Central dislocation with intrapelvic migration of the femoral head associated with T-type acetabular fracture: a case report

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Abstract

Introduction:

Among orthopedic injuries, acetabular fractures represent between the 0.3% and 6%. This case report describes a T-type acetabular fracture associated with central dislocation and intrapelvic migration of the femoral head.

Case presentation:

We present the case of a 20-year-old male who was the victim of a motorcycle accident and sustained trauma to the left lower limb, resulting in a T-type fracture according to the Judet and Letournel classification. Initial management involved reduction following a damage control approach using an external fixator. Definitive osteosynthesis of the acetabular fractures was subsequently performed through internal fixation, achieving joint stability.

Conclusion:

Timely care and attention with an appropriate management approach in these patients significantly influences the short- and medium-term prognosis.

Keywords: Pelvic Bones, Internal Fracture Fixation, Bone Fractures,

Fracture-Dislocation, Case Report. (DeCS)

Resumen

Introducción: Dentro de los traumas ortopédicos, las fracturas acetabulares representan entre el 0,3 % y el 6 %. El presente caso describe una fractura acetabular en T, asociada a luxación central con migración intrapélvica de la cabeza femoral.

Presentación del caso: Se trata de un paciente de 20 años, víctima de un accidente en motocicleta, quien presentó un trauma a nivel del miembro inferior izquierdo, provocando una fractura tipo T según la clasificación de Judet y Letournel. Inicialmente, se realizó una reducción bajo el enfoque de control de daños, utilizando un fijador externo. Posteriormente, se efectuó la osteosíntesis definitiva de las fracturas acetabulares mediante fijación interna, logrando estabilidad en la articulación.

Conclusión: La atención oportuna y con un enfoque adecuado en estos pacientes influye de manera determinante en el pronóstico a corto y mediano plazo.

Palabras clave: Huesos Pélvicos, Fijación Interna de Fracturas, Fracturas Óseas, Fractura-Luxación, Informe de caso. (DeCS)

Introduction

Among orthopedic traumas, acetabular fractures account for approximately the 0.3% to 6%, with posterior column fractures being the most common type (1). The age distribution of these injuries is largely determined by the trauma kinematics: younger patients typically sustain these fractures as a result of high-energy trauma, whereas in older adults, they are usually caused by lower-impact events (2).

In longitudinal observational studies, the incidence of acetabular fractures has been analyzed, revealing that 65% follow a simple fracture pattern, while 34% present an associated pattern. Among these, 9% were identified as transverse fractures, 21% as posterior wall fractures, 16% as transverse fractures with posterior wall involvement, and 2% as both-column fractures (3).

A study conducted in the Mexican population, based on the Judet and Letournel classification (4), found that T-type fractures accounted for 10.9% of cases. This study also highlighted the relationship between trauma kinematics and fracture incidence, reporting that automobile collisions represented 41.3% of cases, while motorcycle accidents accounted for 10.9% (5).

Finally, the literature reports a low frequency of hip dislocations associ-

ated with T-type acetabular fractures (6), which underscores the particular relevance of the present case.

Patient Information

A 20-year-old male patient with no relevant personal or family medical history was involved in a traffic accident while riding as a passenger on a motorcycle. During the anamnesis, the patient reported that the driver lost control of the motorcycle, resulting in a fall in which the patient landed on his left lower extremity. The incident caused significant trauma to the left ankle, hip, and abdomen.

Clinical Findings

On physical examination, the patient had vital signs within normal limits and clear urine output through a Foley catheter. The left lower limb showed shortening, external rotation, and severely limited mobility due to pain throughout the extremity. An open fracture of the left ankle was observed, with contaminated bone exposure of both the tibia and fibula, accompanied by minimal bleeding. There were no signs of circulatory or sensory deficits in the affected limb, and capillary refill was preserved.

Diagnostic Assessment

Subsequent evaluation confirmed an open fracture of the left tibia and fibula, classified as Gustilo-Anderson type IIIB (7), along with a dislocation of the left femoral head associated with a T-type acetabular fracture, according to the Judet and Letournel classification (4). These findings are illustrated in Figures 1, 2, and 3.

Figure 1. Anteroposterior radiograph showing dislocation of the femoral head associated with a left T-type acetabular fracture.

Figure 2. Computed tomography with 3D reconstruction of the pelvis: (A) anterior view and (B) posterior view, showing dislocation of the femoral head associated with a left T-type acetabular fracture.

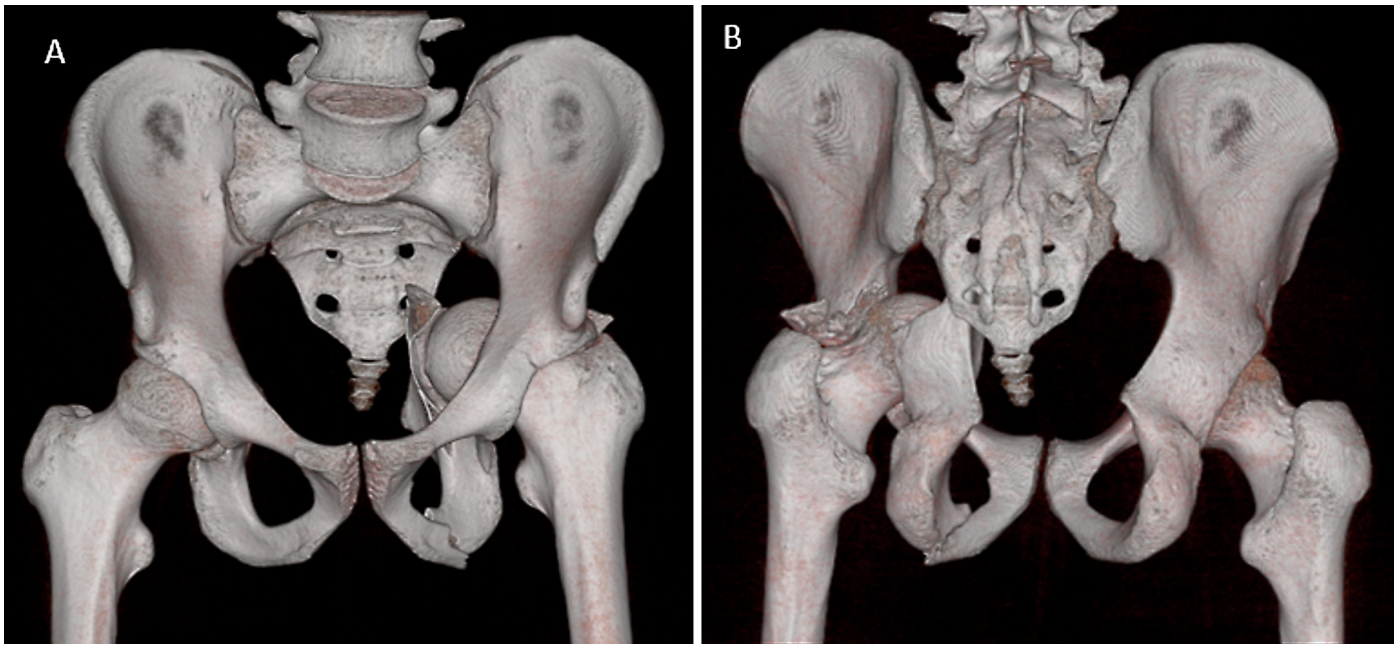
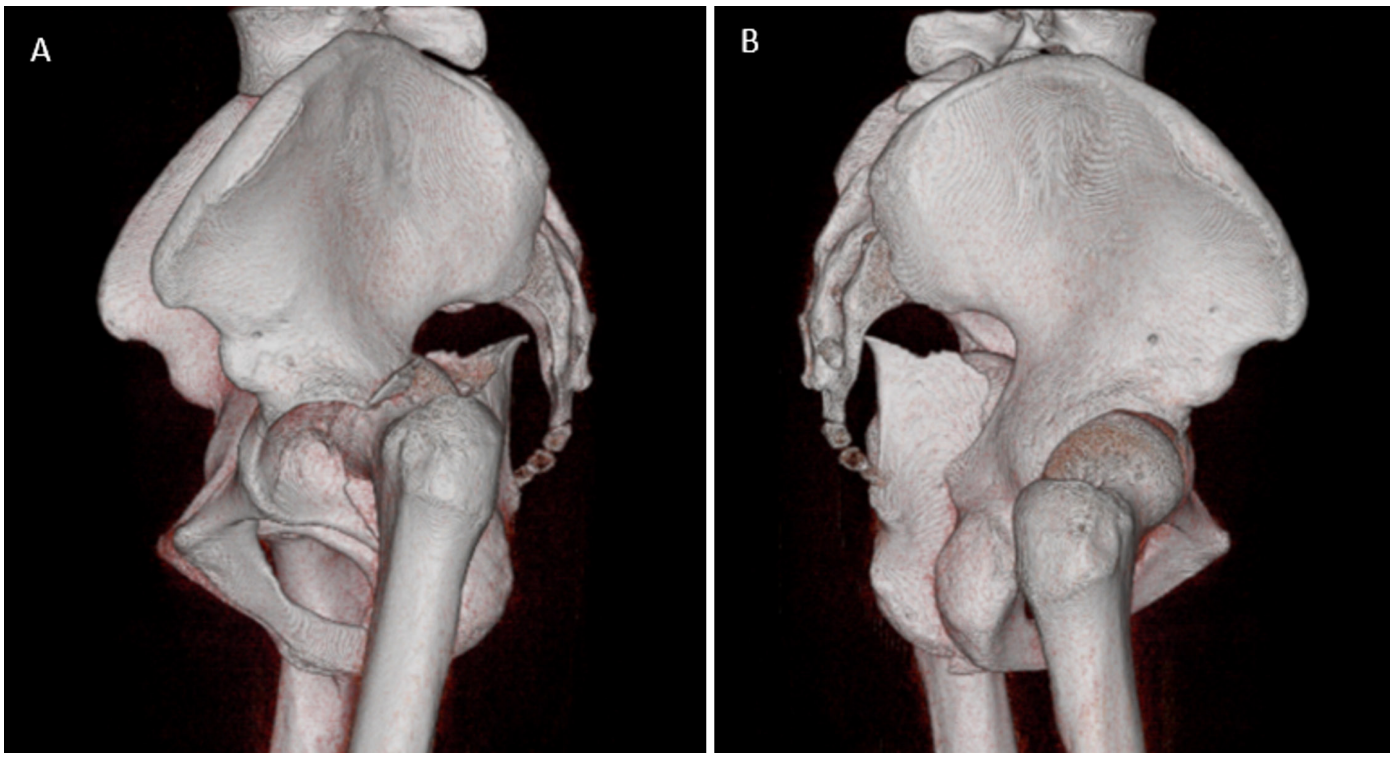


Figure 3. Computed tomography with 3D reconstruction of the pelvis: (A) left lateral view and (B) right lateral view, showing dislocation of the femoral head associated with a left T-type acetabular fracture.



Therapeutic Intervention

Due to the high-energy trauma mechanism, the patient was at elevated risk for complications related to the femoral head dislocation (8), as well as a complex posterior wall fracture with potential involvement of intrapelvic structures. An initial intervention was performed, consisting of a closed reduction with placement of an external fixator for damage control, as shown in the subsequent radiograph.

A transarticular supra-acetabular external fixator was applied to stabilize the reduction. Two 200 × 5.0 mm Schanz pins were inserted into the acetabulum, one 200 × 5.0 mm Schanz pin into the proximal femur, and one 180 × 4.0 mm Schanz pin into the distal femur. A 150 mm carbon rod was placed across the hip and connected using two universal screw head joints. Additionally, a second 250 mm carbon rod was installed, connected to the Schanz pin using two universal screw head joints. Stability of the reduction was achieved by linking both rods with a rod-to-rod connector.

Figure 4. Anteroposterior radiograph following reduction of femoral head dislocation associated with a left T-type acetabular fracture.

During the second surgical stage, the patient was scheduled for fracture reduction. Complete removal of the previously implanted devices in the pelvis and femur was performed.

A posterior Kocher-Langenbeck approach (9) was used for the left hip. Injuries were identified in the posterior hip capsule and the ischiofemoral ligament, along with a central hip dislocation. A Schanz pin was placed at the femoral neck level, and an open reduction of the hip dislocation was carried out.

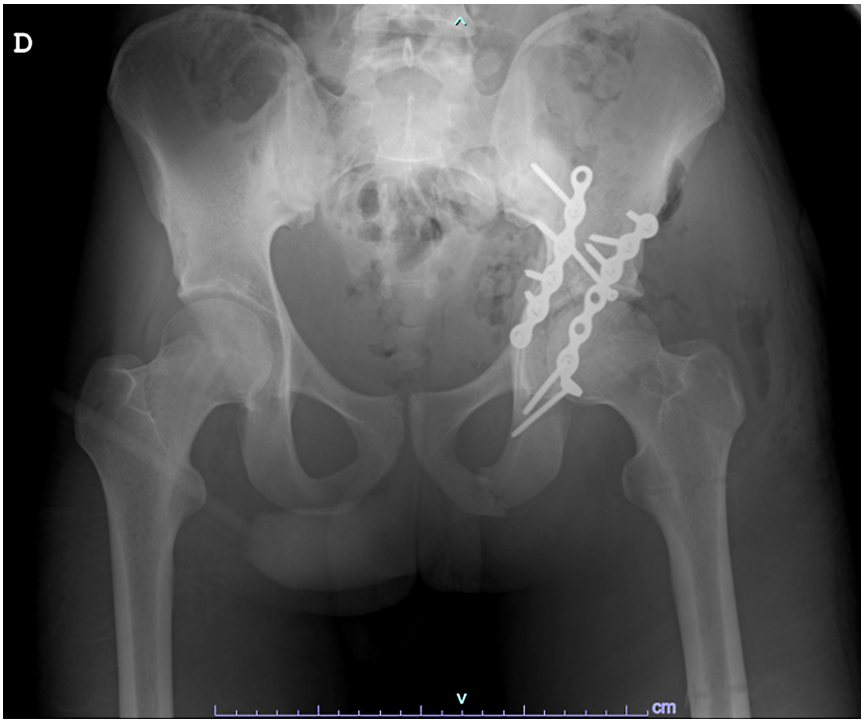
A complex, comminuted, displaced, and angulated fracture of the posterior wall and column was identified. Reduction maneuvers were performed and temporarily maintained with Kirschner wires. Subsequently, four cortical screws were placed to facilitate the reduction.

A curved seven-hole plate was fixed to the posterior wall of the acetabulum using seven cortical screws. In addition, a six-hole plate was placed on the posterior column and secured with six cortical screws.

Capsulorrhaphy was performed, and upon identifying an injury to the ischiofemoral ligament, ligament repair was carried out. Lesions in the short external rotators were also observed and addressed through open tendon repair of the hip muscles.

The procedure was completed without complications.

Figure 5. Anteroposterior radiograph following reduction of femoral head dislocation and left T-type acetabular fracture.



Follow-up and Results:

Following the surgical procedures, the patient was referred to another institution due to administrative reasons, which prevented continuation of the case follow-up.

Discussion

As evidenced in the literature, posterior column fractures are the most common among acetabular fractures (1). The case of the patient presented here is no exception; however, it also included an additional undisplaced fracture of the posterior column. Furthermore, the fracture of the ischium classifies it as a complex T-type fracture, according to the Judet and Letournel classification (4), which is essential for surgical approach decision-making (10). It is important to mention that this case occurred within a high-energy trauma mechanism (2).

Regarding the initial management, it is crucial to urgently address the dislocation, as it could be causing vascular damage, peripheral nerve injuries, or joint involvement, as described in other types of dislocations (11). In this context, damage control via the placement of an external fixator is key to preventing secondary complications, such as early osteoarthritis.

In the second surgical stage, and in accordance with the previously mentioned classification, the Kocher-Langenbeck approach (9) was employed, providing ideal access for fracture reduction. This approach facilitated the reduction of the posterior column, which was the most affected and displaced, achieving effective fixation using implanted material both in the column and the posterior wall.

Finally, the major limitation of this case report lies in the lack of follow-up for the patient due to administrative complications.

Conclusion

The importance of an exhaustive diagnostic approach in polytraumatized patients by the orthopedic and trauma service has been demonstrated. This approach allows for the proper definition of therapeutic priorities, considering that the short- and long-term complications of acetabular fractures can range from permanent damage to injuries of organs, tendons, and/or vascular structures, without overlooking the possibility of developing early osteoarthritis.

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