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RIMC **La Revue Internationale Médico-Chirurgicale**

(ARTICLE ORIGINAL)

Unusual sports injury: traumatic obturator hip dislocation, two case reports and literature review

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Abstract

Traumatic obturator hip dislocation is a rare form of anterior dislocation, usually secondary to high-energy trauma. It constitutes an orthopaedic emergency requiring early reduction within six hours to limit the risk of aseptic necrosis of the femoral head. We report two clinical cases in young patients who suffered sports-related trauma. Treatment consisted of emergency closed reduction, followed by functional treatment with weight-bearing restriction. The prognosis is generally favourable after early reduction, but prolonged clinical and radiological follow-up is necessary to detect any complications, particularly avascular necrosis of the femoral head.

Keywords : traumatic obturator, hip dislocation, femoral head, avascular necrosis

1. Introduction :

The hip or coxofemoral joint is an enarthrosis, resulting from the articulation of the femoral head in the acetabular cavity. Traumatic dislocation of the coxofemoral joint is defined as the permanent displacement of the femoral head outside the acetabular cavity, resulting from high-energy trauma, most often a traffic accident. The position of the hip at the moment of impact and the site of action of the injuring agent determine the direction of displacement of the bone fragments. Hip dislocation may be pure or associated with a fracture. The amount of energy required to dislocate a hip explains the frequency of associated bone injuries. We report here a rare case of hip dislocation in a young patient following a sports accident associated with a torn round ligament.

2. Patients and methods :

2.1. Patient 1 :

A 22-year-old man with no particular medical history, an amateur athlete and motocross rider, was involved in a motorcycle accident with direct impact on his knee in abduction and flexion at the time of impact. This trauma caused severe pain and complete functional impairment of the left lower limb, with no initial loss of consciousness. He was admitted to the surgical trauma emergency department at the Ibn Rochd University Hospital Center in Casablanca approximately one hour after the injury. Upon arrival, the patient was found to be conscious, alert, and hemodynamically and respiratorily stable. Examination of the limbs revealed a vicious attitude of the lower limb with hip flexion of 80°, external rotation of 30° and abduction of 15° (Figure 1) with the knee flexed, without vascular or nerve damage to the lower limb. Any attempt at mobilization was very painful and limited. There was no skin opening.

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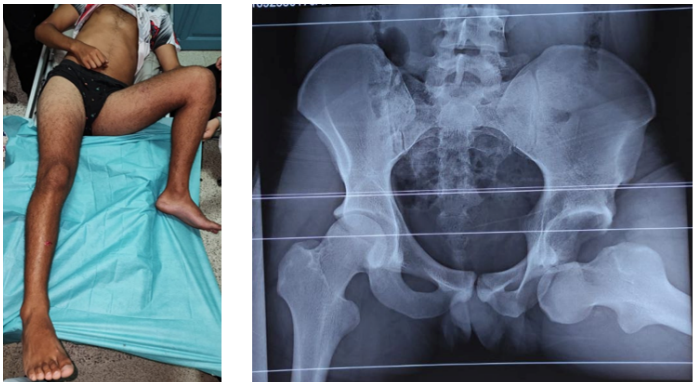

Figure 1: Clinical appearance of the patient (hip in flexion, abduction, and external rotation) and frontal pelvic X-ray (anterior obturator dislocation of the left hip).

Additional investigations were carried out, including conventional X-rays of the pelvis, which revealed anterior dislocation of the left hip in its obturator variety, showing a void in the acetabulum with the femoral head opposite the obturator foramen (Figure 1).

After obtaining informed consent, the patient was rushed to the operating room for reduction of the dislocation. Under general anesthesia, we performed a reduction two (2) hours after the trauma. According to the ALLIS maneuver, the patient was placed on the floor, with an assistant stabilizing the pelvis and the knee flexed to relax the hamstrings, initially by an external maneuver consisting of traction along the axis of the limb, followed by secondary flexion of the hip combined with slight adduction and internal rotation of the hip. The sensation of an audible click confirmed the reduction of the dislocation (Figure 2). The hip is stable in flexion-extension, internal and external rotation, abduction, and adduction, and limb length and post-reduction vascular-nerve examination are normal.

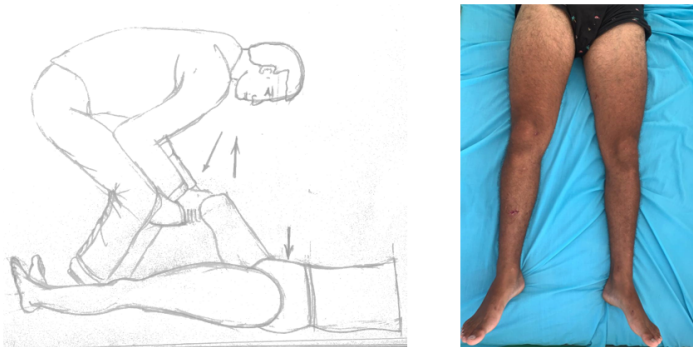

Figure 2: Reduction maneuver and clinical appearance after reduction

A follow-up X-ray of the pelvis showed that the femoral head had been repositioned (Figure 4).

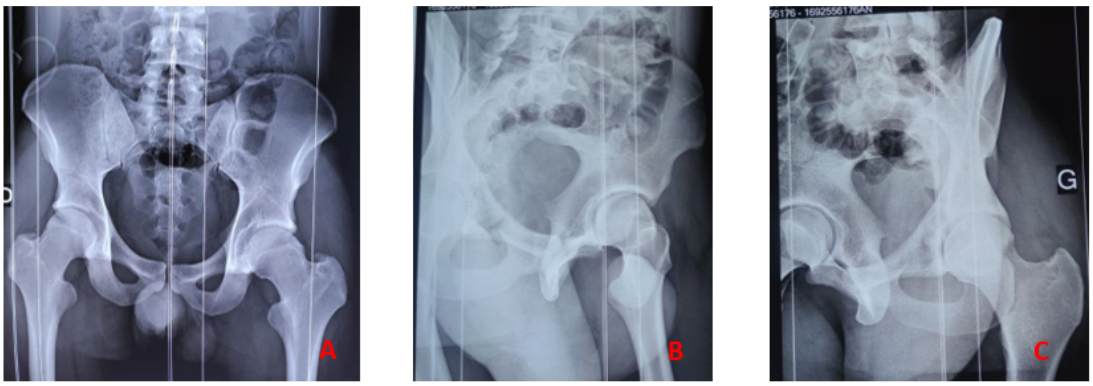

Figure 3: X-ray of the pelvis after reduction (A: frontal view, B: wing view, C: obturator view)

In order to search for associated infra-radiological lesions, an additional CT scan revealed intra-articular fragments (Figure 4).

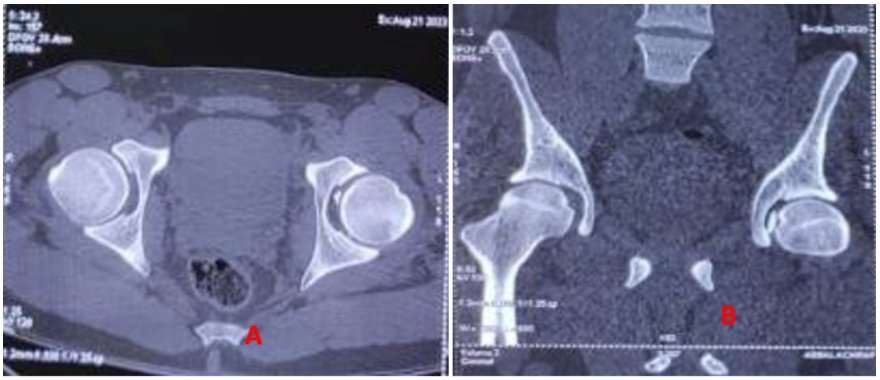

Figure 4: CT scan of the pelvis (A: transverse section, B: frontal section)

After reduction, treatment was functional and included an 8-week period of rest combined with antithrombotic prophylaxis using oral anticoagulants. Weight-bearing on the limbs and resumption of walking were authorized at 9 weeks. Resumption of sports activities was authorized at 16 weeks. After 18 months of follow-up, the patient had no hip pain or stiffness, and follow-up X-rays were unremarkable.

2.2. Patient 2 :

A 30-year-old man, previously independent, with no history of medical conditions, a quad bike rider, victim of a sports accident following a fall from a quad bike, landing on his knee in abduction, causing closed trauma to the right hip with severe pain and complete functional impairment of the right lower limb, with no initial loss of consciousness. He was admitted to the surgical trauma emergency department at the Ibn Rochd University Hospital Center in Casablanca approximately two hours after the injury. The examination upon admission noted that the patient was conscious, well oriented, and hemodynamically and respiratorily stable. Examination of the limbs revealed a vicious attitude of the lower limb with hip flexion of 80°, external rotation of 30° and abduction of 15° (Figure 5) with the knee flexed, without vascular or nerve damage to the lower limb. Any attempt at mobilization was painful and limited. There was no skin opening.

Figure 5 Clinical appearance of patient 2 showing a hip flexed in abduction and external rotation with the knee flexed.

Additional investigations were carried out, including conventional pelvic radiography, which revealed an obturator dislocation showing a void in the acetabulum with the femoral head opposite the obturator foramen (Figure 6).

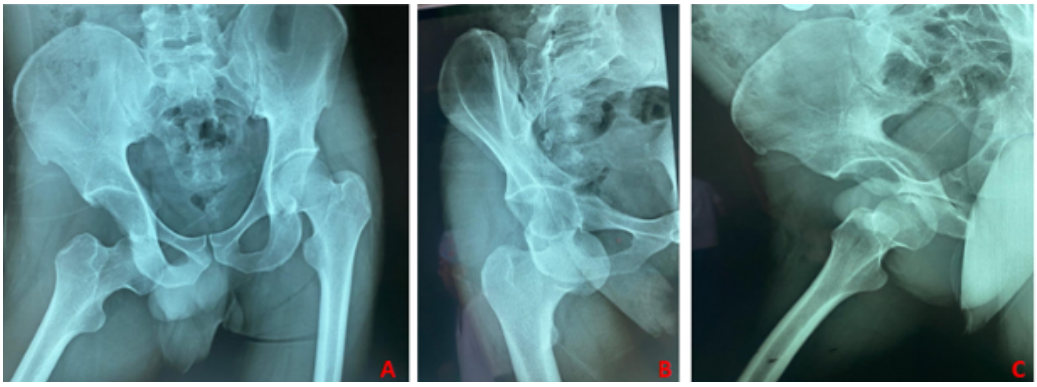

Figure 6 X-ray of the pelvis showing a right hip obturator dislocation with acetabular emptiness and visualization of the femoral head at the obturator foramen (A: frontal view, B: obturator oblique view, C: wing oblique view).

After obtaining informed consent, the patient was rushed to the operating room for reduction of the dislocation. Under general anesthesia, we performed the reduction approximately three hours after the trauma.

According to the ALLIS maneuver, the patient was placed on the floor, with an assistant stabilizing the pelvis and the knee flexed to relax the hamstrings, initially by an external maneuver consisting of traction along the axis of the limb, followed by secondary flexion of the hip combined with slight adduction and internal rotation of the hip. The sensation of an audible click confirmed the reduction of the dislocation (Figure 7). The hip is stable in flexion-extension, internal and external rotation, abduction, and adduction, and limb length and post-reduction vascular-nerve examination are normal.

Figure 7 Clinical appearance after reduction

A follow-up X-ray of the pelvis showed that the femoral head had been reintegrated (Figure 8).

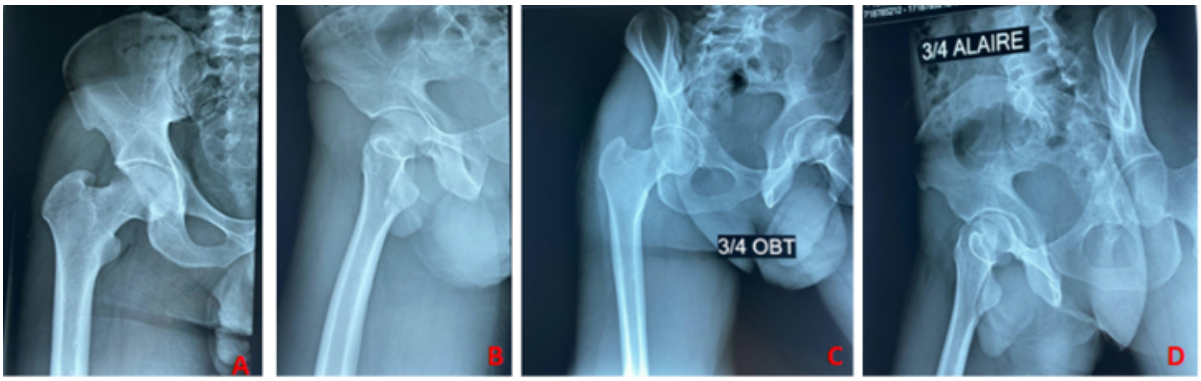

Figure 8 X-ray of the right hip after reduction showing reintegration of the femoral head with good head-to-roof congruence (A: frontal view, B: profile view, C: oblique obturator view, D: oblique alar view)

After reduction, treatment was functional and included an 8-week period of weight-bearing rest combined with antithrombotic prophylaxis using oral anticoagulants. Weight-bearing on the limbs and resumption of walking were authorized at 9 weeks. Resumption of sporting activities was authorized at 16 weeks. After 18 months of follow-up, the patient had no pain or stiffness in the hip, and follow-up X-rays were unremarkable.

3. Discussion :

Traumatic hip dislocation is the total and permanent loss of contact between the femoral head and the acetabular cavity, often associated with a fracture of the femoral head. This injury results from violent trauma and is often associated with other injuries that are crucial to diagnose, as they can be life-threatening to the patient. It is a therapeutic emergency requiring immediate reduction under anesthesia, preferably under optimal conditions. The presence of associated injuries such as a fracture of the femoral head or neck, or fragmentary incarceration, makes the dislocation irreducible and requires open reduction and fixation surgery. [2,10-15]. The severity lies in the medium- and long-term prognosis for the femoral head, with the major complications being the risk of osteoarthritis and post-traumatic necrosis. [2,3,8]. Hip dislocation occurs during high kinetic energy trauma with direct impact on the medial side of the knee in flexion, on a hip in flexion-abduction and external rotation in maximum abduction. The greater trochanter collides with the ilium, causing the femoral head to be pulled out of the acetabulum. The type of dislocation depends on the position of the hip at the time of impact and the point of application of the forces. The frequency of associated injuries such as fractures of the acetabulum, neck, or head is explained by the energy required for the dislocation. Computed tomography provides an accurate assessment of osteochondral lesions that are not visible on X-rays and helps to determine the best surgical approach, but should not delay treatment.

Reduction must be performed under general anesthesia on a patient who has been relaxed and calmed using gentle, and if possible, painless, repetitive maneuvers so as not to aggravate or cause further injury. It is performed by gently pulling along the axis, flexing the hip, and rotating it inward. Reduction of the dislocation by reintegration of the femoral head is clinically confirmed by an audible click and restoration of equal limb length. A control X-ray of the pelvis is used to ensure perfect joint congruency and to look for associated bone injuries not visible on the dislocation X-rays. Systematic after reduction, computed tomography allows for a careful assessment of the injury:

- chondral lesions are very common before or after reduction
- of acetabular fractures, of the head
- or intra-articular fragments [11,12,15].

There is no consensus on post-reduction management; it depends on whether the bone lesions are isolated or associated with the dislocation. Some authors recommend, in the absence of associated lesions requiring specific additional treatment, the use of transosseous traction and gentle active rehabilitation under traction. The duration of traction varies from 3 to 6 weeks depending on the team [2,3].

Many authors in the literature agree on the need for emergency reduction of hip dislocations [8]. The ideal time frame for reduction of the dislocation remains a matter of debate. According to Hougaard and Thomsen, the risk of avascular necrosis occurring after a delay of more than six hours in a series of 127 hip dislocations was 4.8% before 6 hours and 8.8% after 6 hours [8]. Except in the presence of other life-threatening injuries, it seems obvious that dislocations should be reduced within 6 hours [5,16].

In our series, we proceeded with functional treatment involving early rehabilitation and weight-bearing without prior traction. Some studies have determined that there was no increase in the number of necroses in cases of immediate gentle mobilization without traction, but the long-term results of these analyses remain to be evaluated [5,17,18].

The recommended period of complete weight-bearing restriction is 2 to 3 months, and full weight-bearing is prohibited for 3 months. However, some studies have concluded that there is no danger in immediate partial weight-bearing. This approach is dictated solely by caution [16].

4. Conclusion :

Traumatic hip dislocation is a medical emergency. Obturator dislocation is a rare and serious condition that yields good results if reduction is achieved within 6 hours of the trauma, with treatment consisting of simple weight-bearing restriction. The patient must be monitored closely and rigorously over the long term and made aware of the potential risks involved.

Compliance with ethical standards

Declaration of competing interest
All authors declare that they have no conflict of interest in this work.

Ethical approval
This research paper does not contain any studies conducted on human or animal subjects by any of the authors.

Informed consent form
Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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