



TRAUMATIC LATERAL TRANSLATIONAL INJURY OF THE LUMBAR SPINE-A RARE CASE REPORT

Orthopaedics

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ABSTRACT

Introduction- Traumatic lateral translational injury of the lumbar spine is a rare lesion and frequently noted in patients with multiple traumatic injuries. **Case Presentation-** We report a case of traumatic L4-L5 lateral translational injury of the lumbar spine, in which successful decompression, reduction and fixation with posterior instrumentation showed satisfactory outcome. **Conclusion:** Surgical reduction and fixation should be attempted irrespective of the severity of the initial neurological deficit. We recommend early decompression, reduction and fixation with posterior instrumentation to achieve neurological recovery and stability of the spine.

KEYWORDS

Traumatic lateral translational injury, lumbar spine, decompression, posterior instrumentation & fixation.

INTRODUCTION

Traumatic lateral translational injury of the lumbar spine with facet dislocation is an uncommon injury¹. Primary facet dislocation with lateral translation of the lumbar spine is an infrequent occurrence that has been reported to occur in association with anterior subluxation². Its mechanism of injury and treatment remain controversial³. Translational spine injuries results in severe biomechanical instability caused by complete disruption of structural elements of the vertebral column and the adjacent paravertebral soft tissues^{4,5}. A combination of multiple forces may be responsible for the occurrence of the trauma. We present a unique case of L4-L5 traumatic lateral translational injury of the lumbar spine with bilateral facet joint dislocation and discuss the probable physiopathologic mechanism, clinical presentation & surgical management by reduction, decompression and fixation using posterior approach and at the last follow-up the case got a satisfactory result^{6,7,8}.

CASE PRESENTATION

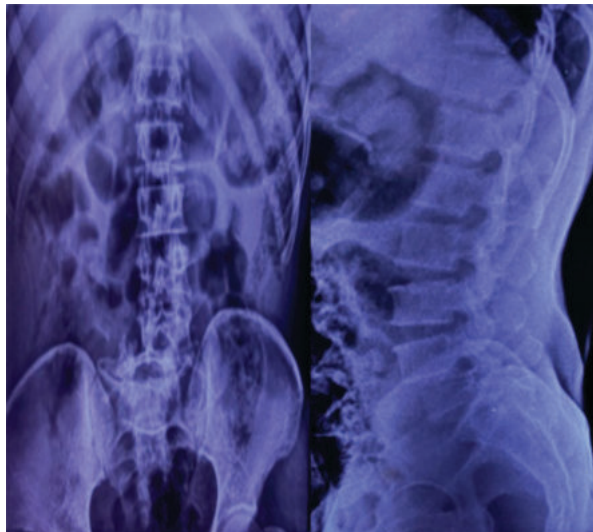


Fig-1- Xray Shows Lateral Translational Injury On L4 Over L5 Level

A 45-year-old man daily labourer presented with history of accidental fall from a tractor with his left hip landing into ground. He experienced

immediate severe pain over the lower back with weakness & numbness in bilateral lower extremities. At the time of admission, he was fully conscious, well oriented with time, place & person. His vitals were stable. He had ASIA-A neurology with muscle power grade zero at L4, L5 & S1 bilaterally and cutaneous sensory loss below the L2 level bilaterally. He had no perianal sensation and loss of rectal tone was present. In plain X-ray of lumbosacral spine showed complete lateral translation of L4 on L5 vertebra. CT-scan showed fracture & dislocation of facet joint in L4-L5 level bilaterally, left transverse process fracture of L4. MRI showed lateral listhesis along with canal stenosis & disruption of posterior ligamentous complex in L4-L5 level.

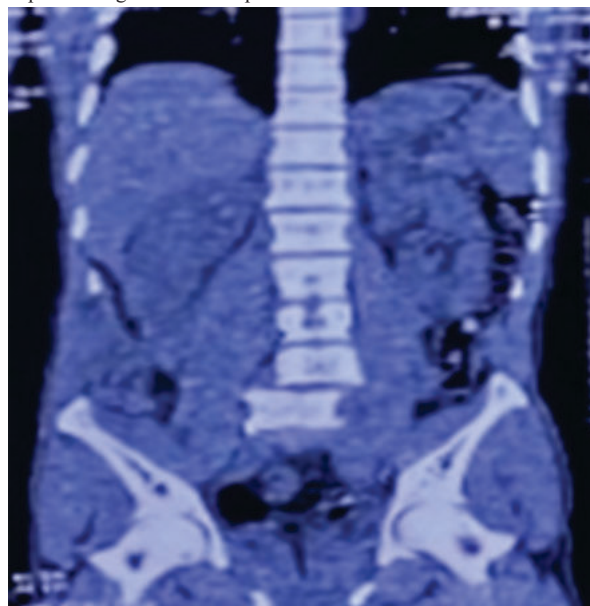


Fig-2- CT Shows Lateral Listhesis In Coronal View

The patient after initial stabilization underwent traction on bilateral lower limbs with 3kg bricks prior to surgery. The patient was kept in air mattress bed and operated on the next day. He had no chronic diseases and this was his index surgery. He was positioned prone and approached through a longitudinal midline incision, exposing L3 till

S1 vertebrae. We found extensive contusion and disruption of his musculoligamentous structures associated with obvious translation at the L4-5 level. Good reduction of the dislocation was achieved. Posterolateral spinal fusion was done using pedicle screw instrumentation. Pedicle screws were placed bilaterally at the L3-S1 vertebral bodies using a free hand technique. Then, pre-bent metal rods were placed in the screw heads and the innere tightened.

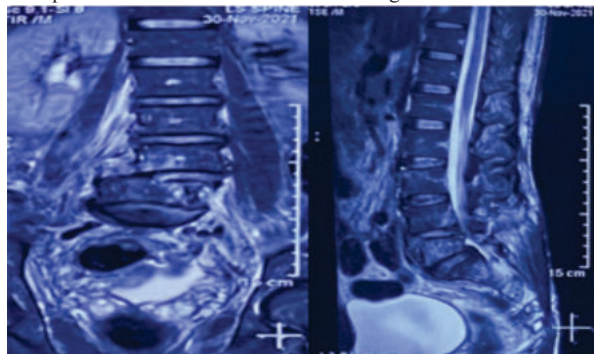


Fig:3-MRI Shows Lateral Listhesis, Stenosis & Disruption Of PCL At L4-L5 Level

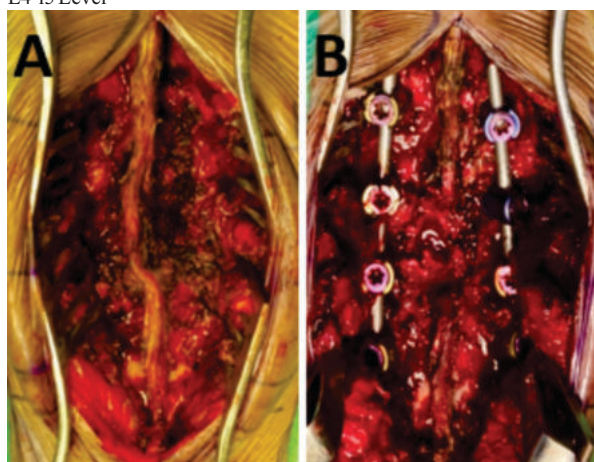


Fig:4- Intraoperative (a) Lateral Listhesis & (b) Posterior Spinal Fusion With Instrumentation.

Decompression of the neural elements was done in L4-L5 level, bone graft packed over L4-L5 facet joint bilaterally and wound closure done in the standard manner. There were no intraoperative & postoperative complications. The patient started regaining motor power 24 hours after surgery. After 15 days of postop we removed suture & discharge this patient. On 1 month postoperative follow up he had improved bilateral lower limb muscles power to grade 4/5. We graded him as ASIA-D at the last follow-up. He is currently walking with lumbar brace support & undergoing rehabilitation.

DISCUSSION

The management of lumbar lateral translational injuries is challenging. Many of these complex injuries are usually left alone in developing countries where there are limited resources to purchase spine instrumentation systems and devices coupled with the lack of skilled surgeons to perform the surgeries⁵.

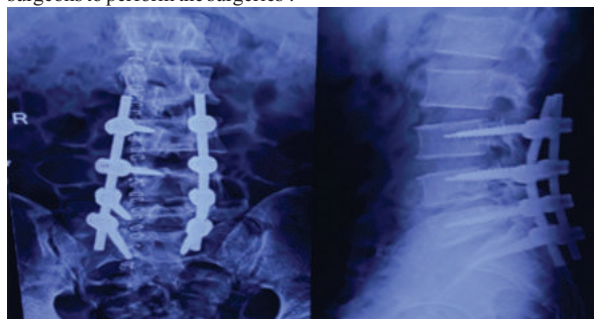


Fig:5- Postop Radiographs Shows Good Reduction And Posterior Instrumented Fusion.

Conservative treatment is ineffective because of the resultant instability. Surgical reconstruction gives the best outcome because it restores the stability of the vertebral column and facilitates rehabilitation¹⁰. The one-stage long segment decompression, reduction, fixation and fusion through a posterior approach used in this patient has been described with good results¹¹. Whenever possible, it should be reduced early to increase the chances of neurological recovery. Neurologic recovery is variable and is highly dependent on the severity of injury & time of surgery since injury. In this case neurological improvement was observed within 24 hours of surgery. It is very important to note that the prognosis of lumbar translational injuries depends more on the degree of anatomical injury found at surgery than on radiologic assessment of the injury^{12,13}. It is challenging to propose an exact mechanism when the injury is complicated and severe. In our opinion, combination of tangential force and compression force caused the fracture dislocation of facet joints results in the lateral translation injury.

CONCLUSION

In limited resource settings, there is a tendency of “skilful neglect” of complex injuries. Where resources allow, surgical reconstruction is essential to restore the normal lumbar alignment, decompress the neural structures and stabilize the lumbar spine using open reduction and rigid fixation. Surgical correction of lateral translational lumbar spine injury should be attempted as early as possible irrespective of the severity of the initial neurological deficit as it can result in certain amount of neurological improvement.

REFERENCES

1. Aihara T, Takahashi K, Yamagata M, Moriya H: Fracture dislocation of the fifth lumbar vertebra. A new classification. *J Bone Joint Surg Br* 80:840–845, 1998
2. Mori K, Hukuda S, Katsuura A, Saruhashi Y, Asajima S: Traumatic bilateral locked facet at L4-5: report of a case associated with incorrect use of a three-point seatbelt. *Eur Spine J* 11:602–605, 2002
3. Vialle R, Charosky S, Rillardon L, Levassor N, Court C: Traumatic dislocation of the lumbosacral junction diagnosis, anatomical classification and surgical strategy. *Injury*. 2007;38(2):169-181.
4. Watson-Jones R. Fractures and joint injuries. 1st ed. Edinburgh: E & S Livingstone; 1940.
5. Magerl F, Aebi M, Gertzbein SD, Harms J, Nazarian S: A comprehensive classification of thoracic and lumbar injuries. *Eur Spine J* 3:184–201, 1994
6. Song KJ, Lee KB: Bilateral facet dislocation on L4–L5 with neurological deficit. *J Spinal Disord Tech*. 2005;18(5):462–4.
7. Dewey P, Browne P: Fracture-dislocation of the lumbosacral spine with cauda equina lesion. *J Bone Joint Surg (Br)* 1968, 50:635–638.
8. Aihara T, Takahashi K, Yamagata M, Moriya H: Fracture-dislocation of the fifth lumbar vertebra. A new classification. *J Bone Joint Surg Br* 80:840–845, 1998
9. Abdel-Fattah H, Rizk AH: Complete fracture-dislocation of the lower lumbar spine with spontaneous neurologic decompression. *Clin Orthop Relat Res* 1990, 251:140–143.
10. McAfee PC, Yuan HA, Fredrickson BE, Lubicky JP: The value of computed tomography in thoracolumbar fractures. An analysis of one hundred consecutive cases and a new classification. *J Bone Joint Surg Am* 65:461–473, 1983
11. Accaro AR, Lehman RA Jr, Hurlbert RJ, Anderson PA, Harris M, Hedlund R, et al: A new classification of thoracolumbar injuries: the importance of injury morphology, the integrity of the posterior ligamentous complex, and neurologic status. *Spine* 30:2325–2333, 2005
12. Chavda D, Brantigan J: Technique of reduction and internal fixation of thoracolumbar fracture-dislocation using pedicle screws and variable screw placement plates. *Orthop Rev* 1994, Suppl:25–31.
13. Arnold PM, Malone DG, Han PP: Bilateral locked facets of the lumbosacral spine: treatment with open reduction and transpedicular fixation. *J Spinal Cord Med* 27:269–272, 2004