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Traumatic Hip Dislocation in A 3Year Old Female Child

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Abstract:
Traumatic hip dislocation in children is a rare but serious orthopedic emergency that requires prompt diagnosis and management to prevent long-term complications. It is commonly caused by high-energy trauma, such as motor vehicle accidents or falls from significant heights. The unique anatomical and physiological characteristics of a child's hip joint influence the mechanism of injury, treatment approach, and prognosis.Here we discuss a case of traumatic hip dislocation in a 3 year old female.

Key Word: *Traumatic Hip dislocation, Pediatric orthopaedics*

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I. Introduction

Traumatic hip dislocation in the pediatric population is a rare but serious orthopedic emergency that requires immediate recognition and management. Unlike adults, children's hip joints have greater ligamentous laxity, a shallow acetabulum, and an increased cartilaginous component, making them more resilient to dislocation. However, when dislocation does occur, it is usually due to high-energy trauma, such as motor vehicle accidents, sports injuries, or falls from significant heights.The condition is classified based on the direction of displacement, with posterior dislocations being the most common, followed by anterior dislocations and rare inferior or superior variants. Pediatric hip dislocations can occur without associated fractures, particularly in younger children, but in older children and adolescents, they are often accompanied by acetabular or femoral head fractures.Prompt diagnosis and urgent closed reduction, ideally within six hours, are crucial to minimizing complications such as avascular necrosis (AVN), chondrolysis, post-traumatic arthritis, and growth disturbances.We are reporting a case of traumatichip dislocation of 3 years old female child. The patient was treated with Open reduction and k-wire fixation and Hip spics application after radiological

Case Presentation

3 years old female child complaints of pain over right since 20 days, patients parents give history of fall from 2 wheeler and sustained injury to right hip. Pain was sudden in onset and progressive in nature which aggravates on bearing weight and relieves on rest, she is now unable to bear weight.

On examination :

* 11 year old Male child , moderately built and nourished , BMI = 1 kg/m2
* Attitude of left lower limb: Flexion, abduction and externally rotated
* On inspection - No visible scars and sinuses
- Visible deformity was present
* On palpation – left hip , no local rise of temperature, Anterior joint line tenderness present,

Range of movements around right hip joint restricted and Greater trochanter on right side was higher than right side

* Measurements – 2 cm shorting was present in right lower limb compared to left lower limb

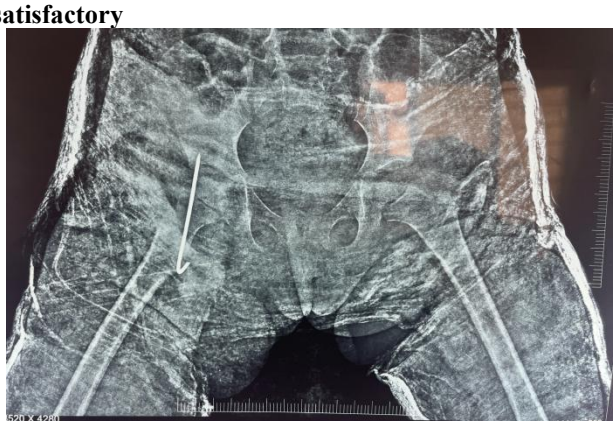
Investigations

• Xray of Pelvis with B/L Hips and full-length left Femur was done: Xray shows posterior hip Dislocation.
• CT pelvis with both Hips shows Posterior dislocation of right Hip.

Management

-Initially patient was treated with Closed reduction And Manipulation using Allis maneuver(The patient is in a supine position while longitudinal traction is applied) andBigelow maneuver(External rotation and extension are used to relocate the femoral head) but it was not relocating, hence Open reduction and relocation and k-wire fixation and Hip spica application was done under General Anaesthesia.

-Post operative xray was satisfactory



II. Discussion

Epidemiology and Mechanism of Injury

Traumatic hip dislocation in children is relatively rare, with an incidence rate significantly lower than in adults due to the increased ligamentous flexibility and shallower acetabulum in pediatric patients (Herring, 2021). The most common cause is high-energy trauma, such as motor vehicle accidents, sports injuries, and falls from height (Bressan et al., 2019). Posterior dislocations, where the femoral head is displaced backward, account for approximately 85–90% of cases, whereas anterior dislocations are less frequent and usually result from hyperextension with external rotation (Eberhardt et al., 2020).

Clinical Presentation and Diagnosis

Children with hip dislocations typically present with severe pain, inability to bear weight, and an abnormal hip position. Posterior dislocations often lead to hip flexion, adduction, and internal rotation, while anterior dislocations present with hip extension, abduction, and external rotation (Herrera-Soto et al., 2018).

Radiographic evaluation is crucial for diagnosis and includes anteroposterior (AP) and lateral X-rays to confirm dislocation and rule out associated fractures. In complex cases, CT scans provide detailed information on intra-articular fractures, while MRI is useful for assessing soft tissue damage and the risk of avascular necrosis (AVN) (Vialle et al., 2020).

Management

1. Emergency Reduction

Early reduction, preferably within six hours, is the cornerstone of management, as delayed reduction significantly increases the risk of AVN (Scriba et al., 2021). Closed reduction is attempted first using techniques such as:

* Allis maneuver: The patient is in a supine position while longitudinal traction is applied.
* Bigelow maneuver: External rotation and extension are used to relocate the femoral head.
-f closed reduction fails or there is an associated fracture blocking reduction, open reduction may be required (Albergo et al., 2017).

2. Post-reduction Management
* After successful reduction, the hip is immobilized using a hip spica cast or abduction brace for 4–6 weeks in younger children.
* In older children or those with stable reductions, early mobilization with non-weight-bearing ambulation for 6–8 weeks is preferred (Bressan et al., 2019).

3. Complications and Prognosis
* Avascular Necrosis (AVN): The most serious complication, with a risk of up to 15%, particularly if reduction is delayed beyond six hours (Herrera-Soto et al., 2018).
* Chondrolysis: Progressive cartilage loss leading to joint stiffness and pain.
* Post-traumatic Arthritis: Develops in cases with intra-articular fractures or residual instability.
* Recurrent Dislocation and Growth Disturbances: Common in younger children due to damage to the femoral epiphysis (Vialle et al., 2020).

III. Conclusion

All Traumatic dislocation in paediatric population just cannot be relocated by closed reduction, some dislocation might require open reduction and k-Wire fixation

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