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18(2) 2023
Case Report

Traumatic obturator hip dislocation with an iatrogenic femoral head fracture: A case report with two-year follow-up

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Received: 18.02.2023; Manuscript No. jotsrr-23- 89624;
Editor assigned: 20.02.2023, Pre-QC No. jotsrr-23- 89624 (PQ);
Reviewed: 21.02.2023, QC No. jotsrr-23-89624 (Q);
Revised: 23.02.2023,
Manuscript No. jotsrr-23-89624 (R);
Published: 3.03.2023,
DOI. 10.37532/1897-2276.2023.18(2).83

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Abstract

Traumatic hip dislocation is a common and dangerous condition in young people who have undergone high-energy trauma. The obturator anterior hip is a highly unusual condition among hip dislocations that requires specialized treatment and reduction techniques by an expert to avoid complications. A 25-year-old female reported to our emergency department with complaints of left hip pain, deformity, and reduced range of motion after falling from a horse.

The patient was diagnosed with left hip obturator dislocation- that the ED physician reduced with sedation- resulting in iatrogenic femoral head fracture. CT and post-reduction radiographs revealed an incongruent left hip joint and a Pipkin II femoral head fracture. The patient received an emergency open reduction internal fixation and trochanteric sliding osteotomy with no intra- or post-operative complications. The patient returned to her previous sports activity after two years of serial clinical and radiological testing at our clinic, which revealed an outstanding hip range of motion without evidence of femoral head necrosis or other sequelae.

Keywords: obturator hip dislocation, open reduction internal fixation, femoral head fracture

INTRODUCTION

Traumatic Hip dislocation is an orthopedic emergency resulting from high-energy trauma in young people. The most common type of hip dislocation is posterior, while obturator dislocations account for only 2% to 5% of all hip dislocations. The injury mechanism is poorly known [1-4]. In this instance, an obturator hip dislocation with an iatrogenic femoral head fracture necessitated an open reduction, internal fixation, and trochanteric sliding osteotomy.

Few articles about obturator hip dislocation are documented and published. To our knowledge, this report is the first documented case of a Traumatic Obturator Hip Dislocation with an Iatrogenic femoral head fracture.

CASE REPORT

A 25-year-old healthy female professional horse rider was brought to our level 1 trauma center emergency department by ambulance after a fall from a horse with an abducted hip during ride practice two hours prior to the presentation. She complained of left hip pain, restricted range of motion, and a noticeable deformity. Initially, she was monitored by the ED physician, and the ATLS protocol was initiated (primary and secondary survey). The patient was conscious, alert, oriented, and vitally stable upon presentation. The patient's left hip was painful, tender, and clearly deformed in abduction, extension, and external rotation compared to the opposite limb.

After a comprehensive clinical examination and radiographic imaging, an isolated left anterior (Obturator) hip dislocation was identified. The ED physician performed the first trial of close reduction with sedation, and the remaining deformity was reduced. After the reduction, the on-call orthopedic resident was contacted. The patient reported with the same complaint and worsening pain. The clinical examination revealed acceptable alignment, with the left hip exhibiting external rotation and a 2 cm lengthening compared to the right hip. There was neither an open wound nor a neurovascular injury.

Compared to the prior imaging, a repeat Pelvic X-ray verified an obturator hip dislocation with associated iatrogenic femoral head fracture (Fig. 1A and 1B).

We progressed with a CT scan revealing a Pipkin classification type II. (Fig 2A-C)

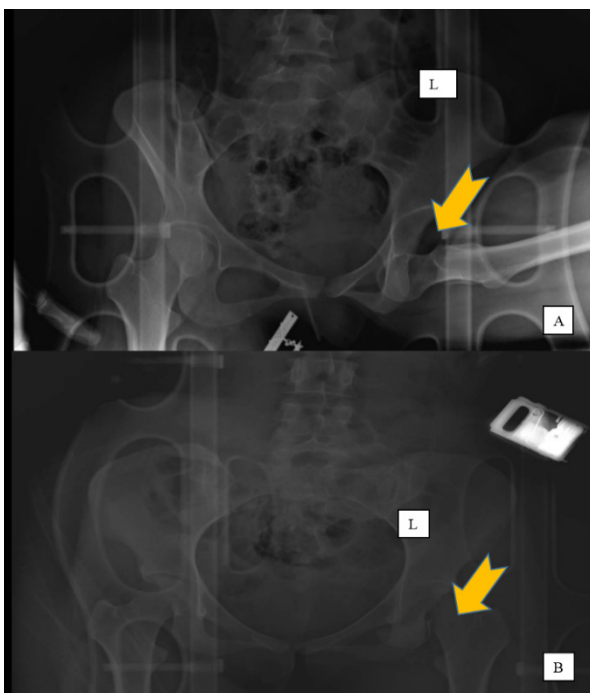


Fig 1. (A) AP Pelvis X-RAYS showed left Obturator hip dislocation at presentation and (B) post-reduction X-RAY done by an ED physician with an iatrogenic femoral head fracture in comparison to the previous image

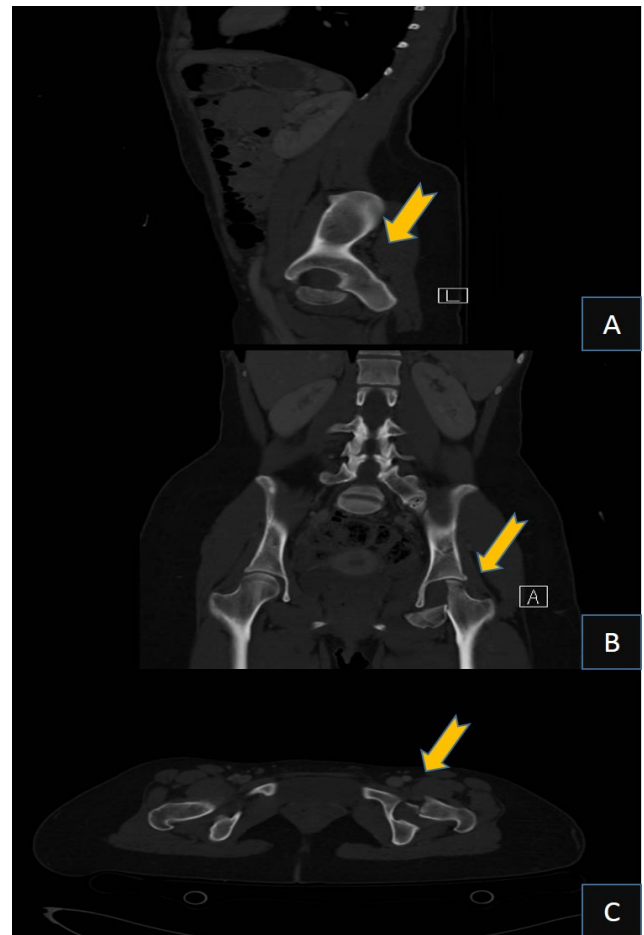


Fig 2. (A) Sagittal (B) Coronal (C) Axial, CT SCAN views Showed left femoral head fracture pipkin classification type II.

It was decided an emergency open reduction of the left hip and internal femoral head fixation be performed. The patient was admitted and obtained clearance from the on-call anesthesia team. The patient was placed in a lateral position on a radiolucent operating room table, with the left hip exposed, and draped for posterior hip approach and Trochanteric flip osteotomy. The skin was incised around 15 cm from the standard posterior hip approach landmark, the gluteal maximus muscle was divided as described by the classic technique. After predrilling, a trochanteric flip osteotomy was performed.

Next, the gluteal Medius was elevated with an osteotomized greater trochanter and vastus lateralis as one sleeve, preserving the piriformis muscle and a short external rotator muscle. Z-shaped capsulotomy was performed, the femoral head was exposed, and a fracture was identified. There was posterosuperior impaction of the femoral head, which was elevated using a tiny osteotome to accomplish anatomical reduction then fixed by two headless screws. Afterward, the hip joint was relocated, and the osteotomy site was fixed with two parallel 4.0 mm cannulated screws. The reduction was satisfactory with the image intensifier (Fig. 3A and 3B).

Four weeks from surgery, Enoxaparin 40 mg subcutaneously was administered along with an effective analgesic. The day following surgery, the patient began weight-bearing and range-of-motion rehabilitation. The patient was discharged home after four days on the same physiotherapy regimen for 8 weeks, with regular clinic visits. Two weeks post-surgery, the patient was examined in the clinic with a well-healed wound and normal laboratory results.

After eight weeks, she resumed her weight-bearing activities. The patient was monitored every three months for two years post-surgery, with no clinical or radiological indications of AVN or other complications (Fig 4A-D). The patient resumed her previous athletic endeavor.

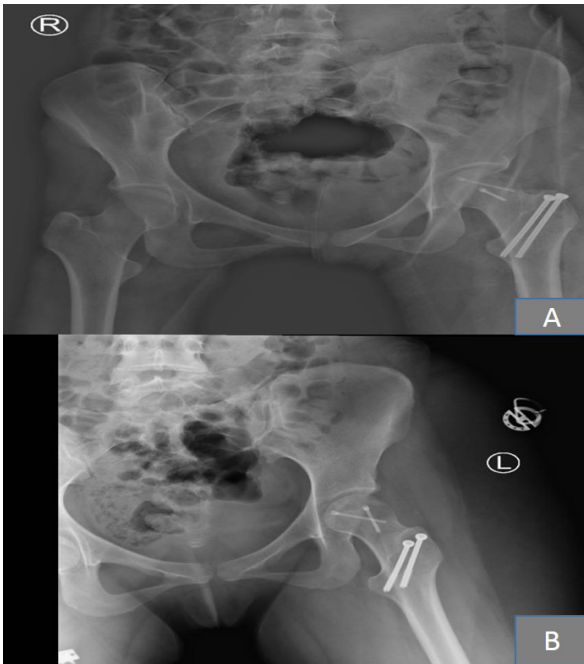


Fig 3. (A) AP Pelvis and (B) lateral hip, X-RAYS on a post-operative day 0 demonstrating concentric reduction of the femoral head and osteotomy site fixation.

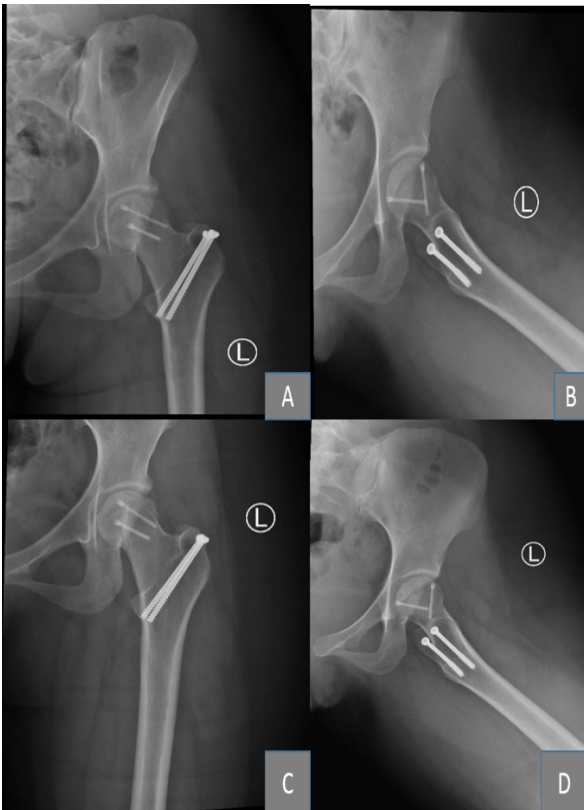


Fig 4. (A, B) AP and lateral left hip views after one-year follow-up and (C, D) two years follow-ups with no clinical or radiographical evidence of AVN or other complications.

DISCUSSION

Hip dislocation resulting from trauma is a severe injury that generates major comorbidities; particularly, the length of time required to decrease the hip has a considerable impact on the chance of developing osteonecrosis of the femoral head [5].

It is an orthopedic emergency that frequently necessitates immediate reduction with close reduction procedures and adequate sedation. Close reduction is not always possible in the presence of accompanying injuries such as a femoral neck fracture, femoral head fracture, or an incarcerated bone fragment [6].

Traumatic obturator hip dislocation is an uncommon condition associated with 15%-35% superior lateral femoral head impaction but not a fracture [7]. The force applied in this position appears to be the most possible mechanism for obturator hip dislocation during forceful abduction, external rotation, and flexion of the hip [8].

In our patient's case, a history of falling from a horse with an abducted, flexed left lower leg led to her current condition. The risk of complications, such as iatrogenic femoral head fracture, can be mitigated by an expert healthcare provider who performs a proper reduction technique.

Following a femoral head fracture, the chance of AVN is approximately 11.9%, while the risk of post-traumatic arthritis is 20% [9].

In the reported case iatrogenic femoral head fracture followed reduction of obturator hip dislocation by an ED physician, a complication caused by an improper procedure. To minimize the risk of this complication, particularly in the case of an obturator hip dislocation, close reduction required inline traction to disengage the femoral head, followed by flexion and internal rotation, which returned the limb to its original position of extension, adduction, and internal rotation [10].

Some published articles critique abduction, which may result in fractures of the femoral neck [11, 12]. Within six hours after a femoral head fracture occurs, anatomical reduction and congruent joint reduction must be performed to reduce the incidence of ANV and associated complications [13, 14].

CONCLUSION

Obturator hip dislocation with an iatrogenic femoral head fracture is a very uncommon injury; however, understanding the close reduction techniques, challenges, urgent reduction, and fixation within 6 hours might reduce the risk of complications.

Close observation and follow-up following the injury can result in a positive outcome.

CONSENT

The patient authorized the publication of this case report in writing.

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