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# The Challenging Reduction in Complex Hip Injury with Buttonhole Effect

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**ABSTRACT**:A complex hip fracture defines as fractures involving the proximal femur with frequent association of the acetabulum wall fracture. The management is often challenging especially when it associated with fail reduction. 53 years old man admitted to our hospital for traumatic left hip fracture. X-ray and CT pelvis showed fractures of intertrochanteric femur, femoral neck and posterior column of left acetabulum. Patient was scheduled for intramedullary nailing of proximal femur and acetabulum reconstruction in two staged surgeries. Initially, patient underwent intramedullary nailing of proximal femur. However reduction was unable to achieve by closed method. Therefore we proceeded with open reduction of the hip joint and acetabulum via Kocher-Langenbeck approach. Upon entering hip joint, noted femoral head button hole through hip capsule and posterior column of acetabulum. Posterior column of acetabulum was reduced with femoral head traction followed by fixation of acetabulum with two recon plates. Hip capsule and muscle repaired for hip stability. Intramedullary nailing with helical blade done for proximal femur fracture. Postoperative x-ray showed stable reduction. A complex hip fracture with associating acetabular fracture is a complex orthopaedic injury that requires proper surgical planning and meticulous soft tissue and fracture manipulation. The treatment is always challenging and there is no clear cut guideline for operative techniques.

**KEYWORDS:**acetabular wall fractures, intertrochanteric femur fractures

## I. INTRODUCTION

A complex hip fracture is defined as fractures involving the proximal femur and acetabulum wall fracture with frequent association of posterior hip dislocation. However, it is rare to encounter posterior hip dislocation with ipsilateral intertrochanteric femur and acetabular wall fractures. The management is challenging as it involved complex fractures and meticulous pre-operative planning. We are pleased to report a rare case of complex hip fractures with buttonhole effect.

## II. CASE REPORT

A 53 years old Chinese gentleman, sustained a road traffic accident and was admitted to the emergency department with pain over left hip. Upon arrival, his vital signs were stable and primary survey cleared. There was noticeable foot drop over left side. X-rays and CT Pelvis showed left intertrochanteric femur with posterior acetabular wall fracture (Figure 1 and 2). He was planned for supracondylar pin insertion and a 2 staged surgery later. Patient subsequently underwent Proximal Femoral Nailing. Intraoperatively there was difficulty in reducing femoral neck, resulting in suboptimal fixation. Therefore, another surgery was planned for open reduction, internal fixation of posterior acetabular wall and revision of proximal femoral nail under same setting. Operation was done with patient in prone position via Kocher-Lagenbeck approach. Intraoperatively noted femoral head button-holed through capsule and impinged in between the posterior acetabular wall fractures. Sciatic nerve appeared intact but compressed at the site acetabular fracture. Posterior column of acetabulum was reduced after femoral head traction done with shantz pin, followed by two recon plate fixation over the posterior column. Helical blade was then readjusted and repositioned. Post fixation and repair of torn capsule, left hip was stable, confirmed with telescopic test. Postoperative x-ray showed stable reduction (Figure 3). At 3 months follow up, he was able to ambulate with walking frame and achieve satisfactory range of movement over hip joint with intensive physiotherapy sessions. Left Hip X Ray one-year post operation showed acceptable union of intertrochanteric and acetabular fractures with presence of heterotopic ossification (Figure 4).

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**Figure 1:**X-ray hip shows fracture of intertrochanteric and neck of left femur

**Figure 2:** CT 3D reconstruction

*Figure 3: Immediate post-operative x-rays*

**Figure 4:** Post operation 1 year follow up at clinic showing heterotopic ossification with no evidence of avascular necrosis

## III. DISCUSSION

For this patient, the initial plan was to fix the intertrochanteric femur fracture then proceed with acetabular fixation on second stage surgery. However, optimal reduction of the femur was not achieved in view of the femoral head button holed through capsule and acetabular fracture site. It would have been easier for intertrochanteric femur fixation if open reduction, capsule repair and internal fixation of posterior acetabulum performed first. Sinha S et al [1] have also reported a similar case of complex pelvic fracture with ipsilateral intertrochanteric femur fracture which they have used the Kocher-Langenbeck approach with patient in lateral position in view of posterior hip dislocation. They have addressed both acetabulum and intertrochanteric fractures in a single setting and same incision, but started with the fixation of intertrochanteric fracture then only proceeded with the recon plate fixation of acetabulum. Another two similar case reports, by Jamshidi MH et al [2] and Yousefi et al [5] also approached the fracture of acetabulum then peritrochanteric femur using the standard Kocher-Lagenbeck technique in a single

setting surgery. Surgical approach and patient positioning vary depending on surgeon's preference and fracture fixation. As for our case we positioned our patient in prone in order for easier access to posterior acetabular column and eliminates gravity as potential deforming force. With the sufficient resources and specialty available, fixing the peritrochanteric and acetabular fractures in a single setting is definitely beneficial in terms of shortening hospital stay, reducing unnecessary exposure to additional anaesthesia risk and prolonged fasting time. Complications that may follow such as avascular necrosis, post traumatic osteoarthritis and non-union need to be informed to patient. Liu B et al [3], in a retrospective case series followed up a group of patients with similar injuries over at least 6 years. The studies revealed 4 out of 17 of patients ended up in avascular necrosis. Therefore, we learnt that fracture healing is not equivalent to satisfactory outcome.

## IV. CONCLUSION

A hip injury associated with acetabular and pertrochanteric fractures is a complex orthopaedic injury that requires proper surgical planning with meticulous soft tissue and fracture manipulation. The treatment is always challenging and there is no clear cut guideline for its operative approach.

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