CASE REPORT

Isolated unilateral facet dislocation of the lumbosacral junction

Traumatic unilateral facet dislocation of the lumbosacral junction without fracture or with non-displaced fractures of adjacent vertebrae is extremely rare. We describe a case of a young male who sustained a unilateral facet dislocation of the lumbosacral junction in a motor vehicle accident. The unusual features of this case include an unremarkable physical and neurological examination on presentation and absence of other substantial vertebral or extra-vertebral injuries.

Sacral fractures and lumbosacral dislocations constitute about 1% of spinal fractures and are frequently associated with life-threatening major injuries. We describe a case of traumatic unilateral facet dislocation of lumbosacral junction. This is an extremely rare injury.

Case report

A 20-year-old male was bending down in sandy terrain when he was struck by a slow-moving vehicle. At the emergency department, he was fully alert, co-operative and haemodynamically stable. His only complaint was dull, non-radiating pain in the lower back. Physical examination revealed mild bruising and tenderness over the lumbosacral junction. A complete neurological assessment showed no abnormality.

Initial anteroposterior and lateral radiographs of the lumbar spine suggested a rotational deformity and showed mild anterolisthesis (Fig. 1) and asymmetry (Fig. 2) involving the intervertebral disc space at the lumbosacral junction. Axial CT views (Fig. 3), including sagittal CT (Figs 4 and 5) and 3-dimensional reconstructions (Fig. 6) revealed a unilateral L5-S1 facet dislocation on the left side with an undisplaced fracture of the adjacent superior facet or S1, a contralateral facet subluxation and a grade I listhesis at the same level. Fractures of the L5 and S1 transverse process were also noted on the left side. No other vertebral or extra-vertebral injuries were identified.

The following day, he underwent open reduction and fusion of the lumbosacral junction.
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through a posterior midline approach. Additional soft-tissue injuries which were identified intra-operatively included tears of the interspinous ligament and the ligamentum flavum at the level of injury. An intra-operative view is presented in Figure 7. The L5-S1 intervertebral disc was extruding and compressing the left L5 nerve root. Successful reduction was possible only after facetectomy of the dislocated facet joint. Instrumentation of L5-S1 was achieved using pedicular screws (CD Horizon Legacy screws, Medtronic, Memphis, Tennessee) and local bone graft. Finally, laminectomy on the side of the dislocated joint and L5-S1 discectomy were followed by transforaminal lumbar interbody fusion at the same level (Capstone Cage, Medtronic).

The clinical course was uneventful except for rhabdomyolysis, which was diagnosed on presentation and responded satisfactorily to an aggressive regimen of intravenous fluids. No renal or other complications were identified. The post-operative radiographs confirmed an adequate reduction of the L5-S1 facet joints as well as stable placement of the implants (Fig. 8). On discharge, he was walking comfortably with walking aids and had no back or leg pain. A further neurological examination showed no abnormality. Three months later, he remained neurologically intact and had almost regained full level of activity.

Discussion

Lumbosacral dislocations are usually caused by high-energy trauma, often in motor vehicle accidents. Different aspects of the mechanism of these injuries have raised much interest in in vitro and observational studies. Consequently, several anatomical and mechanical-based classifications have been developed to assess the severity of the injury and predict possible complications.

The force required to dislocate the lumbosacral junction commonly results in significant instability with associated neurological impairment, often requiring operative treatment. In the review by Aihara et al., 68.4% of patients had a neurological deficit, regardless of the type of dislocation. Most reported lumbosacral fracture-dislocations have been accompanied by high rates of other life-threatening injuries, including adjacent spinal and pelvic fractures or other visceral damage. Pure dislocations at the lumbosacral junction with no evidence of fracture of the facet joints are,
to the best of our knowledge, confined to two case reports.8,9

Our patient is unusual because a unilateral facet fracture-dislocation following a high-energy injury had no associated neurological, visceral or musculoskeletal injury. We think that this presentation can be attributed to the high energy being inflicted at relatively low speed, and the surrounding sandy terrain may have created a physical environment capable of partially absorbing the energy of the injury.

It is essential to obtain high quality radiographs of the lumbosacral junction, particularly when high-energy trauma is involved.10 In our case, the evidence of a rotational deformity and anterolisthesis at the same level indicated detailed imaging. The CT radiographs with reconstructions confirmed the diagnosis by demonstrating the typical ‘reverse hamburger’ sign,9 and the so-called ‘sentinel fractures’7 of the adjacent transverse processes, implying a lumbosacral transition and a subluxation of the opposite facet joint.

According to the classification of Aihara et al,6 the injury described is type I, in which a unilateral lumbosacral facet dislocation is present, with or without involvement of the facet joint. As recommended by others,6,11 our patient was treated operatively and made a good recovery.
No benefits in any form have been received or will be received from commercial party related directly or indirectly to the subject of this article.

References