CASE REPORT

Isolated anterior unilateral sacroiliac dislocation without pubic arch disjunction

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Summary Sacroiliac joint dislocations frequently occur in a context of high-energy polytrauma. When there is disruption of the pelvic ring, sacroiliac joint displacements are more often posterior and combine two lesions: either lesions of the pubic arch as well as the posterior arch or bilateral lesions. The case we report here lacks these two characteristics. This is an isolated unilateral sacroiliac dislocation with no opening lesion of the pubic symphysis or fracture of ilio- or ischiopubic rami and with anterosuperior displacement. After emergency reduction of the dislocation, the secondary fixation was not performed, due to initial hemodynamic instability compounded by deteriorating central nervous system condition.

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Introduction

Sacroiliac (SI) dislocations are rare but reduce quality of life thereafter [1]. The coxal bone is most often dislocated backward and/or the superior part of this dislocation assumes several pelvic ring lesions. We report a case that had neither of these two characteristics: it was an isolated anteroposterior sacroiliac dislocation without an opening lesion of the pubic symphysis or fracture of the anterior part of the pelvic ring.

Observation

A 20-year-old male was involved in a high-energy motor vehicle accident, a backseat passenger ejected from the vehicle. He presented a Glasgow score of 3 when care was initiated. The first workup found a right-sided SI dislocation on the AP pelvic X-ray (Fig. 1). The CT scan confirmed a right isolated unilateral anterosuperior SI dislocation. There was no opening lesion of the pubic symphysis or associated fracture of the ilio- or ischiopubic rami (Fig. 2). This lesion was associated with fractures of the right costiform processes from L1 to L5. The rest of the workup found a right subdural hematoma with cortical edema with no herniation. Before placing an intracranial pressure sensor and transferring the patient to the surgical intensive care unit because of major hemodynamic instability, sacroiliac reduction was attempted using external maneuvers.

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without success. Open reduction was then suggested. The patient was installed in the left lateral decubitus position because the ventral decubitus position was impossible given the patient’s hemodynamic instability. We made a 3-cm paravertebral longitudinal incision on the right side facing the sacroiliac joint. A raspatory was slid between the anterior edge of the sacrum and the posterior edge of the iliac wing to act as a lever. The AP pelvic images, inlet and outlet, showed reduction of the dislocation with the pubic symphysis remaining closed. On these images, we noted a right sacroiliac joint gap persisting after reduction.

The anatomy of the pelvic ring was restored. Because of the hemodynamic instability, but with no retroperitoneal hematoma, and the need to rapidly transfer the patient, we decided to defer fixating the sacroiliac joint. The AP pelvic X-ray taken in the postoperative period (Fig. 3) demonstrated a reduced right SI joint but with an enlarged radiolucent line and a joint gap less than 1 cm. To plan the SI fixation, a follow-up CT scan of the pelvis was scheduled. However, on D4, the patient was again operated with a right craniotomy because of a substantial increase in intracranial pressure. As soon as the patient awoke, the neurological examination showed a minimally conscious state.

**Figure 1** Preoperative pelvis X-ray.

**Figure 3** Postreduction pelvis X-ray.

**Figure 2** a: axial view; b: coronal view; c: axial view before reduction CT scan images, and d: CT scan reconstruction images showing the anterosuperior dislocation without pubic symphysis disruption or damage to the contralateral side.
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with a Glasgow score of 8, (Y4 V1 M3) with no recovery in the following weeks. Therefore, no additional stabilization surgery on the SI joint was performed. On successive radiological follow-up at 1 and 2 months, we observed no secondary displacement of the SI joint.

At the 24-month follow-up, the patient was in a long-stay rehabilitation center. He presented no central neurological recovery, with a neurovegetative state. He was verticalized only on the physical therapy table. The CT done at 24 months of follow-up showed an absence of displacement with the SI joint congruent and persistence of a joint gap less than 1 cm associated with calcifications (Fig. 4).

Discussion

Rupture of the pelvic ring assumes at least two lesions—one at the anterior arch and another at the posterior arch [2] — or bilateral lesions. The association of several lesions can lead to instability. The most widely used classification for fractures and lesions of the pelvic ring is the Tile classification [3] modified by the AO/ASIF. In the present case, the lesion was classified C1.2–a2. In the 2007 OTA fracture classification [4], the lesion was classified 60-A1 (dislocation with mainly anterior displacement). In the Young and Burgess classification [5], the lesion could be classified as a CL II equivalent (lateral compression with rotation of a hemipelvis) and would therefore approach injuries with overlapping of the pubic symphysis joint surfaces without posterior sacroiliac rupture, also a very rare lesion. The classification reported by Zhang et al. [6] only concerns children.

Pure bilateral SI dislocations [7,8] and bilateral SI fractures-dislocations with no lesion at the anterior arch [9–12] have been described. No reports of isolated unilateral SI dislocation without an anterior arch lesion were found in the literature. Unilateral SI dislocations with dislocation in front of the coxal bone have been described [6,13], but all these cases had lesions in the anterior arch (opening of the pubic symphysis or fracture of the ilio- or ischiopubic rami). We found no cases of anterior unilateral SI dislocation without a lesion to the anterior arch.

SI dislocation is usually posterior and often direct trauma from back to front on the sacrum is found [10–12] or injury to the lower limbs in hyperflexion [3]. Anterior dislocations with SI displacement [6] have been reported resulting from direct injury to the homolateral hip or the sacrum, but with no other details provided. In the case reported herein, the dislocation was anterosuperior and the lesional mechanism could not be identified. The pubic symphysis probably acted as the center of rotation without rupturing: the elasticity of the pubis symphysis in this young man provided this degree of mobility. The magnitude of the displacement argues in favor of complete rupture of the short and long posterior SI ligaments, including the interosseous ligament. The apparent relative stability observed is due to preservation of the pubis symphysis. This sufficed to stabilize the posterior SI lesion of the pelvic ring, the time to form a fibrous ligament scar.

During patient management, if closed reduction is unsuccessful using external maneuvers, open reduction is possible [14]. The approach can be anterior or posterior [15]. In the present case, given the patient’s instability and the sole objective of reducing the dislocation in the emergency situation, we chose a posterior minimally invasive approach without associated osteosynthesis. We could have completed the external maneuvers with placement of three external fixator pins in the iliac wing, connected with a clamp used as a handle to work with the iliac wing. After open reduction, we could have placed iliosacral screws with digital guidance in the greater sciatic notch. We could not perform additional emergency osteosynthesis because of the patient’s hemodynamic instability, with no retroperitoneal hematoma, nor secondarily because of the poor neurological and functional course and the patient’s vegetative state. Finally, it is known that persistent combined displacement greater than 1 cm (in the anteroposterior and craniocaudal axes) is associated with poorer functional results [16,17], with the persistent SI joint gap in this case measuring less than 1 cm at the 2-year follow-up and no increase in displacement.

Conclusion

This case describes an isolated posterior pelvic ring lesion, a unilateral SI dislocation, with no lesion to the anterior arch. This type of dislocation is rare, anterior, and in front of the sacral ala. Failure to reduce the dislocation with external maneuvers required reduction through a minimally invasive approach. The absence of a lesion to the anterior arch preserved the reduction with no secondary displacement, in absence of surgical fixation, which was impossible in this context.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

References


