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Case Report

Simultaneous Bilateral Acetabular Fractures: A Case Report

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Abstract: Simultaneous bilateral acetabular fractures are extremely rare. The authors report a rare case of simultaneous bilateral acetabular fracture in an adult due to a road accident. Clinical diagnosis can be misleading in many patients seen in the context of polytrauma. Managing these fractures is a complex task that requires careful planning and surgical intervention, and the foremost goal of surgical intervention is to achieve an anatomically precise reduction of the fracture, as this factor greatly influences the future function of the hip joint.

Keywords: Bilateral, orthopaedic, acetabular, fracture, surgical treatment, osteosynthesis.

INTRODUCTION

Bilateral acetabular fractures are rare, with an approximate annual incidence of 3 cases per 100,000 inhabitants [1]. They are usually seen in the context of multiple trauma patients. The occurrence of simultaneous bilateral acetabular fractures is an even rarer event [2]. These fractures often occur as a result of high-energy trauma, such as a severe car accident, fall from a great height, or a high-velocity injury. Due to the force required to sustain such an injury, simultaneous bilateral acetabular fractures are typically associated with other complex injuries throughout the body. If not diagnosed in time, this can lead to significant impairment of hip function and mobility.

CASE REPORT

A 47-year-old man presented to the emergency room, by ambulance services, following a road accident. The mechanism was motor vehicle collision. Upon the initial clinical evaluation, it was determined that the patient was fully conscious and oriented with stable vital signs. He reported experiencing chest pain and bilateral hip discomfort. Examination of both hip regions revealed unremarkable skin without any apparent deformities. There was no neurovascular abnormalities in both lower limbs. The abdomen was tender, with normal bowel sounds, genitourinary examination showed no hematoma or perineal bleeding. Plain chest X-ray revealed a multiple rib fractures. Plain radiographs of the pelvis revealed (Figure 1) a posterior wall fracture on the right side and a non-displaced posterior wall and hemi-transversal fracture on the left side.

Figure 1: Plain radiographs of the pelvis

The fractures were precisely analyzed using the pelvic CT scan and 3D reconstruction of the pelvis (Figure 2 & 3).

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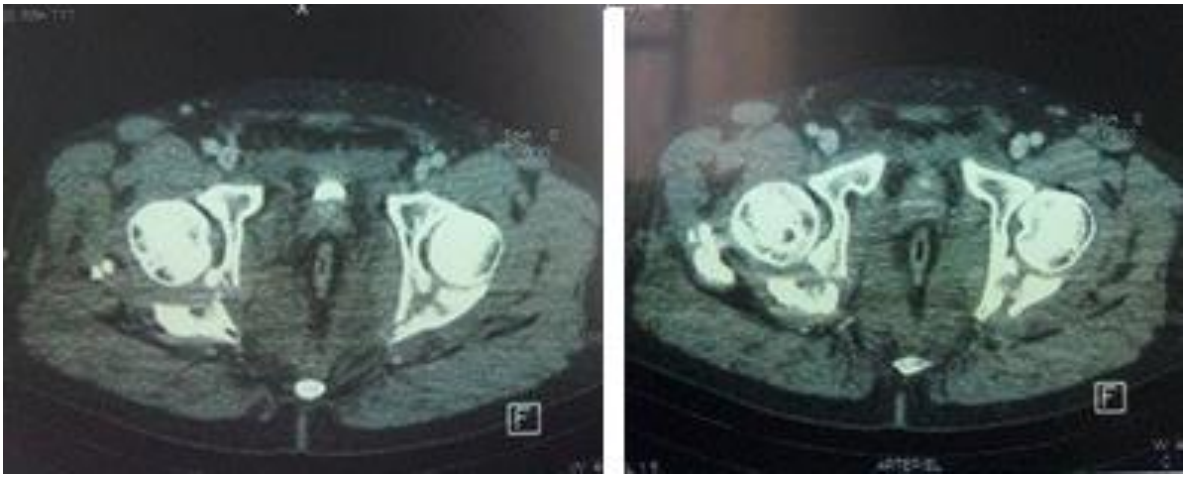

Figure 2: Pelvic CT scan

Figure 3: 3D reconstruction of the pelvis

Given the severity of the trauma, a full body computed tomography (CT) scan, was performed which revealed a multiple rib fracture from the 4th to the 8th rib without pneumothorax, lung contusion or pleural effusions.

The patient was initially hospitalized in the intensive care unit before being transferred to the orthopedics department. Both legs were immobilized in cutaneous traction. He was operated on after stabilizing his respiratory condition. Open reduction and internal fixation of the left acetabulum was performed through a posterior Kocher Langenbeck approach. Internal fixation was achieved using AO reconstruction plate (Figure 4).

Figure 4: Post-operative pelvic x-ray

The patient's postoperative course was uneventful. During the course of his follow-up, the patient continued with wheelchair mobilization for a total of 6 weeks. Throughout this period, he received prophylaxis for deep-vein thrombosis and underwent physiotherapy. Twenty months after his surgery, the patient achieved the ability to ambulate independently and perform all daily tasks without any discomfort. Radiological assessment confirmed complete healing of the pelvic and acetabulum fracture.

DISCUSSION

The incidence of the acetabular fracture is on the rising with the increase in the frequency of automobile accidents [3] due to the high energy transfer that appear in such situations. However, bilateral acetabular fractures are uncommon. The majority of reported cases present patients with bilateral dislocation.

Although bilateral acetabular fractures most commonly occur due to automobile accidents, other mechanisms may also be responsible for this injury such as in high-impact falls [4], high-velocity accidents [5], plane crushes [6], seizure attack [7], sports accidents [8] and agricultural accidents [9]. Pascarella [10] reported two cases of bilateral traumatic fracture dislocation due to a car accident, similar to the mechanism that occurred in our presentation.

The high energy trauma associated with acetabular fracture usually [5] involves the presence of other injuries The high-energy trauma associated with an acetabular fracture usually involves the presence of other injuries which increases the wait time for surgery.

Additionally, bilateral acetabulum fractures are frequently associated with other injuries to surrounding bones or tissues [11]. Chung [12] reported the association of bilateral acetabulum fracture with an unstable burst fracture of the lumbar spine.

Although conservative treatment with traction can provide acceptable results in some patients and fracture types [11], surgery is the most appropriate treatment in most cases [13]. Several series have shown that the surgical delay had no significant effect on the degree of reduction [1]. In acetabulum fractures, the primary objective of surgical treatment is the anatomical reduction of the fracture which will determine the future function of the hip joint. In a recent study by Fatih *et al*., [14], it was observed that the use of a modified Stoppa approach for bilateral acetabular fractures appears to offer distinct advantages when compared to alternative approaches. This method allows for a single incision, resulting in reduced bleeding, shorter surgical duration, and the attainment of satisfactory outcomes. When surgery is not possible as quickly as possible, delayed simultaneous total hip arthroplasty (THA) for fracture management may be indicated.

Marcantonio *et al*., [15] reported a case involving bilateral acetabular fractures that were successfully managed through THA. Their study demonstrated that this approach serves as a highly effective alternative for the primary treatment of acetabular fractures, even in challenging and unconventional cases. Importantly, it was shown to achieve both the anatomical restoration of the acetabular joints and functional recovery.

The development of osteoarthritis [5] is the most frequent complication of acetabular fractures and is directly related to the postoperative reduction obtained. The incidence of moderate to severe hip osteoarthritis was around 26% published by Estrems *et al*., [1]. We believe that with a longer follow-up period, hip osteoarthritis may develop with a perfectly reduced fracture. Heterotopic ossifications [16] are a complication associated with acetabular fractures for which indomethacin has been shown to be useful.

CONCLUSION

Bilateral hip fractures are extremely rare. The clinical diagnosis can be misleading in many cases. The goal of treating acetabulum fractures is the anatomical reduction of the articular surface. The risk of osteonecrosis is mainly linked to the initial injury and the delay in treatment.

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