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# Pediatric Traumatic Hip Dislocation: How Common is it in the Asian Population? A Case Report and Review of Literature

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**Learning Point of the Article:**

Hip dislocations in children are unique as they are extremely rare event, and the diagnosis requires deliberate and vigilant approach; however, the management like any other dislocation requires an emergent reduction for optimal results.


## Abstract

**Introduction:** Pediatric hip dislocation is a rare event in the pediatric population. The management involves a timely diagnosis and emergent reduction for successful outcome.

**Case Report:** We present a case of a 2-year-old male patient with a posterior dislocation of hip. The child underwent an emergent closed reduction using Allis maneuver. Subsequently, the child had an uneventful recovery and resumed his functional activity completely.

**Conclusion:** Posterior hip dislocation in a child is an extremely rare entity. The key to management in such a case is to timely diagnose and reduce it.


**Keywords:** Posterior hip dislocation, pediatric, Alli's maneuver.

## Introduction

Traumatic hip dislocation is a common injury encountered in adults; however, it is rarely seen in pediatric population, only 5% of the cases occur in children aged <14 years [1]. Very few cases of traumatic etiology have been reported worldwide, with mostly being reported in the Western population.

The management involves an early diagnosis and an emergent reduction. The diagnosis is made on plain radiographs. The reduction is carried out either closed or open [2]. Post reduction, an magnetic resonance imaging (MRI) or a computed tomography (CT) scan is warranted to ensure a congruous reduction with no entrapped or incarcerated fragment. Controversy exists on the rehabilitation of these patients, as very few cases have been reported so far. Once reduced, like adult hip dislocation, the pediatric population is associated with the soft-tissue interposition, risk of osteonecrosis, and re-dislocation [3].

We report a case of post-traumatic hip dislocation in a 2-year-old child with no syndromic association or evidence of dysplasia, following a low energy fall who was managed with closed reduction under anesthesia. The child had an uneventful recovery at 1-year follow-up.

## Case Report

A 2-year-old male child in March 2022, presented to the emergency half an hour following a low energy fall while playing with complaints of pain and inability to bear weight. On clinical evaluation, the limb was in the attitude of flexion, adduction, and internal rotation with shortened limb. Immediate radiograph revealed a hip dislocation. An emergent CT scan was done to

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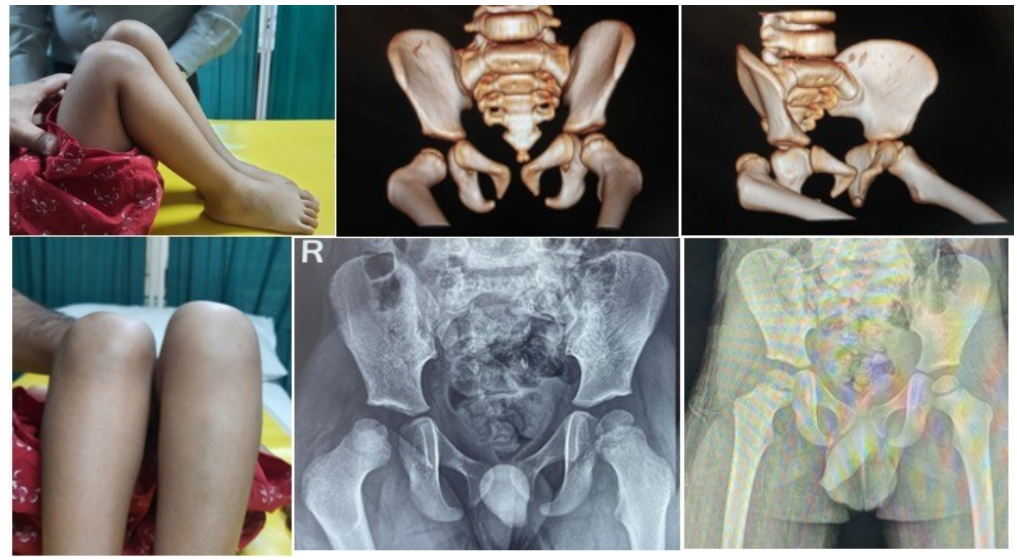


**Figure 1:** The clinical images, pre-reduction computed tomography scan and radiograph and the post-reduction radiograph.

evaluate the extent of injury. CT scan showed a posterior dislocation of hip, with no associated fractures or injuries. There were no signs suggestive of a dysplastic hip on the radiograph or the CT scan. The child was immediately shifted to the operating room, where a closed reduction was attempted successfully under GA using Allis maneuver (Fig. 1).

Post–reduction, an MRI/CT scan was done to rule out an imperfect reduction. There was no evidence of incarcerated or entrapped fragment. The child was discharged from the hospital on the following day and was kept in a supervised skin traction at home for a week. Gradual non-weight-bearing mobilization was started from 2 weeks. Partial weight-bearing ambulation was started from 4 weeks.

The child was followed up for a duration of 1 year. At the end of 1 year, a MRI was done to evaluate the vascular status of the femoral head. At the end of 1 year, the child had no functional limitation. He was full weight-bearing ambulant with no difficulty in squatting or sitting cross-legged. The child essentially had an uneventful recovery.

## Discussion and Review of Literature

The incidence of pediatric hip dislocation is <5% of the total hip dislocations. The subject injury is so rare that it has been reported as case reports previously in the Western literature. Only few studies have reported a higher number of cases, which had recorded the cases over years [2, 3, 4]. Although the pathology has relatively common presentation in the west, it is far less reported in the Asian population. There are no specific reasons cited for the lesser incidence, but we believe the general habitus and structural morphology in the Asian population is the reason behind it. Probably, a more detailed comparative analysis of the 2 population will help in figuring out the cause.

We further did a detailed search of the literature for traumatic pediatric hip dislocations in the Asian population, and we came across only two studies which had reported the entity (Table 1) [5,6].

Children younger than 6 years of age have a pliable cartilage which allows the dislocation to occur after minimal trauma [7, 8]. Post-traumatic hip dislocation in children younger than 3 years old in Western population is extremely rare, with the youngest reported case so far being 21 months old [9]. However, in the Asian population, all the three cases were around 2 years old, with youngest reported case 16 months old [5].

The diagnosis is with the help of a radiograph of the pelvis. A CT scan is rarely an indication once the diagnosis is clear on the

| S. No. | Authors | Gender | Age | Mechanism of injury | Dislocation | Management | Follow-up | complications |
|---|---|---|---|---|---|---|---|---|
| 1 | Meena et al. | F | 16 months | Trivial trauma | Posterior | Closed Reduction+Hip spica | 12 months | Nil |
| 2 | Balasubramanian et al. | M | 25 months | Trivial trauma | Posterior | Closed reduction+broom stick plaster | 18 months | Nil |
| 3 | Present study | M | 24 months | Trivial trauma | Posterior | Closed reduction | 12 months | Nil |

**Table 1: Reported cases of post-traumatic pediatric hip dislocation in Asian population.**

radiograph. We, however, had an immediate access to the CT imaging, and meanwhile, the operating room was being prepared for the reduction, we did a rapid preoperative noncontrast CT (NCCT) sequence of the pelvis to rule out any associated fracture or injury. None of the studies had done a NCCT of the pelvis before reduction.

The management involves an emergent reduction, as early as possible. Delay in the reduction is shown to predispose to osteonecrosis of the hip. The reduction generally is a closed procedure, but if irreducible or incongruently reduced warrants an open procedure [10]. Reduction maneuver for pediatric dislocation involves a gentle traction, but in few reported cases, Allis maneuver was needed [11]. We in our case also performed Allis maneuver to reduce the hip, as it was not reducible with traction.

There is no specific laid rehabilitation protocol following the reduction of the hip, the reason being the rarity of the injury. Furthermore, there is considerable debate on post-reduction spica requirement, although all the cases managed without the spica have also resulted in good to excellent outcomes. All the cases of Asian origin were managed differently in post-reduction phase, and everyone had favorable results. We, in our case, restricted the weight bearing in recovery period and eventually resumed weight-bearing ambulation after 4 weeks. At the end of 1 year, the child had an uneventful recovery, with restored clinical and functional outcome.

Pediatric hip dislocations are associated with complications in the form of osteonecrosis of femoral head, coxa magna, heterotopic ossification, stiffness, imperfect reduction, and redislocation. In all the cases of Asian origin, no complication was encountered.

## Conclusion

We have reported a case of hip dislocation in a 2-year-old male child following a trivial trauma. The pathology is extremely rare in Asian population, with very few cases reported so far. We in accordance with the previously reported literature harp upon early and emergent reduction for a good functional outcome.

### Clinical Message

Pediatric hip dislocation is an extremely rare event, and these can be encountered by any orthopedic surgeon. Awareness of the pathology and emergent reduction of the same can lead to a successful outcome in such a scenario.

**Declaration of patient consent:** The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

**Conflict of interest:** Nil **Source of support:** None

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**Consent:** The authors confirm that informed consent was obtained from the patient for publication of this case report

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