

Sacroiliac screw fixation at the Nouakchott Traumatology-Orthopedics and Burns Centre: report of 2 cases

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Abstract:

Lesions causing instability of the pelvic ring occur in the context of polytrauma, and in some cases are life-threatening. Orthopaedic treatment of these lesions is restrictive for the patient and for the attending physician; functional treatment or sometimes trans-osseous tractions which can last up to 45 days often give poor results in terms of statics; open surgical treatment is not free of vascular (venous plexuses), nervous (sacral roots) or septic risks, but it is reserved for neurological forms or forms with very significant displacement. Based on the observation of two cases, we are going to illustrate the method of closed focus fixation under radioscopic control by percutaneous sacroiliac screw fixation in unstable fractures of the pelvis type B and C of the TILE classification. This technique allows stability of the pelvic ring by fixing the coxal bone with the body of S1 or S2 and rapid resumption of statics and walking.

Introduction

Pelvic fractures most often occur because of violent trauma, associated with visceral lesions, threatening the prognosis of life. They account for 1.5% of all osteoarticular trauma.

Pelvic ring injuries account for 40% of pelvic trauma and are the cause of 8% of in-hospital deaths. Various surgical techniques can be used to stabilize sacroiliac fractures (2-3). Fixation of the coxal bone with the body of S1 or S2 using one or two screws is the standard treatment for these injuries. Percutaneous screw fixation has become the gold standard for the treatment of dislocated sacroiliac fractures.

Using two case studies, we will illustrate the technique of sacroiliac screw fixation in the treatment of posterior instability of the pelvic ring.

Patients and observations

Case 1:

Patient aged 36, victim of a road traffic accident resulting in closed trauma to the pelvis and right wrist; on general examination, the patient was hemodynamically and reportorially stable, with no sensory - motor deficits or urogenital disorders. A radiological work-up revealed a Tile C-type pelvic fracture (left longitudinal fracture of the sacrum) associated with a comminuted fracture of the right iliac wing.5 The patient underwent percutaneous sacroiliac screw fixation and fixation of the pubis with a screw plate after 5 days in hospital. The post-operative course was marked by consolidation of the fracture of the sacrum and acetabulum after 3 months' follow-up, and the patient resumed his daily activities without any static problems or pain on walking (Figure 4).

Cas 2:

A 27-year-old patient with no previous history victim of a road traffic accident resulting in closed trauma to the pelvis. The patient was hemodynamically and respiratory stable. A radiological assessment revealed a stable transverse fracture of the acetabulum and a left sacroiliac disjunction associated with a pubis disjunction resulting in posterior instability of the pelvic ring, Tile C3 type.

The patient underwent osteosynthesis by percutaneous sacroiliac screw fixation under fluoroscopic control and a plate screwed to the pubic symphysis.

The patient's progress was marked by consolidation of the two disjunctions and the iliac bone after 3 months (Figure 5).

The patient resumed his activities without any problems with statics or walking.

Discussion

Sacral fractures, although rare, account for around 45% of all pelvic fractures. Their emergency management consists primarily of stabilizing the hemodynamic state. This may involve external stabilization of the fracture, surgical haemostasis treatment or radiological embolization. Treatment of posterior pelvic ring instability is the second stage, between 5- and 11-days post-trauma, and must be carried out rigorously because these types of injury can have a significant impact on the patient's quality of life due to chronic pelvic instability, deformity, prolonged decubitus and neurological damage [4].

The role of surgical management in promoting early mobilization and improving outcomes has been demonstrated [8].

Various methods have been used to fix the posterior pelvic ring, each with its own advantages and disadvantages [5,6]. The most used method is percutaneous sacroiliac (SI) screw fixation, which involves inserting an 80mm cannulated screw from the lateral ilium through the sacroiliac joint and into the superior vertebral body of the sacrum after precise reduction. It can be inserted in the prone, supine or lateral position [5,6].

The aim is to achieve stable fixation to allow bone growth and subsequent fusion of the sacral joint. This procedure has gained popularity due to its advantages: minimal soft tissue disruption, negligible blood loss, reduced operative time and minimal implant prominence compared to open methods [2,3,5,6]. However, placement of the SI screw is technically challenging and requires a good understanding and three-dimensional imagination of the morphology of the sacrum and its anatomical variations [3,7].

To facilitate accurate visualization of the sacrum, several imaging modalities have been used intraoperatively: fluoroscopy, computed tomography and intraoperative navigation [8].

Accurate reduction is necessary for safe insertion of the SI screw. Various clinical, radiographic and anatomical studies have repeatedly described the potential risk of damage to neighboring neurovascular structures [9], [10], [11], [12].

Misplacement of the SI screw is frequently observed in 3-29% of cases and is associated with injury to the L5 nerve root in 0.5-8% of reported cases [7]. Several studies have attempted to improve the accuracy of SI screw placement to avoid potential subsequent complications [13,14]. However, only a few studies have attempted to manage iatrogenic neurological injury following misplacement of an osteosynthesis screw [15,16]. In our two patients we did not report neurological injury or misplacement of the screw.

Conclusion

Percutaneous sacroiliac screw fixation is an effective and reproducible method for treating posterior pelvic ring instability. Several complications related to mispositioning of the screws and neurological damage have been described in the literature, but this technique has proved to be superior to conventional techniques in terms of reducing operating time, the risk of infection and blood loss.

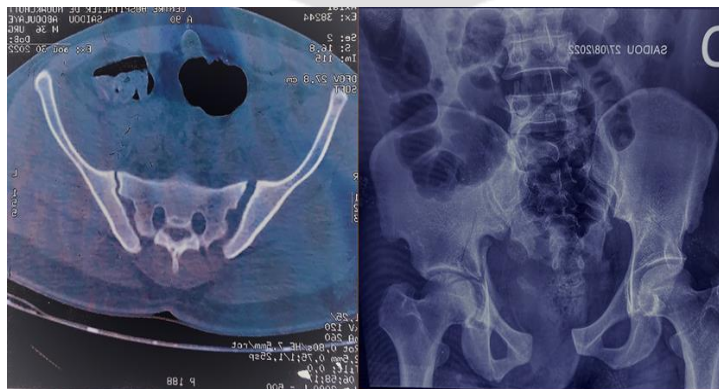


Figure 1 : pubic disjunction and right sacroiliac dislocation.



Figure 2 : radiological check-up at 3 months and 6 months post-operatively

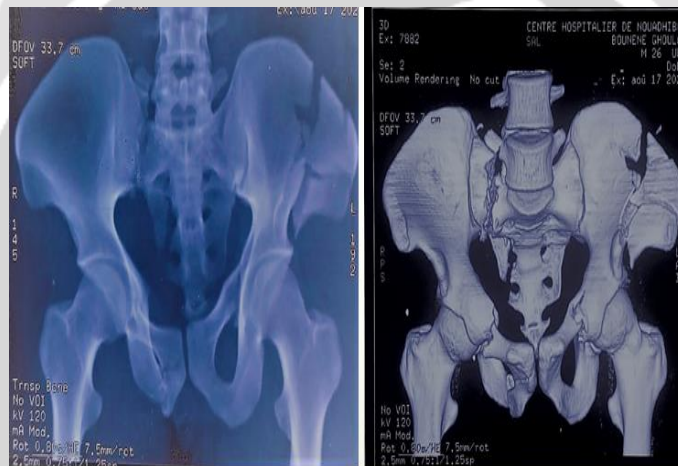


Figure 3 : fracture of the sacrum on the right associated with a fracture of the iliac wing on the left



Figure 4: favorable outcome in the first case, with no impairment of statics or gait

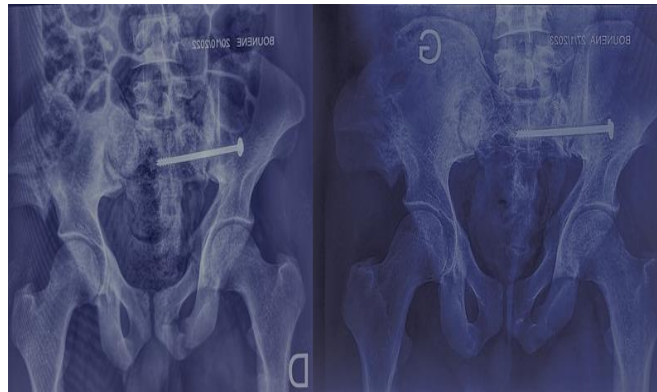


Figure 5 : radiological control after 2 and 6 months.

Conflicts of interest

The authors declare no conflicts of interest

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