

# Facet Joint Cysts Causing Cauda Equina Compression

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**Abstract:** Facet joint cysts are commonest at the L4–L5 level and are associated with facet joint degeneration and type III (degenerative) spondylolisthesis. It is extremely rare for facet joint cysts to cause symptomatic cauda equina compression. Three elderly patients presented to us with significant cauda equina compression caused by facet joint cysts. One presented with classic symptoms and signs of a cauda equina syndrome, a second with bilateral lower limb neurologic loss associated with uncontrolled epilepsy, and the third with bilateral leg symptoms as well as an upper limb tremor and fasciculation. The diagnosis was easily made after magnetic resonance scanning in two patients, although in one patient, it was significantly delayed because of his confounding neurologic picture. Lumbar spine surgery (decompression and cyst resection) was successful in resolving symptoms in all three, even though two patients had significant neurologic compromise before surgery. The occurrence of facet joint cysts in older patients can be associated with other degenerative neurologic conditions, and the diagnosis might not be apparent early. We suggest that in older patients who have a mixed picture of central and peripheral neurologic compromise, this diagnosis should be considered and investigation of the whole of the spine, not just the brain and spinal cord, should be undertaken.

**Key Words:** facet joint cyst, cauda equina compression, lumbar spine surgery

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Facet joint cysts occur in the elderly as a result of degeneration in the joint and associated structures. They are an unusual cause of cauda equina compression,<sup>1,2</sup> and because they can co-exist with other degenerative neurologic conditions, their presentation may not be recognized as classic “cauda equina syndrome.” Our three cases demonstrate the diversity of presentations, although in all three, retrospective analysis of the presenting symptoms and signs clearly points to a central canal lesion of the lumbar spine as one possible diagnosis.

## CASE REPORTS

### Case 1

A 63-year-old woman with a known history of spinal stenosis presented to the accident and emergency department with a 3-week history of back pain and increasing bilateral leg pain. During the previous week, she had experienced symptoms of fecal soiling and urinary incontinence, and on admission she could not walk.

Her past medical history included breast cancer 4 years previously, diabetes mellitus, hypothyroidism, and hypertension. She had previously refused to have surgery for symptomatic L3–L4 and L4–L5 spinal stenosis, secondary to degenerative spondylolisthesis at both levels, proven on magnetic resonance imaging (MRI) scan 4 years before. That scan had shown no evidence of a facet cyst at any level of the lumbar spine.

On examination, her legs were hypotonic and knee and ankle reflexes were absent. Power in all muscle groups at the knee and ankles was 2/5. Perianal sensation was abnormal and anal tone depressed.

MRI showed spinal stenosis at L2–L3 secondary to a facet joint cyst arising from the right-sided joint (Fig. 1). There was considerable crowding of the neural elements in the central spinal canal. At L3–L4 and L4–L5, the spinal stenosis was unchanged from the previous scan.

An urgent decompression from L2 to L5 was performed as well as an instrumented posterolateral fusion to stabilize the olisthetic levels. At operation, the L2–L3 cyst was adherent to the dura but was mobilized off without a tear. Immediately as the cyst was removed, the dural sac filled with cerebrospinal fluid and became pulsatile. Over the following weeks, her bladder and bowel function returned to normal and she became fully ambulant. Six months after surgery, she was symptom-free.

### Case 2

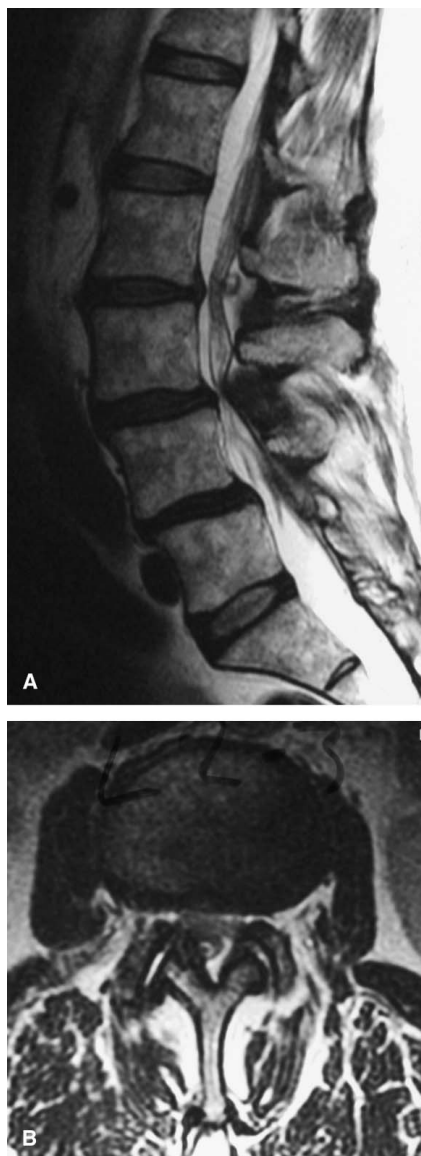
A 69-year-old man, who had been diagnosed with epilepsy many years previously, was admitted by physicians with uncontrolled grand mal seizures. This was brought under control with medication, but he was difficult to mobilize and it was thought he might have experienced a stroke. However, a computed tomography (CT) scan of the brain was normal.

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**FIGURE 1.** A, T2 sagittal MRI, showing grade 1 degenerative slips at L3–L4 and L4–L5 with a facet joint cyst narrowing the central spinal canal at L2–L3. B, T2 axial MRI through the L2–L3 disc, demonstrating compression of the cauda equina by a large right-sided facet joint cyst.

He continued to find mobilizing difficult even after several weeks of admission with inpatient physiotherapy. On closer questioning, he had a 6-week history of back pain with a 3-week history of increasing right leg pain.

Neurologic examination was variable throughout the admission, and there were signs of improvement on occasion.

His immobility continued, and he went on to develop right leg weakness at the knee and ankle with power 2/5. Left ankle dorsiflexion power also deteriorated to 4/5. Ankle and knee reflexes on the right were absent and depressed on the left

side. Straight leg raise was 60° on the right and 90° on the left. Bowel control remained normal, but the patient required urinary catheterization because of difficulty in controlling his bladder.

Plain x-rays were performed followed by a thoracolumbar MRI. This was reported by the radiologist as showing, on the axial views, a very large extruded disc at the level of L4–L5 critically compressing the thecal sac associated with facet joint hypertrophy (Fig. 2). However, on the sagittal views, there was no evidence of disc herniation, and in retrospect this was not a sustainable diagnosis. However, it was also noted that there was lateral recess stenosis at the L5–S1 level.

An urgent decompression of L4–L5 and L5–S1 was undertaken, and a large hemorrhagic facet joint cyst was removed from the central spinal canal at the L4–L5 level, and not an extruded disc as was originally thought. The dura was fully decompressed centrally and in the lateral recesses at both the L4–L5 and the L5–S1 levels.

The patient made a slow recovery, but 6 months following his surgery, he had regained normal neurologic function and was ambulant with the use of one walking stick, with normal bladder and bowel control.

### Case 3

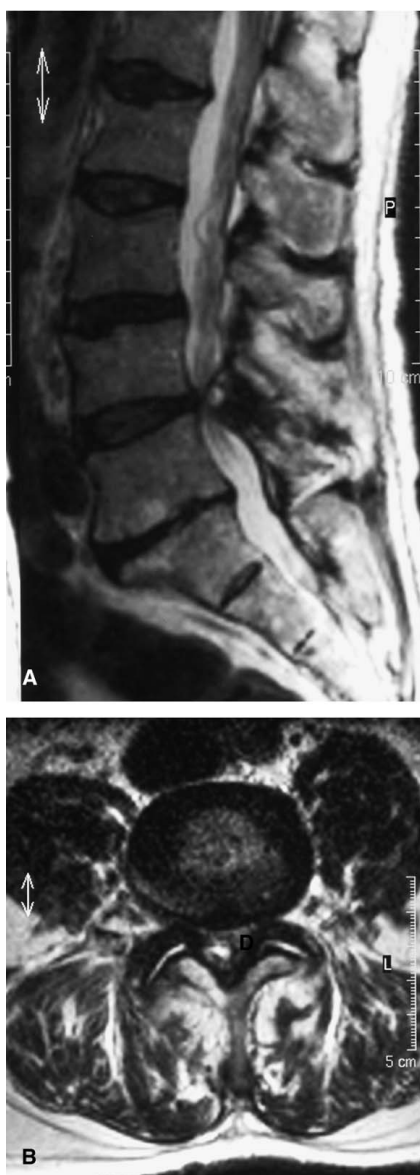
A 65-year-old retired sedentary worker presented to our clinic with pain in his legs, shaking of his left hand, and pain around the lower ribs. He reported bilateral leg pain in the L5 distribution, which was worse on the right than the left. The pain was made worse by sitting and forward flexion. He described the pain as being knife-like in his muscles. He did not report any back pain. His pain eased by lying down and resting.

His past medical history included gastric ulcer, nasal polyps, but no serious illnesses.

On examination, he had a resting tremor of his left arm. There was fasciculation of the tongue, left deltoid, and left quadriceps. Neurologic examination of the upper and lower limbs was otherwise normal, and the cranial nerves were also found to be normal. Straight leg raise was 80° bilaterally. Abdominal examination and range of movement of the lumbar spine and limbs were also normal.

Because of his tremor and the uncertain diagnosis, neurophysiology studies (electromyography [EMG]) of the limbs as well as an MRI were arranged. The MRI showed a facet joint cyst occupying 90% of the spinal canal at the L4–L5 level with associated facet joint degeneration (Fig. 3). The cauda equina was, as a result, critically compressed. No other disc pathology was seen, and EMGs were normal.

The patient underwent an urgent central and lateral recess decompression of L4–L5. At operation, the cyst was adherent to the dura but was easily mobilized and resected. Postoperatively, the patient had a rapid resolution of his pain. He was subsequently referred to a neurologist who confirmed a diagnosis of Parkinson disease. Six months after operation, he

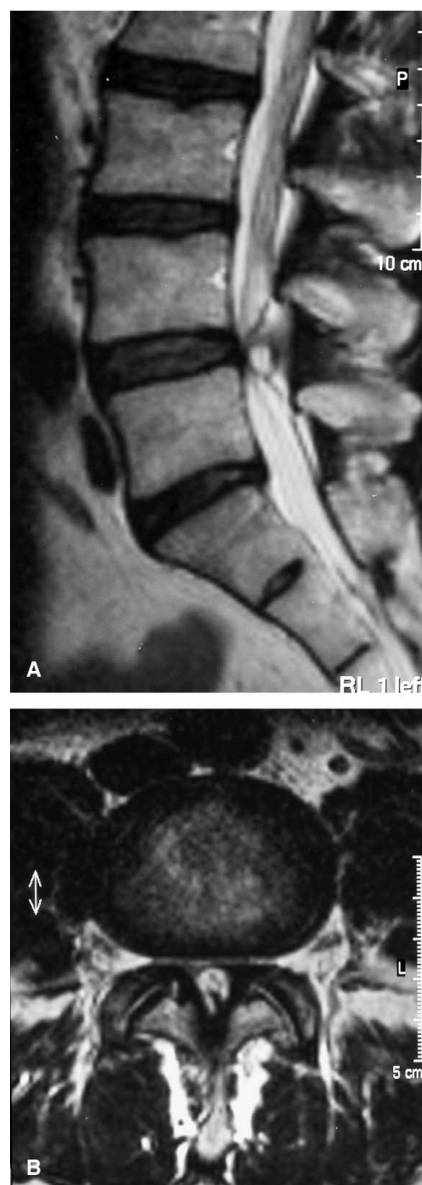


**FIGURE 2.** A, T2 sagittal MRI, showing almost complete occlusion of the spinal canal at L4–L5 with an almost normal disc. This was reported as showing an extruded intervertebral disc. B, T2 axial MRI that demonstrates a high signal mass adjacent to the right facet joint but low signal in the rest of the canal. At operation, the cause of compression was found to be a large facet joint cyst with old hemorrhage within it.

was reviewed because his rib pain had not settled; however, the leg pain attributable to his facet joint cyst had not recurred, and he had no change in his neurologic status.

### DISCUSSION

Facet joint cysts are a known, although uncommon, cause of back pain and radicular symptoms. Rarely have they



**FIGURE 3.** A, T2 sagittal MRI, showing a large facet joint cyst at L4–L5 causing canal compromise in the presence of an otherwise “normal” spine for a man age 65 years. B, T2 axial MRI, showing the degree of cauda equina compromise from the large facet joint cyst at L4–L5 in association with modest facet joint degeneration. There is no significant contribution to the stenosis by the disc.

been described as a cause of significant cauda equina compression, however.<sup>1,2</sup>

The three patients in this study presented with a variety of symptoms, but common to all three was evidence of cauda equina compression. In two cases, the diagnosis was evident on the preoperative MRI scan, but in the third, the scan did not clearly demonstrate a cyst and the cauda equina compression

was thought to be due to an extruded intervertebral disc, despite the age of the patient. Only at operation was the true diagnosis made.

All three of our patients made a full recovery within 6 months of their surgery, with complete resolution of their neurologic deficits, even though in two patients, neurologic loss was marked and had been present in one for >6 weeks.

Cysts occur as a result of facet joint degeneration and are frequently associated with degenerative spondylolisthesis. They can vary in size from a few millimeters to several centimeters.<sup>3,4</sup>

The etiology is somewhat uncertain, and theories range from microtrauma to the facets, advancing age, hypermobility, extruded synovium through lax joint capsules, proliferation of fibroblasts, and myxoid degeneration of collagen tissue. Pathology findings frequently suggest, though, some element of trauma.<sup>5-10</sup>

The most common site for formation is at the L4-L5 level, and they are rarely found in the cervicothoracic region. Cysts can sometimes be associated with not only degeneration of the facets but also degeneration of the ligamentum flavum.<sup>5,11</sup>

Facet joint cysts can mimic the symptoms of an extruded disc such as in case 2 or even a space-occupying lesion, and so they can be difficult to diagnose. This is especially the case when there has been hemorrhage into the cyst.<sup>12,13</sup>

Presenting symptoms include back pain, radicular pain, paresthesia, sensory deficit, and weakness as well as bladder and bowel disturbance.<sup>5,10,14,15</sup> The investigation of choice is MRI, although cysts are often an incidental finding, and very careful correlation between the patient's symptoms and the scan findings needs to be established.<sup>4,16</sup>

Multiple treatment options have been attempted, including percutaneous drainage and injection as well as surgical decompression. However, surgery has the highest rate of success with low recurrence rates.<sup>17,18</sup> In our three cases, it is difficult to imagine that any other treatment apart from surgical decompression would have produced satisfactory results. Even though the neurologic deficits had been present for some time in two patients, recovery was complete, perhaps indicating that the rate of compression was slow, unlike, for instance, in a case of cauda equina syndrome associated with a sudden central disc prolapse. Surgical treatment is therefore more likely to produce a worthwhile improvement in neurologic function in these cases than in younger patients who have had cauda equina functional loss for a similar period.

## CONCLUSIONS

Facet joint cysts are relatively common, especially in elderly patients, but rarely cause symptoms. The presentation is variable. Central canal occlusion by facet joint cysts has been reported infrequently, and there is nothing in the literature to suggest what the outcomes of treatment might be. Our study has shown that good clinical outcomes can be expected with surgical treatment, even when neurologic deficits have been present for some time.

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