

# Surgical hip dislocation for posterior hip dislocation with femoral head fracture pipkin classification type II: A case report

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## Abstract

**Introduction:** Surgical hip dislocation is a powerful and safe approach. It allows for simultaneous treatment of intra-articular pathologies, either preexisting or as a result of trauma, and improves long-term results. It can be used to treat a wide variety of intra-articular pathologies that would be extremely challenging or impossible arthroscopically or with other common open approaches to the hip. Surgical hip dislocation has been used in the trauma setting for open reduction and internal fixation of femoral head fractures and posterior wall acetabular fractures that do not extend into the posterior column. **Case Report:** A 28-year-old male with a posterior hip dislocation had difficulty flexing and extending his hip, internal rotation, and shortening his leg. During physical examination, we found a prominent head left femur on the posterior gluteus. During an X-ray examination, we found a posterior dislocation of the femoral head with a fracture. **Treatment:** Open reduction is preferable whenever there is a nonconcentric hip reduction. This reduces the risk of additional trauma, thus avoiding abrasion to the articular cartilage and bone contusion at the head of the femur. The surgeon who performs open reduction must be fully familiar with the surgical anatomy of the hip and must be aware of the fixation techniques used on fractures in this region. The fragment can be fixed both with 2.0-mm Herbert screws or mini fragment screws, taking care of the head of the implant into the articular cartilage. The joint capsule should always be repaired. When femoral head impaction is present, and the patient is an adult, the goal is to save the femoral head. In this situation, it is preferable to use the Watson-Jones or anterolateral approach with greater trochanteric osteotomy to perform the controlled dislocation of the hip.

**Keywords:** anterolateral approach, femoral head fracture and surgical hip dislocation

## Introduction

Surgical hip reduction is a powerful and safe approach, allowing for simultaneous treatment of intra-articular pathologies, either preexisting or as a result of trauma, and improving long-term result. It can treat a wide variety of intra-articular pathology that would be extremely challenging or impossible arthroscopically or with other common open approaches to the hip. Surgical hip reduction has been used in the trauma setting for open reduction and internal fixation of femoral head fractures and posterior wall acetabular fractures that do not extend into the posterior column.<sup>1</sup>

Posterior dislocation of the hip is a common injury in young and adults. The goal of treatment of a posterior dislocation of the hip is to restore anatomic reduction and hip congruency. Most traumatic posterior dislocations in adults are reduced easily and have a high rate of healing. However, labral, chondral, ligamentum teres, capsular injuries, and acetabular fractures can be associated with injuries that may block an anatomic reduction by closed means. Nonconcentric reduction with soft-tissue interposition should be promptly recognized because delay in treatment is associated with poor outcomes, including

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early onset of osteoarthritis. Nonconcentric reduction and major instability after initial closed reduction are the main indications for open surgical treatment. A recent study showed up to 25% of all posterior dislocations in children required surgery to achieve anatomic reduction. Associated bony lesions of the femoral head or the acetabulum leading to instability are thought to be less common in children and adolescents than in adults. However, the actual prevalence of associated acetabular injuries may be underestimated because of incomplete ossification of the posterior wall and the inability to see cartilage on routine radiographs and computed tomography (CT).<sup>2</sup>

Posterior hip dislocation concurrent with femoral head fracture is a rare incidence. It is estimated that 4%-17% of posterior hip dislocation is accompanied by femoral head fracture. This combination of injuries usually results from high-energy trauma. Pipkin classification is most commonly used to assess femoral head fractures. This classification allows evaluation of the fracture based on the fragment location of the fovea and associated lesions on the neck or acetabulum. For type I and II fractures, it is still controversial whether the treatment should be done surgically or nonsurgically.<sup>3-5</sup>

In adult patients with Pipkin types I and II fracture, in which the hip is congruous after reduction, and the fragment is anterior or anterolateral, it is preferable to use either the Hueter anterior approach (the vertical incision of the Smith-Petersen approach) or the Watson-Jones anterolateral approach. In some cases, especially when the Watson-Jones approach is used, the hip must be moved to allow for perfect visualization of the interfragmentary reduction. When the head fragment is posterior, or there is an associated fracture of the posterior rim of the acetabulum (Pipkin type IV), a limited posterior Kocher-Langenbeck approach with digastric trochanteric osteotomy is preferable.<sup>6</sup>

This study aims to report a surgical hip dislocation for posterior hip dislocation with femoral head fracture pipkin classification type 2, conduct a review, and present the experience with 1 case, including the surgical treatment and subsequent outcomes..

## Case Report

A 28-year-old man went to the emergency room at Haji General Hospital Medan with complaints of pain and limited motion in the left hip. History of trauma (+) 5 days before admission to the hospital, the patient fell from stairs with a knee hit to the ground. After the incident, the patient was unable to walk and felt pain in the left hip. He was brought to Batubara Hospital for initial treatment and was referred to Haji General Hospital, Medan.



Figure 1. Clinical picture

On physical examination localized status on the pelvic.

- L** : Swelling (-) Deformity (+) shortening and internal rotation of left leg
- F** : Tenderness (+) on the left hip, crepitation (-), prominens of posterior gluteus, popliteus and femoral artery palpable, CRT < 2"
- M** : AROM Hip joint Limited due to pain  
AROM Knee Joint Normal  
AROM Ankle Joint Normal



Figure 2. Pelvic X-ray with posterior hip dislocation and femoral head fracture pipkin classification type II

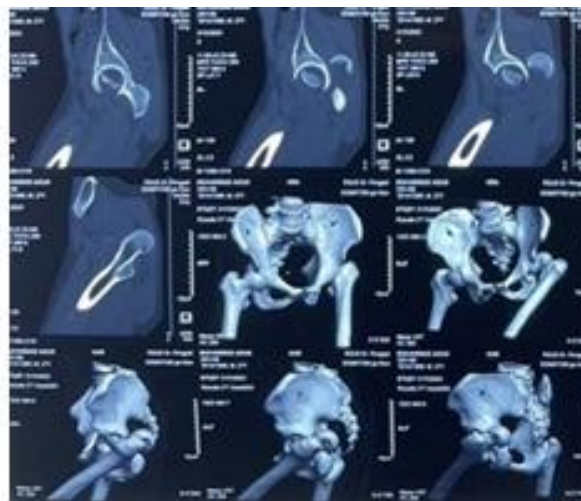


Figure 3. CT Scan of the pelvic result of discontinuity of left femoral head and posterior hip dislocation

## Treatment

In this case, the posterior hip dislocation is accompanied by an ipsilateral femoral head fracture. This condition is a relative contraindication for closed reduction due to inadequate reduction that can be achieved caused by the fracture. Open reduction is preferable whenever there is a nonconcentric hip reduction. This reduces the risk of additional trauma, thus avoiding abrasion to the articular cartilage and bone contusion at the head of the femur. The surgeon who performs open reduction must be thoroughly familiar with the surgical anatomy of the hip and must be aware of the fixation techniques used on fractures in this region.<sup>2</sup>

The fragment can be fixed both with 2.0-mm Herbert screws or mini fragment screws, taking care of the head of the implant into the articular cartilage. The joint capsule should be always repaired. When femoral head impaction is present, and the patient is an adult, the goal is to save the femoral head. In this situation, it is preferable to use the Watson-Jones or anterolateral approach with greater trochanteric osteotomy to perform the controlled dislocation of the hip. The articular cartilage in the area of impaction must be lifted, and the subchondral defect must be filled with an autogenous bone graft using a technique very similar to the "trapdoor" procedure



Figure 5. Design incision Watson-Jones or anterolateral approach



Figure 6. Greater trochanteric osteotomy

for the ON of the femoral head. Bone graft is normally taken from the greater trochanter since it is already open due to the osteotomy. After grafting, the cartilage is returned to its original position and closed using isolated sutures and 1.0 absorbable sutures. The hip is reduced, and the osteotomy is fixed with two extra-long small-fragment half-cancellous screws with washers.<sup>7,8</sup>

The healing process is uneventful. The patient was consulted for functional rehabilitation post-operative. Gradual weight-bearing is allowed after 6 weeks. During follow-up, no signs of complication shown clinically or radiographically.

### Discussion

Femoral head fractures occur almost exclusively as a result of a traumatic hip dislocation. Due to the intrinsic anatomical stability of the hip, most of these injuries result from high-energy trauma, typically in the form of mobile accidents (dashboard injury) or falls from a significant height. Approximately two-thirds of patients are young adults and associated injuries are extremely common, occurring in as many as 75% of the cases.<sup>6</sup> Early diagnosis and treatment of hip dislocation with head femoral fracture must improve clinical output. The delay in a correct diagnosis and, as a consequence, the delayed reduction of the joint increases the risk of complications at the site.

In this case, we do not have a closed reduced dislocation of the hip due to late onset. Treatment options and the proposed surgical hip dislocation are multiple and variable.<sup>2</sup> Femoral head fracture and dislocation of the femoral head is associated with bone impact in which the femoral head is disproportionately broken.<sup>6</sup> The principle of surgical hip dislocation is trochanteric osteotomy parallel to the leg, which is internally rotated to improve access for the osteotomy<sup>9</sup>

A similar case was reported by Giordano et al. Open reduction and internal fixation of the fracture of the femoral head is the treatment of choice for most young patients. In some selected cases, when there is a tiny fragment located in the region below the fovea, removal should be indicated. In elderly patients and those who experience severe femoral head impaction, it is preferable to perform a total hip replacement. Despite optimal management, the rate of complications after femoral head fractures may reach as high as 50%.<sup>6</sup>

In a similar case, six patients were treated after acute trauma, whereas 2 were treated after recurrent



Figure 7. Release posterior hip dislocation, identification of femoral head fracture with 4 cm x 4 cm and reduction with Herbert screw 2.0 mm



Figure 8. Reduced Greater Trochanteric with small-fragment half cancellous screw with washer



Figure 9. Pelvic AP X-ray after operation

dislocations. Five patients were involved in motor vehicle accidents, and 3 in sports-related injuries. Five patients were involved in motor vehicle accidents, and 3 in sports-related injuries. Intraoperative findings include posterior labral avulsion in all patients, fracture of the cartilaginous posterior wall, and femoral head chondral injuries and fracture. Score was 10 for 5/8 patients and 7 in 3 patients. No case of femoral head osteonecrosis was noted. One patient developed an asymptomatic heterotopic ossification. In this case, we adopted a surgical hip reduction. Traditionally, open reduction of traumatic posterior hip dislocation is performed through a posterior Kocher-Langenbeck approach.<sup>1</sup> But in the case we performed with use Watson-Jones or anterolateral approach.

## Conclusion

Some conditions and treatment options for dislocation of the femoral head based on the pattern. In this case, we found hip dislocation and femoral head fracture gave improvement for the fracture of the femoral head with Herbert screw fixation, posterior hip dislocation with surgical hip dislocation with Watson-Jones approach, But controlling and postoperative care was crucial for successfully clinical. This procedure can hopefully give the best achievement and satisfactory results for the adult and last a lifetime.

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