CASE REPORT

Traumatic Posterior Hip Dislocation with an Ipsilateral Comminuted Femoral Intertrochanteric Fracture: A Case Report

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High-energy trauma has increased the incidence of traumatic hip dislocation¹ and dislocation is often associated with fractures. Posterior dislocation of the hip associated with fractures of the head of femur or acetabulum is known as a Pipkin fracture². However, a hip fracture-dislocation extending to the ipsilateral femoral trochanter is exceedingly rare and only a few cases have been described¹⁻⁵. Some cases involved a trochanteric fracture associated with anterior dislocation of the hip^{2,3,5}, while the combination of a posterior dislocation of the hip with ipsilateral fractures of the intertrochanteric region and acetabulum, with no fracture of the head of the femur, is unusual. Such injuries present a therapeutic dilemma to the orthopedic surgeon.

Case Report

A 59-year-old male was brought to our emergency department after sustaining injuries after his car crashed into the rear of a truck that braked suddenly in front of him. On admission, he was conscious, but was unable to move his left lower limb, which was shorter than the right. He also sustained facial injuries and multiple rib fractures. An anteroposterior radiograph of the pelvis showed a comminuted intertrochanteric fracture and slight fracture of the acetabulum, with the femoral head dislocated inferiorly (Fig. 1). After closed reduction failed and consulting with the patient, an emergency primary total hip replacement was carried out. The left hip was exposed through a posterolateral approach with the patient in the lateral position. The dislocated femoral head and neck component had entered the posterior thigh muscles with a little capsule attachment. There was a slight linear fracture on the posterior wall of the acetabulum, but no indentation or fracture on the surface of the femoral head. Superior and inferior parts of the hip joint capsule remained

intact after removing the free femoral head and neck component. The residual part of the greater trochanter, which had been fractured in two parts, was reduced and fixed with a Kirschner wire and tension band after an uncemented total hip arthroplasty (Fig. 2). The stability of the cementless prostheses and reduction of greater trochanter fractures were checked under an image intensifier and were found to be satisfactory. Postoperatively, the patient was allowed gradual progressive weight-bearing after 2 weeks of bed rest. Six months post-injury, the patient had equal range of motion in both hips by telephone follow-up.

Discussion

Dislocation of the hip always results from high-energy trauma^{1,3-5} and is often associated with injury to the femoral head or neck^{2,6,7}. If the longitudinal forces exceed the adduction forces, then an acetabular fracture results². When the injury is extended to the ipsilateral femoral trochanter, it is believed that the hip fracture-dislocation, caused by a longitudinal compression force, is always combined with adduction. Hip dislocation combined with an ipsilateral femoral trochanteric fracture is an extremely rare injury in adults, with the majority being anterior dislocations^{4,5}. The most similar report was a case in which posterior dislocation of the hip was associated with a fracture of trochanter extending to the subtrochanteric region⁸.

A longitudinal compression force combined with adduction followed by a posterolateral force over the trochanteric region was probably the mechanism of the fracture-dislocation of the hip in our case. According to Henle *et al.*, the position of the leg at the time of the accident determines whether the hip dislocates with or without additional osseous lesions of the femoral head or posterior wall of the acetabulum⁶. Our patient sustained a violent impact in a traffic accident when his hip

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Fig. 1 The anteroposterior radiograph following injury showed posteroinferior hip dislocation with a comminuted intertrochanteric fracture and linear fracture of the acetabulum on the left side.

and knee joints were flexed. The presence of a linear fracture of the medial acetabular wall indicated that a longitudinal compression force along the femur affecting the acetabular wall was the first component in this hip injury. Posterior dislocation of the hip resulted from a continuous axial force on the hip joint with the limb in flexion, adduction, and internal rotation. The displaced intertrochanteric fracture of the femur resulted from either a second direct force acting on the greater trochanter or an indirect force in the form of rotation when the femoral head was fixed in position by the posterior joint capsule and ischiofemoral ligament.

Due to the limited incidence of this unusual injury of the hip, this fracture pattern has not been included in the classification of hip dislocation injuries^{1,2,8}. The optimal treatment strategy for fracture-dislocation of the hip remains controversial because these injuries have a worse prognosis with a delay in reducing the joint^{4,9}. The treatment options for this rare injury include open reduction and internal fixation (ORIF) or a primary total hip arthroplasty. Displaced femoral intertrochanteric fractures and fracture-dislocation of the hip are always accompanied by a high risk of avascular necrosis of the free femoral head, which might be caused by severe damage to the capsular attachment and blood supply from the

high-energy trauma at the time of injury¹⁰. To treat this unusual pattern, since our patient was relatively old, primary uncemented total hip replacement was a relative suitable treatment choice. A Kirschner wire and tension band was used as a fixation device based on the fracture configuration, giving good immediate stability in the reduction and reconstruction of comminuted femoral intertrochanteric fractures in one stage. However, we also agree with some authors^{4,6,8} that ORIF is the preferred primary treatment for this injury pattern, especially in young laborers, because the intact femoral head allows the stable placement of internal fixation devices. In addition, a subsequent total hip replacement is an effective salvage procedure after failed treatment of an intertrochanteric fracture¹¹ and the development of severe post-traumatic arthritis or avascular necrosis of femoral head¹².

This unusual pattern of injury needs to be included in the current systems of classifying fracture-dislocation of the hip. The mechanism of this injury could be a longitudinal force with adduction initially, followed by rotation extending to the trochanteric region. Primary uncemented total hip replacement was a suitable choice for our relatively old patient, considering the complex hip injury and high probability of avascular necrosis of the femoral head.

Fig. 2 The postoperative radiograph showed total hip replacement with an uncemented prosthesis. The intertrochanteric fracture is well fixed by a Kirschner wire and tension band.

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