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Button Hole Effect: A Rare Complication Following Irreducible Traumatic Posterior Hip Dislocation with Posterior Acetabular Fracture and Tissue Entrapment.

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Abstract

Purpose: Most hip dislocations are not well-reported in developing countries. Our current study aims to explain the trauma, its clinical presentation, goal-standard treatment, prognosis and the functional outcome.

Methods: Convenience sampling was used to recruit participants, and demographic data were collected and recoded.

Findings: Incarcerated posterior capsule, labrum and joint pushed out of the acetabulum cup and posterior acetabulum wall fracture, which contributed to poor reduction failure. It was therefore concluded that the management of a complex, persistent, irreducible hip joint dislocation and fracture involving a posterior acetabular fracture in a young patient was open reduction and acetabular reconstruction**.**

Recommendations. Orthopaedic and trauma emergency surgeons need to immediately diagnose and point out the type of dislocation and whether it is isolated. In cases of irreducible posterior hip dislocations, an emergency surgical posterior approach must be adopted immediately to clean and repair all interposed tissue and any associated injuries to the capsule, labrum, capsules and muscles.

Keywords: *Irreducible Posterior Hip Dislocation, Open Reduction, Acetabulum Reconstruction*.

Introduction.

In Tanzania, traumatic hip dislocation (THP)is a common injury associated with high-energy trauma, but globally, hip dislocation in young adults is a common traumatic injury which contributes about 80–90% of all hip dislocations. (Zheng et al., 2025).

Other types of dislocation, like anterior, bilateral, and obturator, are uncommon and contribute only about1.5-5%. (Yousefi et al., 2012)(Uzel et al., 2011)(Zheng et al., 2025)

Several studies pointed out that traumatic posterior dislocation of the hip joint associated with posterior acetabular fracture and button hole effect is a rare traumatic injury, which calls for urgent intervention. (Yousefi et al., 2012),(Report, 2026)

Any delay may result in a permanent joint disability, including recurrent hip dislocation, nerve injury, joint stiffness and avascular necrosis of the femoral head. Hip dislocation usually is a result of high-energy trauma, most frequently caused by motor vehicle accidents and its condition is worsened when associated with acetabular or femoral head fracture. (Kim et al., 2012)

Motor vehicle collisions and motorcycle accidents were the most common causes of traumatic hip dislocations (Uzel et al., 2011). Some studies have explained that other causes of dislocation, including falls from a significant height, such as from a ladder, tree or an industrial accident, can also generate enough force to dislocate a hip. (Dawson-amoah et al., 2018)

Case Report

On November 16, 2021, we admitted a 24 -year-old male who sustained a motor vehicle crash as a motorcycle driver. He was knocked down by a fast-moving car, which pushed him and landed on the left side of his body. Patient arrived at the EMD emergency department with isolated trauma to the left lower limb.

Clinical, physical and radiological examination at EMD revealed posterior hip dislocation, posterior acetabulum fracture and bruises on the aspect of the knee.

The presence of bruises on the anterior left knee and posterior dislocation of the hip indicated a high-energy trauma.

First closed reduction without anaesthesia was attempted at the emergency room, and a second attempt at the operating theatre under general anaesthesia, but was unsuccessful.

Three weeks later, on 06 January 2022, the patient was taken to the main operating orthopaedic theatre for open reduction and posterior acetabular reconstruction with plate and screws

During the posterior-lateral approach, the femoral head was completely displaced out of the acetabulum and impacted on the posterior aspect of the ilium. The femoral head was forcefully

pushed out of the acetabulum, rupturing the capsule, ligament of trees, and causing the fracture of the posterior wall of the acetabulum with button hole effect.

Interposed tissue was cleaned, and the acetabulum was found to be full of capsular tissue. We also found an osteochondral fragment measuring 3 cm x 2 cm attached to the labrum with a capsular tear, which was also incarcerated in the acetabulum.

The femoral head was completely detached from the acetabulum cap. There was no femoral head fracture nor articular cartilage disruption. All incarcerated tissues in the acetabulum were removed and cleaned. Before we cleaned the interposed tissues, we tried reduction, but it was unsuccessful as well.

A femoral head extractor was introduced along the femoral head through the posterior acetabulum to engage the femoral head to the acetabulum. The capsule was severely crushed and incarcerated in the acetabulum, which made it difficult to repair.

The osteochondral fragment was fixed with a 2 mm reconstruction plate and a 3.5mm cortical and cancellous screw. The piriformis and other pelvic muscles were repaired. The sciatic nerve was not injured. Postoperative X-rays confirmed the concentric reduction with symmetrical widening of the joint space. The postoperative regimen includes bed rest for 2 weeks, followed by light weight-bearing for 6 weeks. ambulation with crutches and an active range of motion.

The patient was to be followed every 12 weeks. After 12 weeks, the patient's limb mobility was within the normal range of motion, and the patient could walk without pain and resume some of his activities. Today, 20TH march 2026, we assessed the patient in our orthopaedic clinic. He was walking normally without any support.

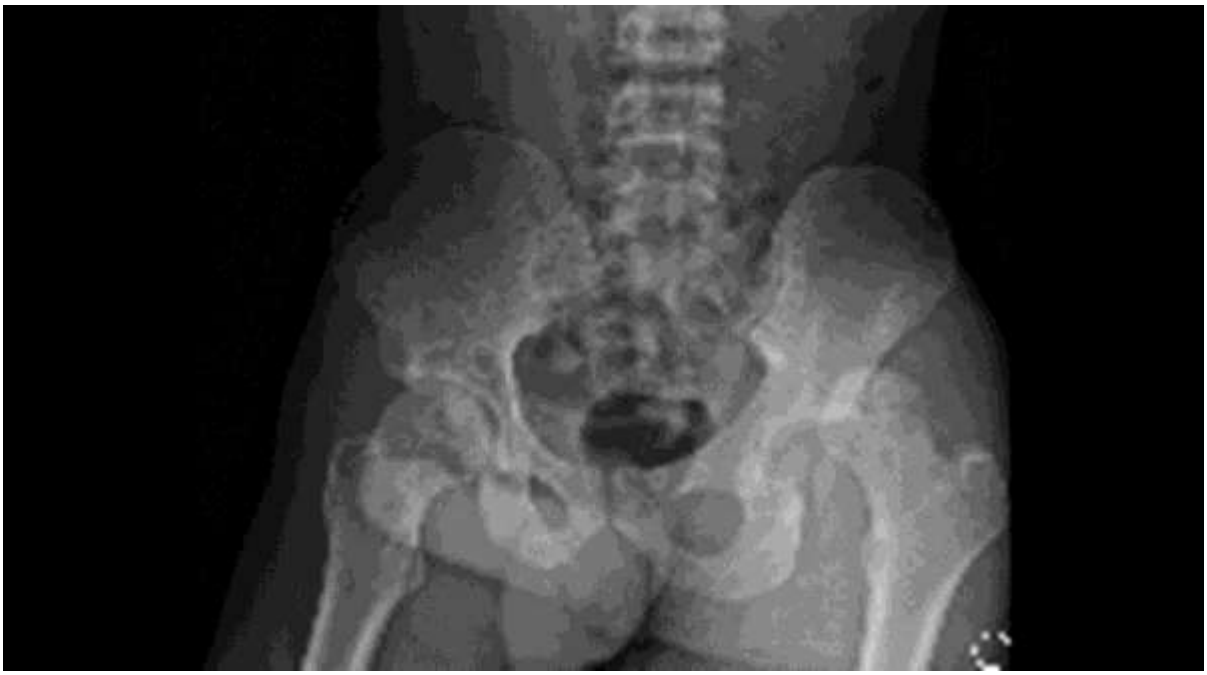

Fig 1. pelvic x ray anteroposterior view showing left posterior hip dislocation.

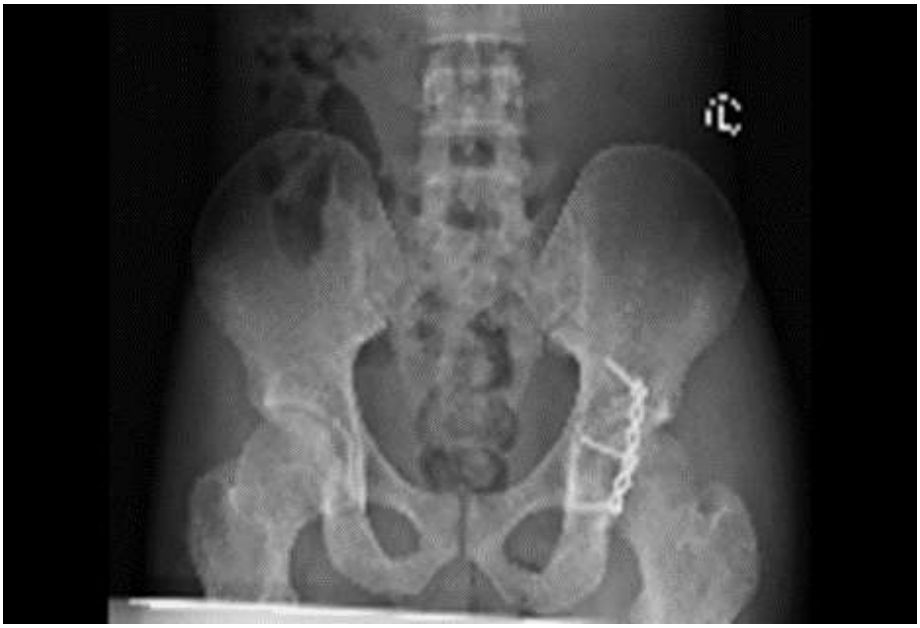

Fig 2. Pelvic X-ray after open reduction and acetabular reconstruction.

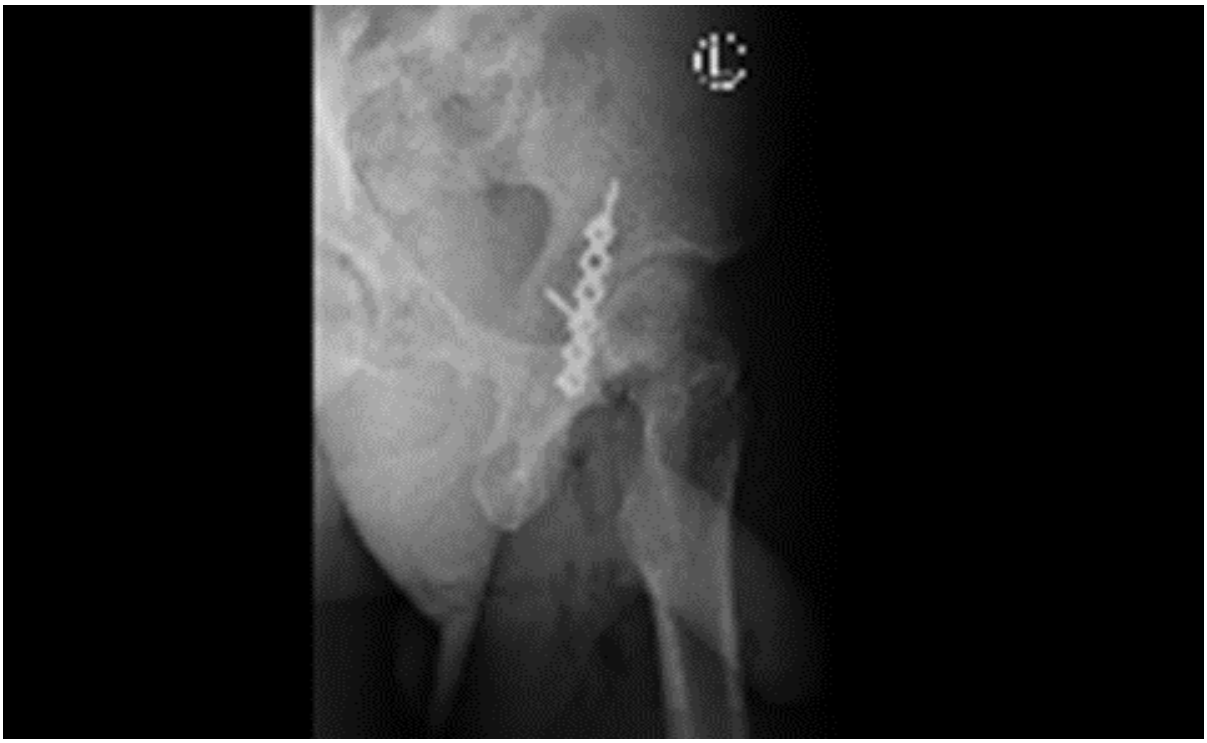

Fig 3 control left hip x-ray showing concentric reduction

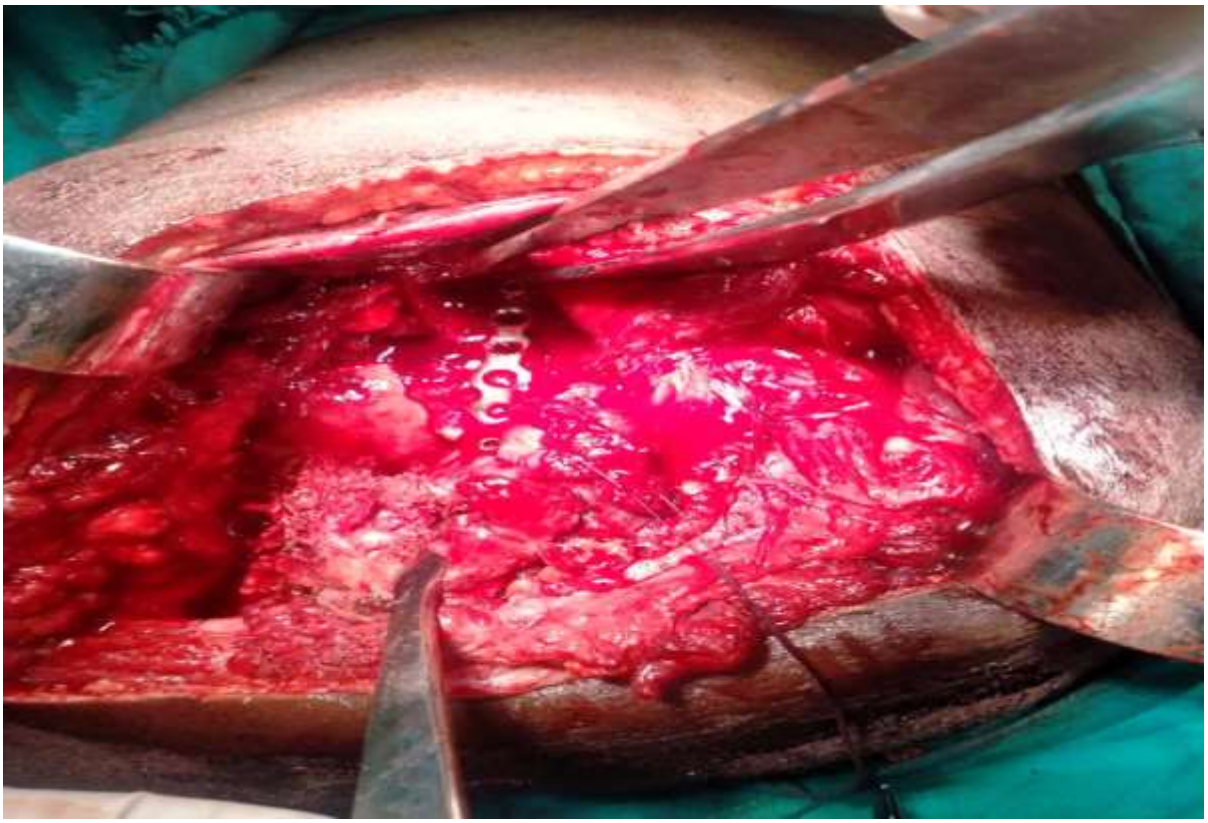

Fig 4, surgery showing a reconstruction of posterior acetabulum with a buttonhole effect

Fig 5. A picture showing an orthopaedic specialist doing surgery.

Discussion

Posterior irreducible hip dislocation can be taken as a serious orthopaedic injury that calls for emergency treatment. Several studies indicate that posterior hip dislocation is the most common type of traumatic hip dislocation, accounting for approximately 90–90% of cases; anterior dislocations represent only about 7–10% (Giza et al., 2004). However, posterior hip dislocation with a buttonhole effect remains extremely rare.(Sukati et al., 2023)

A case report by and colleagues described a posterior irreducible hip dislocation associated with tissue entrapment, acetabular fracture, and a buttonhole effect. Their findings highlighted that the mechanism underlying this condition remains poorly understood, and it remains unclear why most posterior hip dislocations do not progress to a buttonhole effect. In contrast, only a small number of cases demonstrate this complication. (Uzel et al., 2011)

Traumatic hip dislocations occur predominantly in young adults and are more common in males. Studies have reported that males account for approximately 90% of cases, with a mean patient age of around 34 years. These findings are consistent with previous observations reported by (Yousefi et al., 2012). Road traffic accidents are the leading cause of traumatic hip dislocations, contributing to nearly 95% of cases due to the high-energy forces involved. Such mechanisms, particularly motor vehicle collisions, explain the higher incidence of posterior dislocations compared with anterior dislocations(Hammer, 2019)

Posterior hip dislocations are frequently associated with additional injuries. Common associated injuries include fractures of the femoral head, acetabulum, and other skeletal structures.

The severity of associated injuries tends to increase when acetabular or femoral head fractures are present. Many posterior hip dislocations are complicated by fractures involving the femoral head or acetabulum, as described by (Report, 2026), (Uzel et al., 2011), (Paul et al., 2024)

Additionally, sciatic nerve injury has been reported in 10–15% of posterior hip dislocation cases, while bilateral posterior dislocations with bilateral sciatic nerve palsy remain rare. (Kim et al., 2012)

Radiological investigations play an essential role in the evaluation of traumatic hip dislocations. Plain radiographs are typically the first imaging modality used to determine whether the dislocation is isolated or associated with fractures.

Irreducibility of the femoral head may occur when acetabular or femoral head fragments become incarcerated within the joint. During closed reduction attempts, caution must be exercised because fractures such as Pipkin type II may convert to type III due to excessive manipulation.

In addition, irreducibility may result from soft tissue interposition, including the joint capsule and the short external rotators of the hip, such as the obturator internus, superior gemellus, inferior

gemellus, and piriformis muscles, which may obstruct the acetabulum. (Uzel et al., 2011)(Giza et al., 2004)

Intraoperative findings often reveal significant tension of the surrounding soft tissues around the dislocated hip joint, sometimes accompanied by anatomical variations. Posterior acetabular rim fractures may occur due to detachment of the ischiofemoral ligament (Buchholz & Wheeless, 2020).

A characteristic "clunk" sound during reduction generally indicates successful repositioning of the femoral head into the acetabulum. Following reduction, computed tomography (CT) scanning is recommended to confirm concentric reduction and to detect possible osteochondral lesions or intra-articular fragments. (Zheng et al., 2025), (Sukati et al., 2023)

If fragments or soft tissue interposition are identified, urgent open reduction should be performed. Repeated attempts at closed reduction are discouraged because they may increase the risk of further soft tissue injury or iatrogenic fractures. Once irreducibility is suspected, open reduction should be performed promptly. (Uzel et al., 2011)

The posterior surgical approach is most commonly used, although anterior or anterolateral approaches may be required depending on the nature of associated injuries and soft tissue damage. Use of intraoperative imaging, such as a C-arm image intensifier, is important to appreciate concentric reduction and can detect any fragment jammed in the joint. (Dawson-amoah et al., 2018)

Conclusion

Irreducible posterior hip dislocation associated with posterior acetabulum fracture and button hole effects is a complex hip injury and its management is also complex which requires emergence treatment. Clear history and physical examination and radiological investigation are important to any patient with hip injury. Any patient with irreducible hip dislocation an orthopedic surgeon should immediately opt for emergence surgical intervention for open reduction. (Sukati et al., 2023)

Recommendations

It is important to know the type of dislocation and whether or not it is isolated. In cases of irreducible posterior hip dislocations, the surgical posterior approach must be adopted immediately to remove the interposed tissue. Any associated injuries to the capsule, labrum, and muscles should be repaired well during surgery. This was the first case study to be conducted at Kilimanjaro Christian Medical University College from the department of orthopaedics and traumatology. The study was limited to a sampling technique (convenience sampling method); Only one case report cannot represent the entire population under the study, hence bias. Further, a single case reported does not favour the analysis, which can give us a true result.

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