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An Unusual Case of Acute Traumatic Sequestrated Thoracic Disc Prolapse- a Case Report and Literature Review

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Abstract

Sequestrated thoracic disc herniation following a minor traumatic event without an apparent spinal fracture or dislocation is an extremely rare condition. Evaluation of a young morbid obese male with acute paraparesis secondary to an accidently sitting down to the floor revealed a right-sided extruded disc at the level of T7-8 and T8-9. At 12-month follow-up, he made a dramatic recovery following an appropriate surgical intervention. As soon as occurrence of acute paraparesis following a minor traumatic event, Magnetic Resonance Imaging (MRI) of the spine is necessary, even in the absence of radiological evidence of fracture-dislocation.

Acute Thoracic Disk prolapse due to a traumatic injury is a relatively rare episode, especially in presence of neurological deficit after traumatic events, total spine MRI is appropriate, even in the absence of fracture-dislocation in plain radiographs or total spine multi-directional CT scan. In the case of sequestrated thoracic disc herniation, transfacet pedicle-sparing approach is the preferred method for discectomy.

A 29-years-old young morbidly obese man experienced acute paraplegia secondary to a falling down had a right-sided extruded disc at the levels of T7-8 and T8-9. After 12 months, he recovered very well after an appropriate discectomies. Following an acute paraparesis after a traumatic event without evidence of fracture-dislocation, thoracic MRI should be performed to rule out the possibility of epidural hematoma or a sequestrated disc

Keywords: Thoracic; Acute Traumatic; Disc herniation; MRI; Epidural

Introduction

Acute traumatic disc herniation without a serious fracture or dislocation is a rare medical event and commonly occurring at thoracolumbar junction and cervical regions [1-8]. However, its occurrence in the thoracic spine is extremely rare [9-12]. This can be logically attributed to the support and protection afforded by the rib cage. We present a case with traumatic sequestrated disc at T7-8 and T8-9 levels documented with MRI who was surgically managed with success. A PubMed review of published medical literature shows that our case is very rare [9, 11, 12, 14]. Fuentes, et al. [12] in 2001 reported a 39 years old man who had a motor cycle accident-causing paraplegia at the T9-10. Costotransversectomy was performed but outcome was poor. Ogrenci, et al. [11] in 2019 described a 24 years old man who sustained a car accident with paraplegia at T12-L1 level. The T12-L1 Facetectomy and laminectomy led to good outcomes. Rahimizadeh, et al. [14] in 2016 published a case report of a 75 years old man fell from a height

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causing paraplegia and was treated with T10-11 transfacet pedicle sparing approach, with favorable results. Valluzzi, et al. [9] in 2021 M described a case of 53 man after falling from height with paraparesis at the level of T9-10 but paraparesis was spontaneous regression. Rahimizadeh A, et al. [16] in 2022 published a case report about a 72 years old female who had a fall causing paraplegia and managed with transfacet pedicle sparing approach with good outcomes.

Case Presentation

A 29-year-old male was presented to a local hospital after suffering a fall on buttock because of missing a sitting chair accidently. He attempted to stand up, but had significant weakness in both lower limbs, more pronounced on the right. He was subsequently transferred to a local hospital where he was managed with spinal precaution but unable to conduct any image studies due to his Body Mass Index (BMI) exceeding 60 (morbid obesity). The day after the injury, he was transferred to a tertiary hospital and had plain AP radiographs, CT scan and MRI after clinically diagnosed with spinal cord injury, considering old compression fractures from T10-L1 with anterior intervertebral ankylosis shown in his thoracolumbar radiographs (Figure 1). Two days later he was transferred to our hospital for surgical managements. We examined an obese man with a high BMI of 61 Kg/m². Neurological assessment revealed severe low back and right - sided chest - wall pain and loss of bowel and bladder function with urine incontinence. He had difficulty standing and mobilizing independently, with muscle strength of grade III in the left lower limb and grade II in the right, sensation loss was mainly below umbilicus level but pin pricks were presenting in left lower leg. The weakness of both lower extremities (Frankel Grade C) was more prominent on the patient's right side. This was associated with hyperactive reflexes and Babinski sign was elicited on the right.

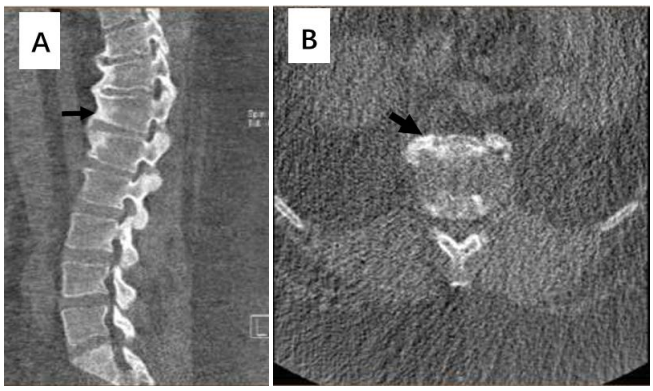

Figure 1: Anterior ankyloses of the T10 to L1 on CT scan images (arrows) with old wedged compression fractures and increased kyphosis (A) and axial view showing that bony fusion between disc spaces from T10 to L1 (B).

MRI study was undertaken and demonstrated a relatively large right-sided mass anterolateral to the dural sac with mainly low signal intensity on the T2-weighted axial images at the T7-8 level (Figure 2 A and B). The sagittal T2-weighted MRI indicated an isointense mass with downward migration at the level of T8-9 compatible with a sequestrated disc fragment (Figure 3 A and B).

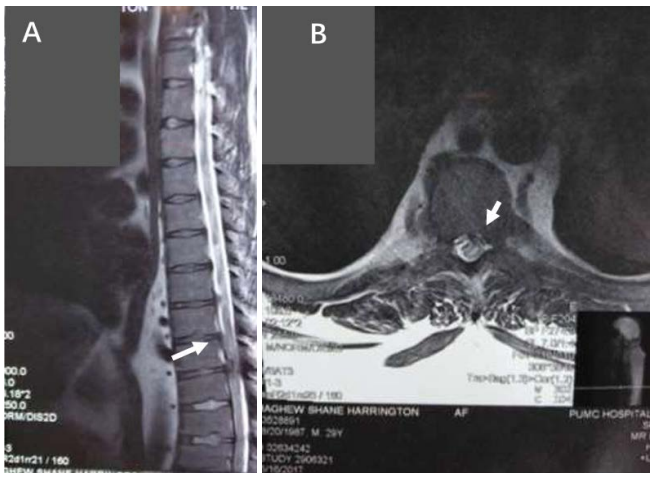

Figure 2: MRI showed that at the T7-8 level (A, as indicated by the arrow), there was a left-sided disc protrusion (B), presenting a mixture of low and high signals on the T2-weighted image.

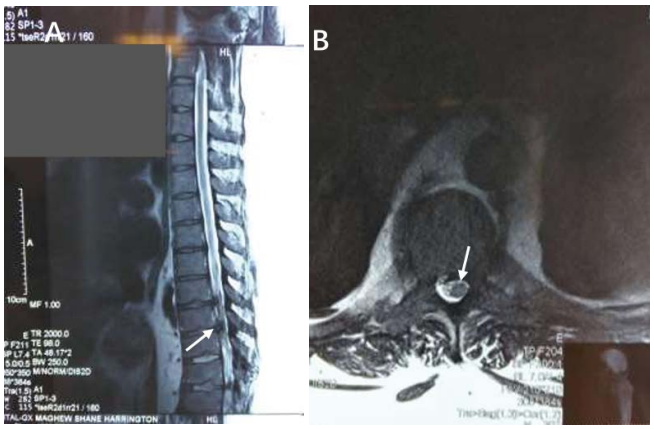

Figure 3: MRI showed T8-9 (A) a huge disc sequestration on the left occupied 50% of the spinal canal (arrow in B), causing severe spinal cord compression.

After general anesthesia, the patient was placed on a Jackson radiolucent table (with a maximum weight - bearing capacity of 215 kg and proper padding for bony prominences). Intra-operative fluoroscopy images were used to locate thoracic lumbar junction, counting upwards to T7 and surgical incision was made in midline from T7-11. The thick subcutaneous adipose tissue made it difficult to visualize the laminae adequately. After dissection of the paraspinal musculatures, laminectomies were performed from T7 to

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T10, starting from the distal end. A large sequestrated disc herniation was observed on the right side at the T7 - 8 and T8 - 9 levels (Figure 2 and 3) and was excised completely, all thickened ligament flavum was resected as well. After decompression and discectomy, we focused on exploration of the spinal canal proximally and distally, and meticulously hemostasis and placed a drain tube outside epidural space.

In surgical intervention, the initial step involved performing a right T7 and T10 full laminectomy, covered the corresponding disc spaces of T7-8 and T8-9, and the sequestrated fragments were approached via bilateral transfacet pedicle-sparing corridor. Intraoperative fluoroscopy images were hardly to see vertebrae clearly, therefore, palpation of the T12 rib as an anatomic landmark for upwards counting to locate the T7-8 and T8-9 levels. Two large pieces of sequestrated disc fragment embedded below the dura mater was discovered and successfully removed (Figure 4). At the twelve months follow-up, he could walk normally (Frankel Grade E on the left, grade D on the right) and no x-rays were taken due to his obese body stature.

Figure 4: Intraoperative photo showed two large pieces of sequestrated nucleolus pulpous compressing the spinal cord on the left side.

Discussion

Thoracic disc protrusion accounts for roughly 0.25%-075% of all disc ruptures [13]. Within this region of spine column, the offending pathologies are generally the formation of the hard discs and the osteophytes which are the final and detrimental consequences of a chronic degenerative scenario [13, 14]. Those pathological anomalies stand in significant contrast to sequestrated soft disc prolapses which occur less frequently and within a relatively short period of time [9-12]. On extremely rare occasions, a pure sequestrated soft disc herniation might occur subsequent to a traumatic event without an apparent vertebral fracture or dislocation [1-8]. The occurrence of traumatic disc herniation in thoracic spine is extremely rare and confined to only four previously published cases [9-12]. On MRI, acute traumatic disc Signal Intensity (SI) depends on the water content of the sequestrated disc. The signal intensity of the disc fragment varies from low to high on T2-weighted images. Sometimes, a traumatic sequestrated disc may have a high signal, easily be misdiagnosed as an epidural hematoma [5, 8].

There are anatomical considerations as well that characteristically distinguish the spinal cord from lumbar vertebral regions. Most of the space occupied by the spinal cord in relation to a small size of the thoracic spinal canal with little reserved space for the cord. The specific blood supply in lower thoracic spine segments of the great medullary artery and the poor blood supply, particularly between T4-10 should be taken into account pre - and post - operatively. These are relevant aspects when choosing the appropriate surgical approach. It is important to realize that herniated thoracic discs are very rare and difficult to diagnose, especially in our case, the patient was morbidly obese and had ankylosis from T10 to L1 (Figure 1), making it difficult to identify the level of the disc prolapse pre- and intra- operatively.

For acute thoracic disc herniation with neurological deficit, surgery via transfacet pedicle-sparing approach seems to be the most appropriate option [10, 13-15]. Favorable outcomes depend on early diagnosis and timely surgical intervention.

Conclusion

This case highlights the value of emergency MRI for patients who have sustained a traumatic spinal cord injury. With consideration of the sequestrated texture of the disc in traumatic thoracic disc prolapse, the transfacet pedicle-sparing approach is the choice for removal of the offending pathology.

References

1. Kotilainen EM, Kärki T, Satomaa OK. Traumatic cervical disc herniation-tetraparesis in a patient kicked by a horse. Acta Orthopaedica Scandinavica 68 (1997): 176-177.
2. Hayes KC, Askes HK, Kakulas BA. Retropulsion of intervertebral discs associated with traumatic hyperextension of the cervical spine and absence of vertebral fracture: An uncommon mechanism of spinal cord injury. Spinal Cord 40 (2002): 544-547.
3. Bucciero A, Carangelo B, Cerillo A, et al. Myelo-radicular damage in traumatic cervical disc herniation. Journal of Neurosurgical Sciences 42 (1998): 203-211.
4. Ando T, Mimatsu K. Traumatic lumbar disc herniation: A case report. Spine 18 (1993): 2355-2357.

Li Shen, et al., Arch Clin Med Case Rep 2025
DOI:10.26502/acmcr.96550714

5. Song K-J, Lee K-B, Kim D-Y, et al. A traumatic disc herniation mimicking an epidural hematoma in a young adult - a case report. Neurosurgery Quarterly 22 (2012): 81-83.

6. Lee HW, Kwon YM. Traumatic intradural lumbar disc herniation without bone injury. Korean Journal of Spine 10 (2013):181-184.

7. Kil JS, Park JT. Posterior epidural herniation of a lumbar disk fragment at L2-3 that mimicked an epidural hematoma. Korean Journal of Spine 14 (2017): 115-117.

8. Basile L, Brunasso L, Gerardi RM, Maugeri R, Iacopino DG, Gulì C, et al. Traumatic lumbar disc extrusion mimicking spinal epidural hematoma: Case report and literature review. Surgical Neurology International 11 (2020): 348.

9. Valluzzi A, Sorenson T, Nasi D, et al. Spontaneous regression of a giant traumatic herniated thoracic disk: A case report and review of the literature. Journal of Neurological Surgery. Part A, Central European Neurosurgery 82 (2021): 182-185.

10. Rahimizadeh A, Sami SH, Rahimizadeh S, et al. Acute traumatic sequestrated thoracic disc herniation: A case report and review. Surgical Neurology International 12 (2021): 108.

11. Ogrenci A, Koban O, Yilmaz M, et al. Traumatic sequestrated thoracic disc herniation; A case report. Turk Neurosurg 29 (2019): 954-956.

12. Fuentes S, Metellus P, Dufour H, et al. Traumatic thoracic disc herniation: Case illustration. Journal of Neurosurgery 95 (2001): 276.

13. Russell T. Thoracic intervertebral disc protrusion: Experience of 67 cases and review of the literature. British Journal of Neurosurgery 3 (1989): 153-160.

14. Rahimizadeh A. Thoracic disc herniation: 20 years' experience in 82 cases. Global Spine Journal 6 (2016): S-0036.

15. Stillerman CB, Chen TC, Day JD, et al. The transfacet pedicle-sparing approach for thoracic disc removal: Cadaveric morphometric analysis and preliminary clinical experience. Journal of Neurosurgery 83 (1995): 971-976.

16. Rahimizadeh A, et al. A Rare Scenario of Acute Traumatic Thoracic Disc Herniation and Review of the Literature. Iran J Neurosurg 8 (2022): E12.

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