsu et al. reported 55% success rate for conservative treatment methods; using corticosteroid injections this rate rose to 57%<sup>(12)</sup>. Amoretti et al. used percutaneous treatment under CT guidance on 120 patients with symptomatic lumbar synovial cyst proving that 75% were successfully treated with this method. They also proposed that this method should be the first attempted for lumbar synovial cyst patients due to its economy and ease of appli-

cation<sup>(13)</sup>. In our case, after cyst aspiration under CT guidance, the efficiency was increased by a steroid injection in the same region. Especially for young patients or those who want to avoid surgery, we believe this treatment method gives a chance before resorting to surgery.

In symptomatic lumbar synovial cyst cases percutaneous cyst aspiration, steroid injection or surgical resection may be chosen. However as percutaneous cyst aspiration has a lower rate of complications such as infection, bleeding, nerve damage and dural puncture compared to surgical treatment, it should be first choice. In cases where synovial cyst is accompanied by anomalies such as herniated disk, spondylolisthesis and spinal stenosis, surgical treatment may be more appropriate<sup>(14)</sup>. Percutaneous aspiration of lumbar synovial cysts with computer tomography guidance may be completed safely and effectively. In addition with epidural steroid injection the patient's radiculopathic symptoms may resolve and we believe this can provide long-term symptomatic relief.

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