Dorsal Migration of Lumbar Disc Fragment as a Cause of Cauda Equina Syndrome. A Case Series and Review of the Literature

Shawn S Rai MD, Carlos R Goulart MD, Sepehr Lalezari MD, Michael A Galgano MD, Satish Krishnamurthy MD
State University of New York-Upstate; Department of Neurosurgery
Poster#: 1771
Disclosures:

- None
Introduction:

- Intervertebral disc herniation is relatively common, but dorsal migration of the sequestered disc is an exceedingly rare phenomenon.
- Dorsal migration results from the migration of detached fragments of nucleus pulposus, causing compression of the spinal cord or lower nerve roots depending on the anatomic location of the disc fragment.
- Magnetic resonance imaging findings can often be misdiagnosed as an extradural mass or epidural hematoma when the clinical presentation is acute spinal cord or cauda equina compression.
- We present three separate cases of dorsal migration of a sequestered disc and review the current literature to make the readers aware of this infrequent pathological entity and its management.
Methods:

- We present three cases of patients with dorsal migration of sequestered disc fragment at our institution.
- We review the current literature to make the readers aware of this infrequent pathological entity and its management.
Results: Case 1

- 31-year-old male presented to our institution with one-week of progressive low back pain, left lower extremity numbness and weakness.
- The lower back pain started suddenly after lifting a heavy box. This was followed by left lower extremity weakness and numbness three days later.
- Neurological examination revealed that he had an asymmetric cauda equina syndrome (CES) with grade 3/5 weakness of the left lower extremity and numbness involving the left side more than the right.
- MRI revealed an extradural lesion with significant compression of the posterior aspect of the thecal sac at the level of L2-L3.
- A L2-L3 laminectomy was performed. Cartilaginous material was found in an extradural location and this was separated easily from the dura and completely excised.
- Histopathology confirmed that the specimen was extruded vertebral disc.
- Post-operatively there was a significant improvement of his neurological deficits at three-month follow up except for mild residual left thigh numbness.
Results: Case 2

- 79-year-old woman with past medical history significant for melanoma presented with unsteady gait of four months duration.

- She noticed that she had difficulty ambulating initially, but this progressively worsened to the point where she needed to use a walker. She had urinary urgency but no symptoms in the upper extremities.

- She had weakness of the hip flexors and adductors bilaterally. Deep tendon reflexes were absent in the lower extremities but there were no sensory deficits.

- MRI demonstrated a lesion in the dorsal epidural space at L2-3 with compression of the thecal sac.

- A L2-L3 laminectomy was performed for resection of this extradural lesion. Upon performing the laminectomy, there was a dark appearing extradural lesion eccentric to the right that appeared to be eroding into the bone. The lesion was easily dissected from the dura and then removed.

- Histopathology confirmed that the specimen was extruded vertebral disc.

- She significantly improved neurologically and was able to walk without any assistance three days following surgery. At three-month follow-up, she was walking independently without any neurological deficits.
Results: Case 3

- 47-year-old woman with no significant past medical history presented with low back pain and left lower extremity radiculopathy for 2 weeks prior to presentation after an exerting hike.

- Her symptoms progressed to include weakness of the left lower extremity, and she complained of difficulty walking.

- On exam she had gastrocnemius weakness, left lower extremity numbness, and abnormal gait.

- MRI demonstrated a lesion in the left lateral epidural space, dorsal to the S1 nerve root with compression of the thecal sac. A L5/1 left hemi-laminotomy was performed, and cartilaginous, extruded disc material was identified dorsal to the left S1 nerve root. This extruded disc fragment was easily dissected of the dura and nerve root and removed.

- Histopathology confirmed an intervertebral disc fragment. Her pre-operative neurologic symptoms improved significantly following surgery.

- At two-month follow-up, she had no motor weakness but had mild residual left lower extremity numbness, although improved from prior to surgery.
Discussion:

- Disc fragment sequestration as described in literature occurs in about 28.6% of vertebral disc herniations
  - The most common location for a sequestered disc is in the right or left anterior epidural space
- Review of the literature reveals 67 cases of dorsal disc fragment sequestrations, including our 3 cases.
- Disc herniations are found most frequently in patients 40-60 years of age, and males are much more vulnerable. Analysis of the literature revealed that females accounted for only 11 cases of dorsal disc sequestrations out of 67 patients. Males are approximately six times more likely to have a dorsally migrated disc as compared to females in our literature review.
- The most common location for a posterior epidural disc sequestration was in the lumbar spine at the L3-L4 level. There have been limited cases of cervical or thoracic posterior migrated epidural disc sequestration; our review of the literature demonstrated two cases of dorsally located thoracic disc fragments.
- The chronicity of the presenting symptoms range from immediate onset to greater than 1 year. Patient presentations ranged from cauda equina syndrome to paraparesis and radiculopathy.
- The most important diagnostic tool is MRI of the lumbar spine.
- The lack of continuity of the disc fragment with intervertebral disc and the unusual location of the migrated disc fragment can mislead the treating physician toward other compressive process such as a neoplasm or an epidural hematoma.
- Proper diagnosis with prompt surgical decompression and removal of the dorsal disc fragment alone provides excellent results.
Dorsal sequestration of intervertebral disc is a rare occurrence. Review of the literature indicates that a dorsal epidural compression in the lumbar spine preceded by a traumatic event should alert the possibility of this diagnosis. This is especially true in males in their fifth or sixth decade of life. We support the hypothesis that an acute traumatic event or repeated traumatic events result in rupture of the barriers to the posterior epidural space and causes dorsal migration of the nucleus pulposus. Simple surgical decompression of the dorsal component with removal of the disc fragment provides excellent neurological recovery.
References: