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Unilateral facet dislocation at the lumbosacral spine

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Abstract

Unilateral facet dislocation of the lumbosacral junction is considered the mildest form of traumatic lumbosacral dislocation. This is an extremely rare injury that can be a diagnostic challenge in an emergency setting, where radiography is often inadequate. CT or MR may be useful for early diagnosis and treatment. Imaging findings in a new case are presented and the usefulness of different imaging methods is reviewed.

Keywords: Facet dislocation; Lumbosacral dislocation; Spine trauma; Spine imaging

1. Introduction

We present a case of unilateral facet dislocation at lumbosacral level secondary to trauma. This injury is considered the mildest form of traumatic lumbosacral dislocation. This case is of interest because of the low frequency of this pathology at lumbar spine and the difficulty of making a correct diagnosis in an emergency setting [1].

2. Case report

A 13-year-old male fell from the passenger seat of a motorcycle, and his head and lower back struck the ground. Back symptoms were initially obscured by head pain but on the second day, the patient complained of mild lumbar pain with no neurological compressive symptoms.

X-ray examination in the emergency room demonstrated grade I spondylolisthesis at L5 (Fig. 1).

Brain computed tomography (CT) was normal. CT scan of the lumbar spine showed the following findings:

1. Widening of the left L4–L5 facet joint with thickening of ligamentum flavum indicating a ligamentous injury (Fig. 2).
2. Anterior dislocation of left inferior facet joint of L5, located anterosuperior to the superior facet of S1 (Fig. 3), producing a naked facet joint (Fig. 4).
3. A small flat fragment detached from the upper endplate of S1 (Fig. 5).
4. Fractures of left transverse processes of L3 and L4.

The CT scan was performed using a Hispeed CT (GE Medical Systems) with slice thickness of 3 mm and pitch of 1.5.

An MRI scan on the next day demonstrated the displaced facet and ruptured ligamentum flavum and also a mild reduction in the degree of anterior shift of L5. The L5–S1 disc was not ruptured, but sagittal images demonstrated an incomplete horizontal fracture of the upper endplate of S1 just below the disc (Fig. 6). A Signa 1.5 T MR system (GE Medical Systems) was used.

Three days later, the patient underwent posterior interbody fusion with the use of pedicle screws (Fig. 7), and he then wore a corset for 6 months. After this period, he still complained of mild mechanic pain irradiating to the left hip. He is currently engaged in an exercise program and shows clinical improvement.

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Fig. 1. Lateral emergency radiograph showing spondylolisthesis of L5.

3. Discussion

Unilateral locked facet is a common cervical spine injury defined as a one-sided dislocation in which inferior facet of the upper vertebra has ridden up over the superior facet of the lower vertebra [2].

Lumbosacral dislocation injuries are rare, with a varied number of reported cases according to the definition. The low occurrence of lumbosacral dislocation is likely to be multifactorial. The frontal orientation of the facets and the stability provided by muscles and powerful iliolumbar ligaments may prevent anterior displacement of the fifth lumbar vertebra [3]. Aihara et al. [4] have classified fracture-dislocation of the fifth lumbar vertebrae into five types. Our case corresponds to the least severe type, i.e., type I or unilateral facet dislocation with or without facet fracture. Only 18 cases of this type of dislocation could be found in the literature [5,6].

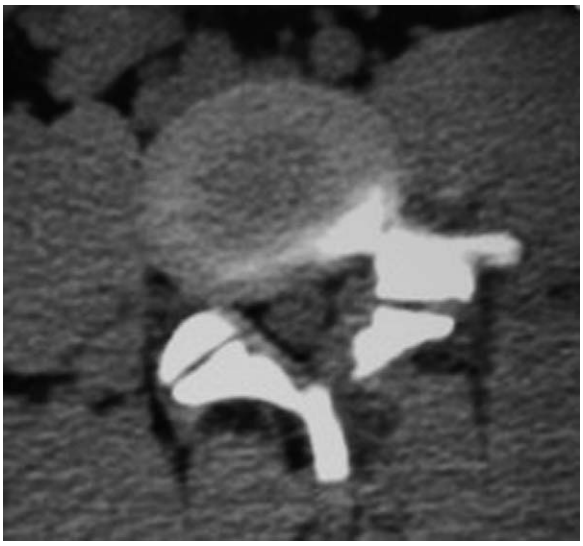

Fig. 2. Axial CT scan showing widening of the left facet joint with thickening of the ligamentum flavum.

Fracture-dislocation at lumbosacral spine is an uncommon lesion that is almost exclusively the result of a major trauma, usually from a road traffic accident [1,7–11]. It results from the combined forces of hyperflexion and rotation. The rotation component is responsible for the asymmetric nature of the lesion. The lumbosacral junction has a more marked sagittal inclination than the remainder of the spine, contributing to the anterior dislocation caused by hyperflexion forces [12]. A cadaveric study demonstrated that facet dislocation occurs when a rotational force is applied to the spine held in flexion; hyperflexion alone was not capable of producing a pure facet dislocation [13].

Traumatic lumbosacral dislocations are rarely isolated injuries. Multiple fractures and visceral, vascular or neurologic lesions may be associated and act as distracting injuries that delay the diagnosis [12]. Fractures of transverse processes of the lumbar spine are considered sentinel findings and have been described in almost all reported cases [14].

The diagnosis must be suspected in radiography on observation of spondylolisthesis, widened interspinous space or dislocated facets [2]. However, emergency radiographs are often inadequate and the lesion can be missed. Fractures of

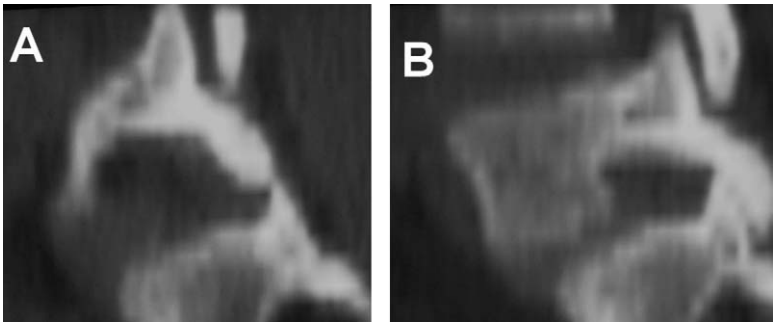

Fig. 3. Sagittal reconstruction at level of the dislocated facet (A) and on the contralateral side for comparison (B).