

## Original Research Article

## Luxury Fracture of the Sacrum [S1 S2] and [S2 S3]

Amel Djerbal<sup>1\*</sup>, Kenza Badache<sup>2</sup>, Samir Tebani<sup>1</sup>, Yousria Akloul<sup>1</sup>, Souhila Sadat<sup>1</sup>, Dalila Zeghdoud<sup>1</sup>, Reda Harrar<sup>1</sup><sup>1</sup>Faculty of Medicine, University of Algiers I, Specialized Hospital Establishment Salim Zemirli –El Harrach, Algiers<sup>2</sup>Faculty of Medicine, University of Algiers I, University Hospital Center of Algiers, Hospital of Algiers Mustapha

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**Abstract:** *Introduction:* Transverse fractures of the sacrum are rare and constitute less than 1% of all vertebral fractures. While the majority is longitudinal, only 3 to 5% are transverse fractures. Transverse fractures are usually seen following a fall by high-energy trauma, hence the name “Suicidal jumper’s fractures”. Neurological deficits involving the sacral roots are common and have been reported at rates of 96% to 100% in the literature. *Material and Methods:* We describe two uncommon cases of fracture-dislocation of the sacrum, the first at the S2-S3 level and the second at the S1-S2 level treated by isolated laminectomy without internal fixation with cauda equina syndrome, during the year 2020 in our department, including a review of the literature on the treatment of this type of fracture. *Result:* Our two patients on neurologically recovered at 7 months post laminectomy. *Conclusion:* Isolated decompression can be considered for patients who present a stable sacrum with non-displaced fracture or an old fracture that shows fracture healing. Favorable pelvic outcomes and neurological recovery, along with acceptable stability, can be acquired.

**Keywords:** Transverse fractures sacrum, dislocation, suicidal jumper’s fractures, laminectomy.

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## INTRODUCTION

Transverse fractures of the sacrum are rare and constitute less than 1% of all vertebral fractures. While the majority is longitudinal, only 3 to 5% are transverse fractures [1-3]. Transverse fractures are usually seen following a fall by high-energy trauma, hence the name “Suicidal jumper’s fractures”. Neurological deficits involving the sacral roots are common and have been reported at rates of 96% to 100% in the literature [4].

## MATERIAL AND METHODS

We describe two uncommon cases of fracture-dislocation of the sacrum, the first at the S2-S3 level and the second at the S1-S2 level treated by isolated laminectomy without internal fixation with cauda equina

syndrome, including a review of the literature on the treatment of this type of fracture.

## Case 1:

A 17-year-old girl who fell from the 7th floor of a building following a suicide attempt. S2-S3 with fracture of the left leg and dislocation fracture of the right talus, with neurological disorder. Radiographs and computed tomography (CT) scans showed a transverse fracture of S2- S3 with significant posterior dislocation (Figure 1). Magnetic resonance imaging (MRI) was performed to assess neurological damage, showed a transverse fracture of S3 with significant posterior dislocation (S2-S3) with crushing of the adjacent nerve roots (Figure 2). X-ray of the left leg and right foot shows fracture of the left leg and dislocation fracture of the right talus (Figure 3).

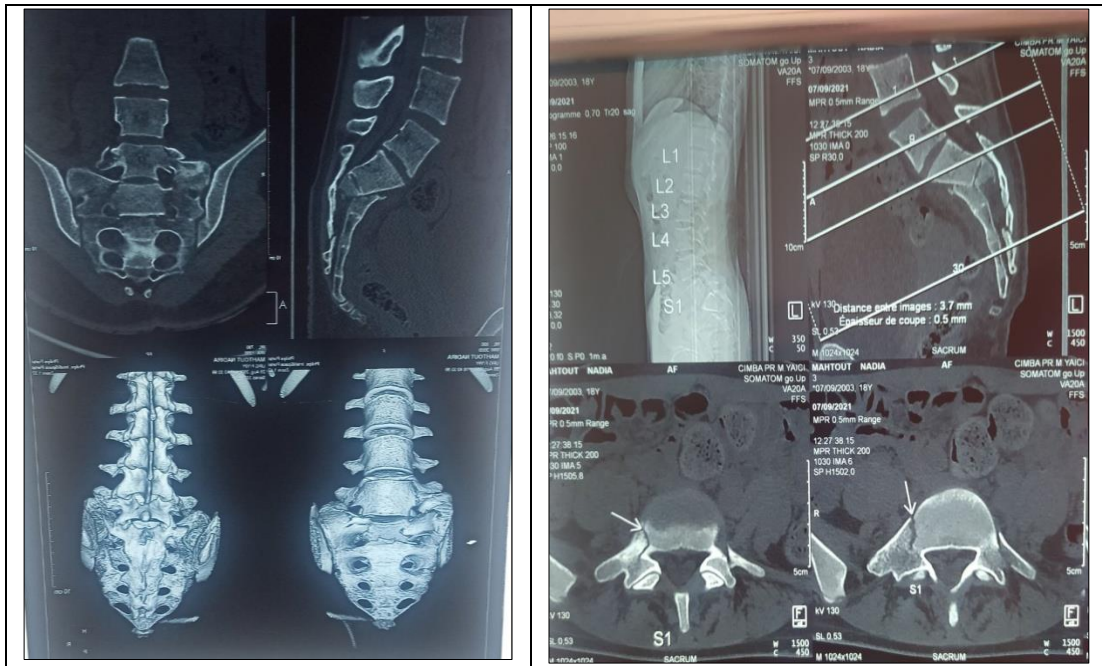


Figure 1: CT scan shows a transverse fracture of S2- S3 with significant posterior dislocation

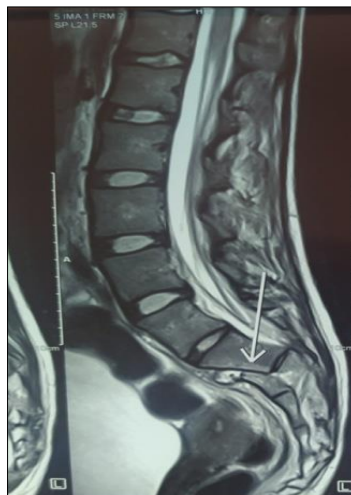


Figure 2: MRI shows a transverse fracture of S3 with significant posterior dislocation (S2-S3) with crushing of the adjacent nerve roots

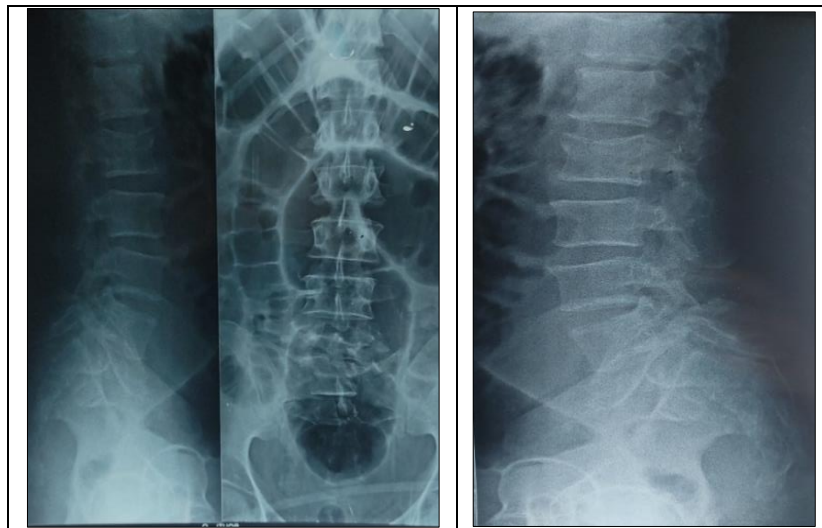


Figure 3: fracture of the left leg and dislocation fracture of the right talus

**Case 2:**

A 60-year-old man had a fall of 10 meters after a work accident. The standard X-ray showed a dislocation of the sacrum at the S1-S2 level (Figure 4) associated with a bilateral fracture of the calcaneus, CT

scan showed a dislocation of the sacrum at the S1-S2 level associated with a bilateral (Figure 5). The patient also presented neurological lesions of the type of cauda equina syndrome.



**Figure 4: The standard X-ray showed a dislocation of the sacrum at the S1-S2 level associated with a bilateral fracture of the calcaneus**



**Figure 5: CT scan showed a dislocation of the sacrum at the S1-S2 level associated with a bilateral fracture of the calcaneus and fracture of the neck of the talus in the right foot**

**Treatment**

Our two patients treated by isolated wide laminectomy without internal fixation and without reduction of the sacral dislocation.

**RESULT**

Our two patients on neurologically recovered at 7 months post laminectomy.

**DISCUSSION**

Laminectomy and wide decompression were best when patients showed signs of neurologic deficits and radiographic evidence of spinal canal encroachment [5]. MRI results showed that after relieving displaced fragments, the compressed nerve root presented more clear morphology and the patient showed obvious neurologic recovery. A systematic review of 521 patients

reported in the literature neurological outcome after traumatic transverse sacral fractures, this review could not provide evidence of improved neurological recovery after surgical treatment compared with nonoperative treatment. When surgical treatment was considered, there was a low level of evidence that fixation of the fracture results in better neurological improvement compared with isolated decompression [6]. Zelle *et al.*, [7], and Ayoub [4], *et al.*, reported better neurological recovery may be achieved with early decompression. Although prolonged delay may negatively influence neurological recovery [8]. The absence of fixation techniques relieved patients of implant-related complications, but also lead to prolonged immobilization. The long-term outcomes remain uncertain [5]. Mahajan concluded that isolated decompression could be considered for patients with old fractures for more than 6 weeks and when the fractures

showed no great displacement [9]. When this fracture is associated with a spinopelvic dislocation, lumbo-iliac fixation of transverse sacral fractures has been increasingly used in recent years to reconstruct lumbosacral stability [10-14].

## CONCLUSION

Isolated decompression can be considered for patients who present a stable sacrum with non-displaced fracture or an old fracture that shows fracture healing. Favorable pelvic outcomes and neurological recovery, along with acceptable stability, can be acquired.

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