

Anterior Inferior Hip Dislocation: Report of Three Cases and Review of Literature

Pratik Agarwal¹, Siddharth Khadilkar², Sunil Handralmath², Madhav Khadilkar¹

Learning Point of the Article:

Luxatio erecta femoris can be managed with closed reduction under general anaesthesia, within 6hrs to decrease complications.

Abstract

Introduction: Inferior dislocation of the hip, also called luxatio erecta femoris, is the rarest type of hip dislocation with a poorly understood mechanism of injury. We came across three such cases resulting from high-energy trauma with various other associated injuries.

Case Report: The first patient, a 25-year-old man, presented with the right hip pain, hip and knee joint in flexion without rotational component, after motor vehicle collision. The second patient, a 42-year-old man, presented with the left hip pain, hip and knee joint in flexion with rotational component, following fall from 20 ft height. The third patient, a 29-year-old lady, presented with the left hip pain, hip and knee joint in flexion with rotational component, after motor vehicle collision. All three patients were diagnosed by radiograph and were managed by closed reduction under short general anesthesia, within 3 h, 9 h, and 6 h, respectively. Thomas splint was used to immobilize the limb in all for 1 month and weight-bearing was started after 2 months from injury. Two of them were followed up to 6 months and one was lost to follow up. No evidence of avascular necrosis of femoral head or other complication related to hip dislocation was noted.

Conclusion: Luxatio erecta femoris is a rare type of hip dislocation and with limited publication. The position of limb on presentation should raise the suspicion of same and diagnosis confirmed through radiological investigations. Usually, this type of dislocation can be managed with closed reduction. If closed reduction is unsuccessful, then a fracture femur or bone chip in the joint could be the cause of the difficulty.

Keywords: Hip, dislocation, inferior, luxatio erecta femoris.

Introduction

Inferior dislocation of the hip, also called luxatio erecta femoris or infracotyloid dislocation, is the rarest type of hip dislocation with a poorly understood mechanism of injury, mainly occurring from high-energy incidents, such as road traffic accidents or sports [1, 2, 3, 4]. They represent 2–5% of all hip dislocations and can be obturator or ischial type, with the latter being more common [4, 5].

The hip joint is inherently stable due to the configuration of bony structure and the ligaments around it, thereby needing a strong force to cause dislocation here [6, 7].

Injuries are caused by two mechanisms [8, 9]. The obturator type involves a force applied to an abducted hip, which is then

forced into flexion and externally rotation, leading to dislocation of the femoral head anterior and inferior to the obturator foramen.

The ischial type involves a force applied to the flexed hip and flexed knee, with the femur in extreme flexion with no abduction or external rotation of the thigh and it dislocates the femoral head inferiorly, lying next to the ischium [10].

In this article, we are reporting three cases of traumatic inferior hip dislocations, one ischial inferior hip dislocation and two cases of obturator inferior hip dislocation. All cases were managed with closed reduction. The literature review is aimed at increasing the understanding, guiding the surgeons for diagnosis and treatment of this uncommon injury.

Author's Photo Gallery



Dr. Pratik Agarwal



Dr. Siddharth Khadilkar



Dr. Sunil Handralmath



Dr. Madhav Khadilkar

¹Department of Orthopaedic, Bharati Vidyapeeth Medical College, Pune, Maharashtra, India,

²Department of Orthopaedic, Vaishampayan Memorial Government Medical College, Solapur, Maharashtra, India.

Address of Correspondence:

Dr. Pratik Agarwal,

Department of Orthopaedic, Bharati Vidyapeeth Medical College, Pune, Maharashtra, India.

E-mail: agarwalpratik.dr@gmail.com



Table 1: Overview of patient collective: Patients' demographics, trauma mechanism, attitude of limb, associated injuries, method of reduction, post-reduction neurovascular status, post-reduction protocol followed, and complication at 6-month follow-up.

Age	Sex	Mode of injury	Attitude of limb	Associated injuries and diagnosis	Method of reduction	Post-reduction neurovascular status	Post-reduction protocol	Complication at 6 months
25	M	Road traffic accident	At hip joint- -flexion 90°, abduction 10° & rotation absent. - At knee joint- -flexion 140° (Fig 1g-1)	Undisplaced fracture of posterior lip of right acetabulum with a contused lacerated wound over right leg. Ischial type (Fig.1a-f)	Under short GA, patient in supine position, closed reduction done within 3 h of injury, by applying axial traction along the long axis of femur by 1 surgeon, while pelvis was stabilized by the 2 nd surgeon (Fig.1i)	Intact	Immobilized in Thomas splint for 1 month. At 1 month –ROM exercise. At 2 months – Partial weight- bearing. At 4 months – Full weight- bearing.	Nil
42	M	Fall from 20 ft height	At hip joint- -flexion 50° - abduction 20° -external rotation 90° At knee joint- flexion 40°	Craniocerebral injury with transverse process fracture of L1 and L2 vertebrae. Obturator type (Fig.2a-b)	Under short GA, patient in supine position, closed reduction done within 9 h of injury, by maintaining traction followed by gradual extension of knee joint with some internal rotation.	Intact	Immobilized in Thomas splint for 1 month. At 1 month –ROM exercise.	Lost to follow up after 1 month
29	F	Road traffic accident	At hip joint flexion - 70° abduction - 30° external rotation 90°. At knee joint- flexion 80°	Left side chest contusion, liver laceration with splenic injury, contused lacerated wound over both hand and multiple abrasions over the left lower limb. Obturator type (Fig.3a-b)	Under short GA, patient in supine position, closed reduction done within 6 h of injury, by maintaining traction followed by gradual extension of knee joint with some internal rotation.	Intact	Immobilized in high above knee cast for 1 month. At 1 month –ROM exercise. At 2 months – Partial weight- bearing. At 4 months – Full weight-bearing.	Nil

Case Report

Three cases of inferior hip dislocation were encountered by us between January 2019 and December 2019. Case 1 was 25yrs old man with ischial type of inferior hip dislocation (Fig. 1a-i). Case 2 was 42 yrs old man with obturator type of inferior hip dislocation (Fig. 2a-b). Last case was 29 yrs old lady with obturator type of inferior hip dislocation (Fig. 3a-b). Details of the cases are as follows in Table 1:

Discussion

An inferior dislocation is a rare type of hip dislocation with only about 14 articles reporting it, as shown by a study by Jain et al. [10]. It reported 13 men and 4 women, aged 5–56 (mean, 23)

years with 16 unilateral and one bilateral inferior dislocation of the hip [10].

Literature review revealed that most patients presented with an ischial-type dislocation, with extreme hip flexion, prominence of the greater trochanter, and the thigh touching the anterior abdominal wall, whereas some presented with varying degrees of flexion, abduction, and external rotation, indicating an associated fracture, a chronic injury, or an obturator-type dislocation [8, 9, 10, 11, 12].

In the present study, the patient with ischial type dislocation had marked flexion, whereas in obturator types, there was relatively less flexion with abduction and extreme external rotation.

Inferior hip dislocation can be managed with closed reduction

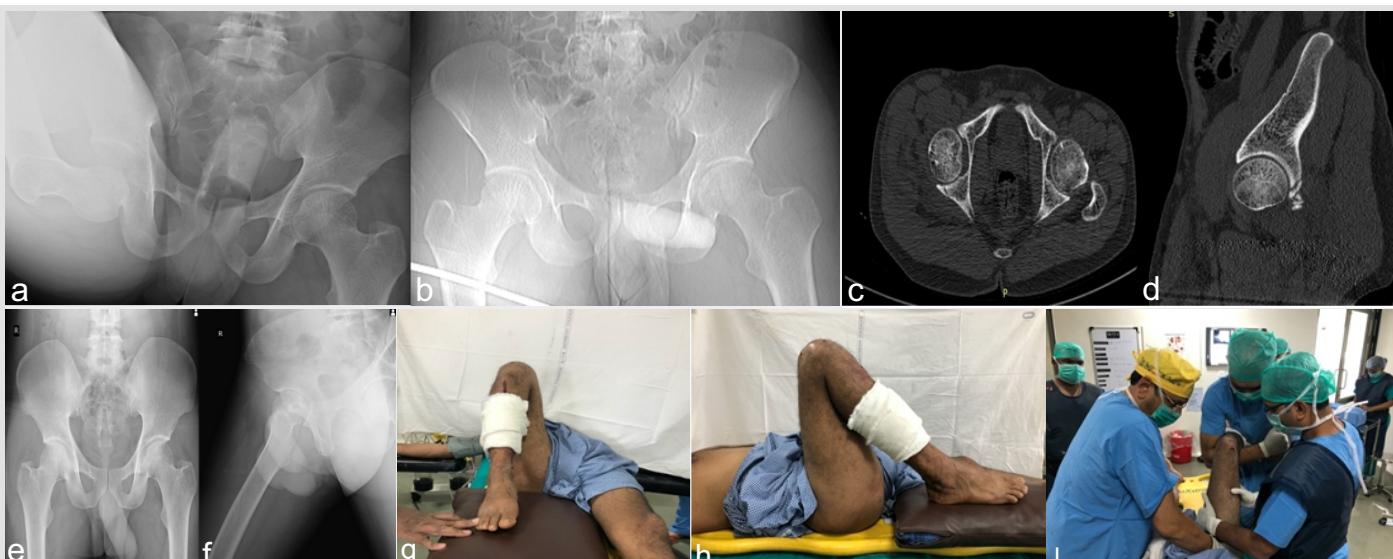


Figure 1: (a) A plain radiograph taken on arrival to the emergency department displaying the inferior dislocation of the hip (ischial type). (b) A plain post-reduction radiograph showing relocated of the femoral head. (c) A computerized tomography post-reduction image (coronal view) displaying relocated right hip joint with undisplaced fracture of posterior acetabular lip. (d) A computerized tomography post-reduction image of pelvis (sagittal view) showing relocated right hip joint with undisplaced fracture of posterior acetabular lip. (e) Follow-up radiograph of pelvis with both hips (anteroposterior view) at 6 months showing integrity of the right hip joint is maintained. (f) Follow-up radiograph of the right hip (lateral view) at 6 months showing integrity of the right hip joint is maintained. (g) Clinical image showing attitude of lower limb pre-reduction. (h) Clinical image showing attitude of lower limb pre-reduction. (i) Reduction maneuver.



Figure 2: (a) A plain radiograph taken on arrival to the emergency department displaying the inferior dislocation of the hip (obturator type). (b) A plain post-reduction radiograph showing relocated of the femoral head.

under general anesthesia or sufficient sedation. Reduction is usually achieved by maintaining traction and gradual knee extension with some internal rotation if needed [1, 9, 13].

In the present study, all three patients were treated non-operatively and had good outcome clinically and radiologically. Out of three cases, two hip dislocations were relocated within 6 h, whereas one relocation was done within 9 h from injury. Alli's maneuver was done for hip relocation, in which the patient was supine, with an assistant stabilizing the pelvis, the knee was flexed and lateral traction was applied to the inner side of the thigh, along with this longitudinal traction (in line with the axis of the femur). Then, hip joint was gently adducted and internally rotated to achieve the reduction.

An important complication following traumatic dislocation of the hip is prolonged and irreversible ischemia of the head of the femur leading to osteonecrosis in 10–30% or more of cases, particularly if the dislocation is accompanied by severe bone destruction [14]. Hip dislocations should ideally be reduced within 6 h to prevent and minimize complications [14].

Radiological and clinical assessment was done at 6 months. Two patients followed up, had no sign of instability, and had full range of movement. Both patients were walking full weight-bearing. However, one patient was lost to follow up at 6 months.

Limitation

Follow-up of all three patients is not adequate to comment on complications related to inferior hip dislocation such as

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Figure 3: (a) A plain radiograph taken on arrival to the emergency department displaying the inferior dislocation of the hip (obturator type). (b) A plain post-reduction radiograph showing relocated of the femoral head.

avascular necrosis (AVN) of femoral head and osteoarthritis which need longer follow-up for at least 3–5 years.

Conclusion

Luxatio erecta femoris is a rare type of hip dislocation and with limited publication. The position of limb on presentation should raise the suspicion of same and diagnosis confirmed through radiological investigations such as X-ray and CT. Concomitant extremity fractures with additional vital organ injuries may lead to life-threatening condition. Usually, this type of dislocation can be managed with closed reduction under sufficient general anesthesia and muscle relaxant. Reduction should be done within 6 h to decrease complications. If closed reduction is unsuccessful, then a fracture femur or bone chip in the joint could be the cause of the difficulty. Follow-up is important to monitor any signs of AVN and osteoarthritis.

Clinical Message

Clinical suspicion and radiological investigations (X-ray and CT scans) are important for early diagnosis inferior hip dislocation. Associated fracture femur or bone chip in the joint may be suspected in case of a failed closed reduction, which will require open reduction to relocate the hip joint. More case reports, studies, and a long-term follow-up are required for more information on incidence of any signs of AVN and osteoarthritis.

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