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A case report of the management and the outcome of a complete epiphyseal separation and dislocation with left anterior column fracture of the acetabulum

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ABSTRACT

INTRODUCTION: Femoral head and neck fractures in children are uncommon, accounting for fewer than 1% of all pediatric fractures and fewer than 8% of all hip fractures. Furthermore, traumatic transphyseal hip fracture is rare to present in daily practice especially when associated with an acetabular fracture.
PRESENTATION OF THE CASE: A twelve years old boy, not known to have any chronic illnesses, presented to the emergency department as a case of polytrauma after a road traffic accident. Signs of left hip dislocation were discovered upon physical examination. X-rays and CT scans, revealed a complete transphyseal posterior dislocation and a left anterior column fracture of the acetabulum with a minimal displacement. Within five hours, the patient underwent open reduction and internal fixation by two cannulated screws. The acetabular fracture was managed conservatively. After six months, there were clear signs of osteonecrosis of the femoral head.
DISCUSSION: A high-energy trauma in children and adolescents can lead to simultaneous epiphyseal and acetabular fractures which are associated with a poor prognosis. The age seems to play a role as patients older than ten years have a higher risk of developing AVN after sustaining a hip dislocation regardless of the time of intervention.
CONCLUSION: Epiphyseal fracture with dislocation of the femoral head is rare among children and adolescents, especially when associated with an acetabular fracture. AVN in such cases can develop, and it represents a challenge to orthopedic surgeons due to the poor prognosis and the future functional limitations of the joint.

1. Introduction

The rates of lower limb fractures or dislocations are relatively uncommon among children. It is even more infrequent to face a case of a hip dislocation with a concomitant acetabular fracture [1,2]. Since traumatic transphyseal hip fractures are rare, the published data related to them are scarce. However, such fractures can lead to a permanent deformity of the hip joint [3]. The goals of treatment in the aforementioned injuries are early anatomic reduction, maintenance of reduction until complete healing, and minimization of any associated complications. In this study, we present the management along with the follow-up findings of a rare case of proximal femoral epiphysiolysis with a posterior dislocation of the femoral head and a concomitant acetabular fracture.

2. Case report

A twelve-year-old boy, not known to have any chronic illnesses, was an unrestrained frontal passenger in an automobile when it rolled over after a collision into another car. The patient presented to our emergency department at King Saud Medical Complex as a case of poly-trauma. After resuscitation and assessment, he was conscious, alert and oriented. The patient only recalled the rollover and did not remember how his injuries exactly occurred. Upon the secondary survey, there was shortening, external rotation of left lower limb, and tenderness of the left hip joint. The patient had a decreased and painful range of motion. The distal neurovascular status of the left lower limb was intact. Radiological assessment, including x-rays and computed tomography (CT) scans, revealed a complete transphyseal posterior dislocation and a left anterior column fracture of the acetabulum with a displacement of less than

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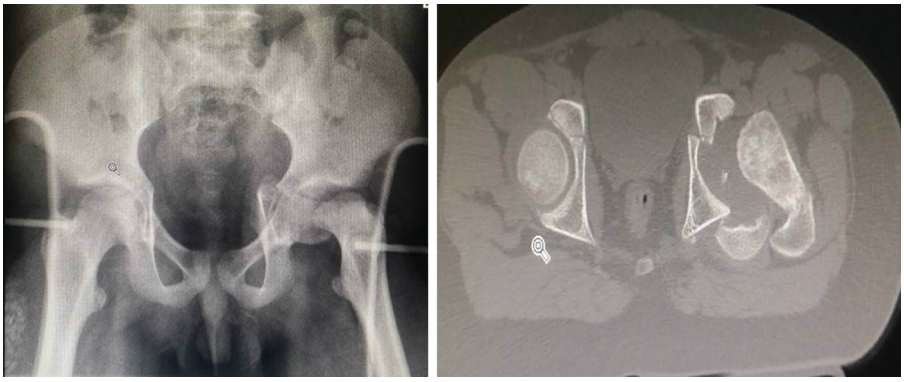

Figure 1. X-ray and C-scan showing complete transphyseal separation and dislocation of the femoral head associated with anterior column fracture of left acetabulum.

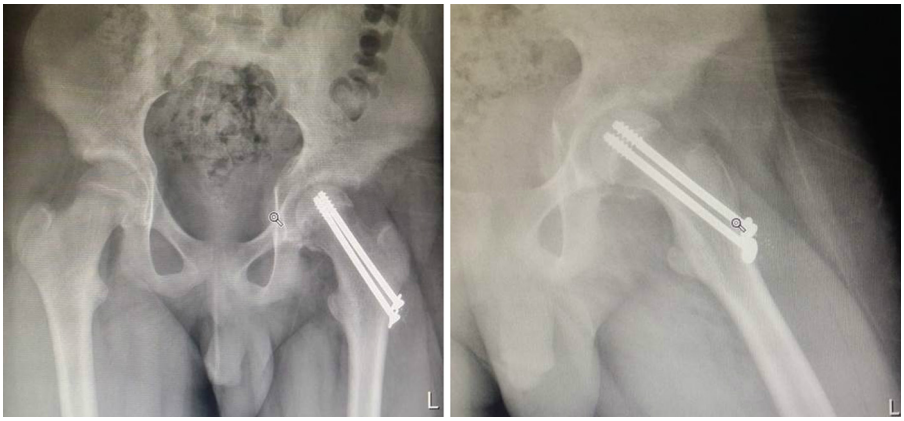

Figure 2. Post-operative AP and lateral X-ray views revealing the fixation with the two cannulated screws.

five millimeters (Fig. 1). After seeing the radiographic studies, we believe that the mechanism of injury was a high impact on the knee with the hip flexed more than 90°.

Due to the difficulty of closed reduction of the dislocated hip, the patient was prepared for an emergency operation and was given prophylactic antibiotics prior to surgery. After five hours from the accident, he was shifted to the operating room and placed in a lateral position on the OR table. Under general anesthesia, the patient underwent an open reduction through a Kocher-Langenbeck approach. The surgery was meticulously performed as none of the nerves or vessels were injured during the superficial or deep dissection. The damage was minimized to the surrounding soft tissues, including the quadratus femoris, to avoid compromising the blood supply from the medial circumflex femoral artery. The internal fixation was maintained by two cannulated 6.5 mm screws (Figs. 2 and 3). Multiple C-arm radiographic images of different views were taken during surgery and immediately after the insertion of the two cannulated screws to confirm proper reduction and fixation. There were no intra-operative complications or breach of sterility. The acetabular fracture was managed conservatively since the displacement was less than five millimeters.

Post-operatively, the patient was doing well, as he had no complications and did not develop any neurovascular deficits. He was kept on skin traction for one week and was instructed not to bear weight on the left lower limb.

The patient was seen in the clinic after one month, two months, four months, and six months and radiographic assessments were performed each time (Fig. 4). The last visit revealed clear signs of osteonecrosis of the femoral head. After ten months from his surgery, the patient was readmitted for a removal of the cannulated screws (Fig. 5) and at the same admission a magnetic resonance imaging (MRI) of the left hip was performed confirming the pres-

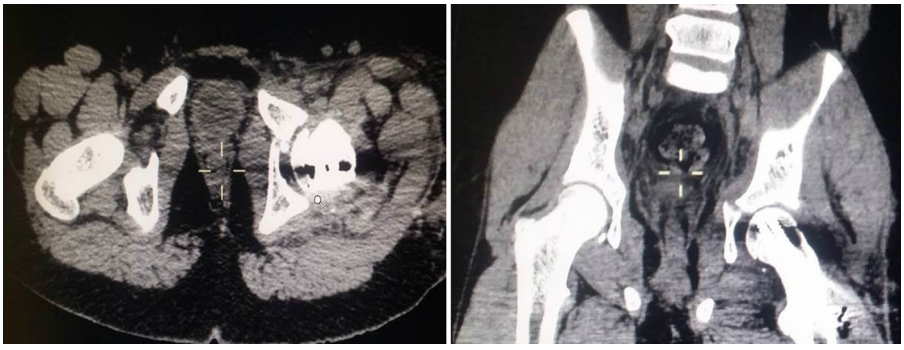

Figure 3. Axial and coronal CT cuts demonstrating a well reduced epiphysis.