



Case Report

Treatment of unstable bilateral slipped capital femoral epiphysis using modified Dunn procedure along with cc screw fixation in a recurrent epileptic patient

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ABSTRACT

Introduction: Slipped capital femoral epiphysis (SCFE) is uncommon in daily practise, and diagnosis and treatment are usually delayed.¹ In patients with severe slipped capital femoral epiphysis, the modified Dunn method allows for the restoration of proximal femoral morphology and proper hip function (SCFE). The purpose of this article is to outline the treatment management of unstable bilateral slipped capital femoral epiphysis in an epileptic patient.²

Case Report: A 9-year-old female, a known case of grandmal epilepsy, arrived in the outpatient department with a severe SCFE. The patient underwent modified Dunn osteotomy and fixation of the epiphysio-metaphysis junction with CC screw fixation. Since there is very little awareness regarding slipped capital femoral epiphysis in an epileptic patient, this case report is very rare.

Conclusion: One should be vigilant about children suffering from uncontrolled epileptic attacks. A delay in diagnosis can lead to an unsatisfactory treatment outcome and a poor prognosis.

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1. Introduction

The majority of cases present with stable slips, and in situ fixing are the most widely used treatment worldwide.³ SCFE is a separation between the epiphysis and the metaphysis of the proximal femur. The epiphysis remains in the acetabulum and the femur rotates outwards and in extension. The most prevalent hip condition in children aged 9 to 15 is SCFE. It has been associated with endocrine abnormalities such as hypothyroidism, hypogonadism, and hypopituitarism. SCFE treatment's key goals are to prevent additional slip progression, accomplish stabilisation and restoration of hip function, and avoid early hip OA while limiting the threat of avascular necrosis (AVN) and eventual proximal femoral deformity.⁴

2. Case Report

A 9-year-old thin-built girl had a history of falls after an episode of grandmal epilepsy while playing near her house and presented to the outpatient department after one and a half months with a chief complaint of pain in the bilateral hip joints and was unable to bear weight since the day of the trauma. She is a known case of epilepsy since she was five months old and was on anti-epileptic medication. She had repeated episodes of seizures after sustaining trauma. On examination, Tenderness was present in both hip joints. Range of motion was painful and restricted with flexion, abduction, and external rotation deformity. X-rays of the pelvis with bilateral hip joints (AP and lateral views) were taken. In the AP view, there was a lateral or outward displacement of the metaphysis and an inferior displacement of the epiphysis noted (Figure 1), whereas in the lateral view, the shaft was displaced anteriorly and the head posteriorly (Figure 2) with posterior calcification of

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epiphysis. Laboratory reports ruled out any endocrinopathy. A CT scan and MRI were not performed as the patient was restless and had severe pain on extension of the bilateral lower limb.



Fig. 1: X-ray of pelvis with bilateral hip (AP view)



Fig. 2: X-ray of right hip (Lateral view)

Southwick angle were calculated bilaterally to grade the displacement which turned out to be 89 degree on the right side (Figure 3), and 96 degree on the left side in AP views (Figure 4). Angle in the right lateral view was 40 degree whereas in left lateral due to severe pain was not measured (Figure 5). Klein line passed above the head of femur, stating trethowan sign positive (Figure 6).



Fig. 3: Southwick angle of right hip (AP view)



Fig. 4: Southwick angle of left hip (AP view)



Fig. 5: Southwick angle of right hip (Lateral view)



Fig. 6: Trethowan sign positive

metaphysis was reduced back and stabilized by two 2mm k wires (Figure 8).



Fig. 7: Metaphyseal callus removed



Fig. 8: K wire passed from metaphysis to epiphysis

3. Operative Management

The patient was positioned in the right lateral position and an incision of 5-7 cm was made over the lateral aspect of the thigh. The tensor fascia lata was cut and a plane between the gluteus medius and maximus was created (Gibson approach). On identifying the greater trochanter, a trochanteric osteotomy was performed, and the abductor muscles were lifted off. A Z-shaped incision was placed in the capsule.

The callus obstructing the reduction was removed and the neck was shortened by 2-3mm (Figure 7). The displaced

4mm cortico-cancellous screws were passed through the k-wire. The trochanter was placed back in its position with two k-wires. Retinacular soft tissue flap was created which included branch of medial circumflex femoral artery, capsule, external rotators and the thick periosteum with aim of preserving the blood supply the head (Figure 9). The patient was positioned on the left lateral and similar steps were performed on the other hip. There was absorption of femoral neck noted on left side intra-operatively. The child's limbs were kept in flexion, abduction and external rotation. Post-operative xrays were taken in AP and lateral views

(Figure 10 (a), (b)).



Fig. 9: Retinacular soft tissue flap

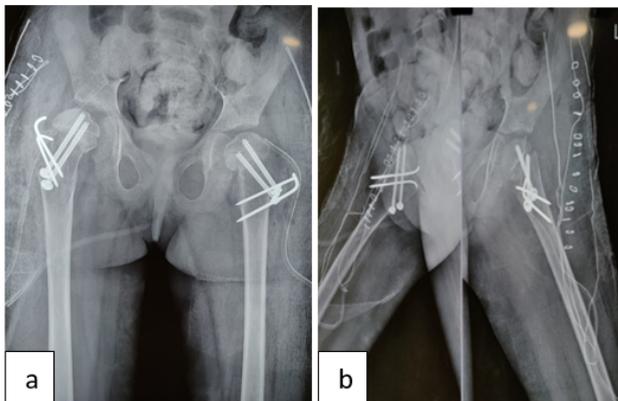


Fig. 10: Post-operative x-ray a) AP view b) Lateral view

4. Post-Operative Protocol

The patient was placed in flexion, abduction, and external rotation for a period of 4 weeks (Figure 11), after which passive range of motion of the hip and knee joints was started. Passive knee bending of 90 degrees was achieved at the end of 1^{1/2} months (Figure 12). Standing with the help of support was possible at 2 months (Figure 13).

5. Discussion

Slipped capital femoral epiphysis is a under researched complication of grandmal epilepsy in high risk cases. As affected patients have a persistent change in their state of consciousness or sedating adverse effects from antiepileptic medications, clinical symptoms and signs of fractures as



Fig. 11: Flexion, abduction and external rotation attitude



Fig. 12: 90° knee bending

well as dislocations may be lacking or non-specific in the post convulsion state. Acknowledgement of bony fractures or metaphyseal displacement is complicated further by the possibility that related symptoms are misconstrued as postictal muscle aches.⁵ Fractures are more prevalent in children with epileptic seizures, particularly those treated with more than one anti-epileptic medication. Children with grandmal epilepsy on anti-epileptic drugs have significantly decreased calcium levels, reduced phosphate levels in their blood, and greater phosphate levels in their urine.⁶ Matava et al. discovered that patients with an early clinical signs of knee pain had significantly greater diagnostic errors than those who have hip pain. Since the large numbers of patients are at first investigated by a general practitioner, these lead to significant reduce in overall diagnostic delay.⁷ Huber et al. discuss the benefits of close supervision of epiphyseal blood flow while performing modified Dunn's procedure.⁸



Fig. 13: Standing with support

According to our findings, the modified Dunn procedure can re-establish femoral neck anatomy and hip joint function. Furthermore, the intra-articular pathology can be assessed and managed during surgery.⁹

6. Conclusion

These fractures in children's if poorly managed can lead to severe consequences like chondrolysis, avascular necrosis etc. In these cases, accurate diagnosis and treatment can result in a satisfactory result.

7. Clinical Message

Children suffering from unrestrained epileptic seizures should be monitored closely.

8. Consent

Patient had been informed and has given the consent regarding this publication.

9. Conflicts of Interest

"The author(s) declare that they have no competing interests".

10. Source of Funding

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