

# Lumbar Disc Herniation Causing Cauda Equina Syndrome in a Paediatric Patient. A Case Report

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## SUMMARY

Lumbar disc disease occurs mainly in the adult population. A disc prolapse in the paediatric population is very rare. Cauda equine syndrome resulting from compression of the cauda equina is a rare syndrome and is one of the few spinal surgical emergencies. Here we present a 13-year-old boy with pain in the lumbar region radiating bilaterally to the lower limbs, with asymmetrical weakness of lower the limbs, perianal hypoaesthesia and urinary retention. MRI of lumbar spine confirmed disc protrusion at the L<sub>3</sub>-L<sub>4</sub> level with severe spinal canal stenosis. Patient was treated with microdiscectomy at the L<sub>3</sub>-L<sub>4</sub> level. Postoperatively, his neurological deficit disappeared gradually.

Although very rare, lumbar disc prolapse in the paediatric age group can lead to cauda equina syndrome. Early diagnosis and treatment can prevent life-long disability.

**Key words:** lumbar disc prolapse, cauda equine syndrome, children, microdiscectomy

## BACKGROUND

By any measure, disc disorders are a considerable problem occurring mainly in adult population. They represent the accumulation of various etiological factors like genetic, environmental and occupational influences. In children, however, the occurrence is less frequent representing 0.5-3.8% of all symptomatic disc protrusions [1-3]. In the paediatric age group, a disc herniation is almost always secondary to trauma [4]. Cauda equina syndrome is a rare surgical emergency occurring in around 2% cases of lumbar disc herniation. Early evaluation and surgical decompression can prevent lifelong disability.

## CASE REPORT

A 13-year-old boy was brought with a 3-day history of acute low back pain radiating bilateral to the lower limbs and asymmetrical weakness of the lower limbs. There was no history of any trauma, fever or any other illness in his past. Patient had urinary retention one day after admission. Local examination of the spine revealed tenderness over the L<sub>3</sub>-L<sub>5</sub> region with paravertebral muscle spasm. SLR (straight leg raising) was positive at 50° on the right side and 40° on the left. A neurological examination revealed hypoaesthesia of the perianal region and in bilateral L<sub>4</sub>/L<sub>5</sub> nerve root distribution.

On his right side, knee extension was grade 5/5, knee flexion was grade 3/5, dorsiflexion and palmar flexion of ankle were grade 3/5.

Knee extension was grade 4/5, knee flexion, dorsiflexion and palmar flexion of ankle on left side were grade 3/5.

Bilateral knee reflexes were normal while bilateral ankle reflexes were absent. Babinski's response was absent on both sides. Radiographs and MRI of the lumbosacral spine were done. Axial T1-weighted MRI of lumbar spine revealed right posterolateral disc protrusion causing anterior epidural effacement and spinal canal stenosis at L<sub>3</sub>-L<sub>4</sub> level (Fig. 1). Sagittal T2-weighted images showed posterior disc protrusion at L<sub>3</sub>-L<sub>4</sub> level (Fig. 2). A myelogram showed spinal cut-off due to disc protrusion at the same level (Fig. 3).

Laminotomy at L<sub>3</sub>-L<sub>4</sub> with excision of extruded disc fragments was done under general anaesthesia. The postoperative period was uneventful. Pain resolved postoperatively and the bilateral weakness of the lower limbs improved gradually. The patient was discharged from the hospital on the 5<sup>th</sup> postoperative day and was kept on regular follow-up. A urinary catheter was removed 12 days after the operation. The patient returned to his school four weeks after the operation.

At 6 months, the patient had recovered fully and he remained symptom-free at one year of follow-up.



Fig. 1. Axial T1-weighted MRI of lumbar spine showing right posterolateral disc protrusion at L<sub>3</sub>-L<sub>4</sub> level

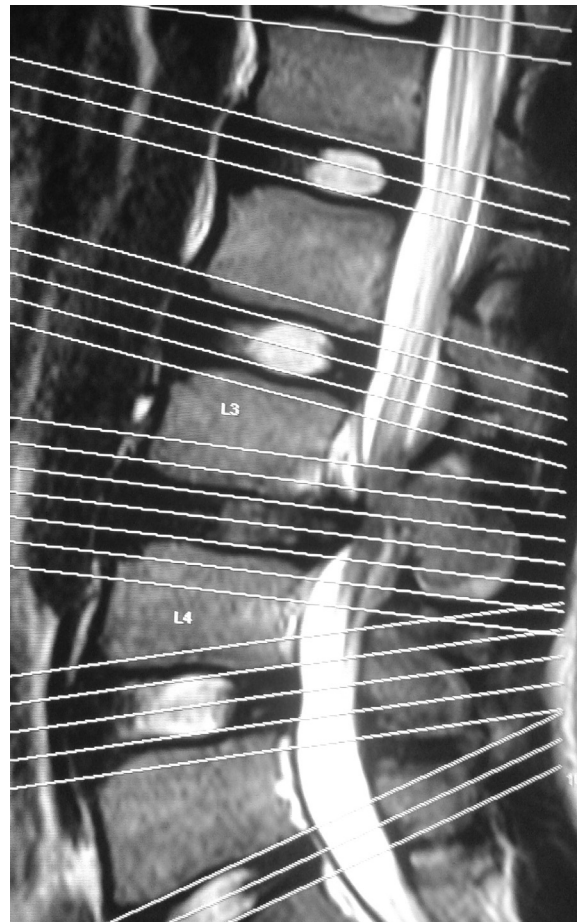


Fig. 2. Sagittal T2-weighted image showing posterior disc protrusion at L<sub>3</sub>-L<sub>4</sub> level



Fig. 3. Myelogram showing canal cut-off due to disc protrusion

## DISCUSSION

Lumbar disc herniation causing back pain is rare in children [5-7]. Although the exact frequency of lumbar disc herniation in children is not known precisely, it is much lower than in adults. Various studies have reported the incidence at between 1-5% in patients <20 years of age [8-9]. The aetiology of lumbar disc herniation in children is still not known precisely. Several factors have been identified as a cause of disc herniation. Trauma is commonly considered to be the most common cause. Other factors include familial predisposition to disc herniation (leading to early degenerative changes), vertebral deformations such as scoliosis, transitional defects, schisis and canal stenosis [11-13]. The presentation of children with

lumbar disc herniation is almost similar to adults and includes symptoms like back pain, radicular pains, weakness of varying degrees and, rarely, cauda equine syndrome. SLR is present in up to 90% of cases due to greater nerve root tension in children and adolescents compared to adults [14-15].

Various modalities of treatment are available, ranging from conservative treatment to different methods of disc surgeries. The conservative treatment consists of varying periods of bed rest, medications for symptomatic relief, physiotherapy and restriction of activities. As reported by various authors, the success rate of conservative treatment is around 50% [16-17]. The indications for a surgical intervention in paediatric disc herniations include persistent pain not responding to 4-6 weeks of conservative treatment, severe disabling pain, progressive neurodeficit and spinal surgical emergencies like cauda equina syndrome. It has been agreed by most authors that surgical treatment has a better outcome in paediatric disc disease after failure of conservative treatment of 4-6 weeks [18]. Discectomy is the most widely used surgical procedure for disc removal in children as well as in adults and it gives excellent results. Recently, microdiscectomy has been used with success rates of around 90% of cases [19]. Complications of surgical treatment may include dural tear, infections, discitis, spinal deformities and recurrence.

## CONCLUSION

Although lumbar disc herniations are rare in the paediatric age group, a high index of suspicion, early evaluation and appropriate treatment can prevent lifelong disability. Conservative treatment should be tried initially. For those not responding to conservative treatment and those with progressive neurodeficits or cauda equina syndrome, surgical treatment should be considered. Microdiscectomy remains the treatment of choice in paediatric lumbar disc herniations with excellent results.

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