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## A rare case report-cervicotrochanteric fracture of femur in child

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### Abstract

Paediatric femoral neck fracture is a very rare condition. The treatment of most hip fractures in children consist of closed or open reduction and internal fixation. In spite of so many treatment options the rate of pediatric treatment options the complications like osteonecrosis, coxa vara, premature physal closure, mal union, non-union are relatively high. 1

Here we report a rare case of three and half years female kid with cervicotrochanteric fracture of femur on the right side. she was brought to the hospital after four days of fall before which no treatment was taken other than analgesics.

**Keywords:** Pediatric femoral neck fractures, cervicotrochanteric fractures, moore's pin

### Introduction

Paediatric femur fracture is a rare condition and occurs in less than 1% of all fractures in children. it is usually result from high energy trauma because neck of femur in children is covered with strong and thick periosteum [2].

At the age of 3 years, metaphyseal vessels are obliterated and retinacular vessels are the only significant source of blood supply which enters as lateral epiphyseal vessels. This lateral epiphyseal vessels are divided into posterosuperior and posterior inferior branches. Intraosseous blood vessels supply the femoral head which gets damaged in case of femoral neck fracture and becomes more complicated if the fractures are intra-articular [3].

Femoral neck fracture in children is classified by Delbert in 1907 based on location of fracture LINE which was later popularised by Colonna 1929 i.e are Type 1(transsepiphyseal), type 2(transcervical), type 3 (cervicotrochanteric) and type 4(intertrochanteric). Type 2 being most common. This classification helps in deciding the treatment plan [4].

Ossification of femoral epiphysis occurs at 4-6 months of age and that of greater trochanter at the age of 4 years. The proximal femoral physis closes at age of 18 years. any abnormality in physis can cause premature closure of physis or limb length discrepancy [5].

Complications from cervicotrochanteric type of fracture in children includes osteonecrosis, pseudoarthrosis, coxa vara, Limb length shortening, malunion, nonunion which may be prevented by properly plan and early treatment by close reduction and hip spica cast or internal fixation with screws or pins or k wires and external cast immobilization [6].

### Case Report

A 31/2 years female kid was presented to emergency department in our hospital after 4 days of fall from height of around 10 feet directly over the right hip. patient complaints of excruciating pain and swelling in the right hip and inability to stand/walk. For the same she was taken earlier to local Hospital where analgesics was given. Pain did not subside on taking medication for which patient was brought to our hospital. There was no history of loss of consciousness, head trauma, ENT bleed, spine, chest or abdominal trauma.

On physical examination patient was conscious and oriented. Swelling and tenderness was present over the right greater trochanter and hip joint line. Right lower Limb was externally rotated and peripheral circulation was normal. Passive motion of the hip joint was markedly restricted. On measurement 1 cm of true length shortening present on right side. Rest of systemic examination and other joints were normal.

### Correspondence

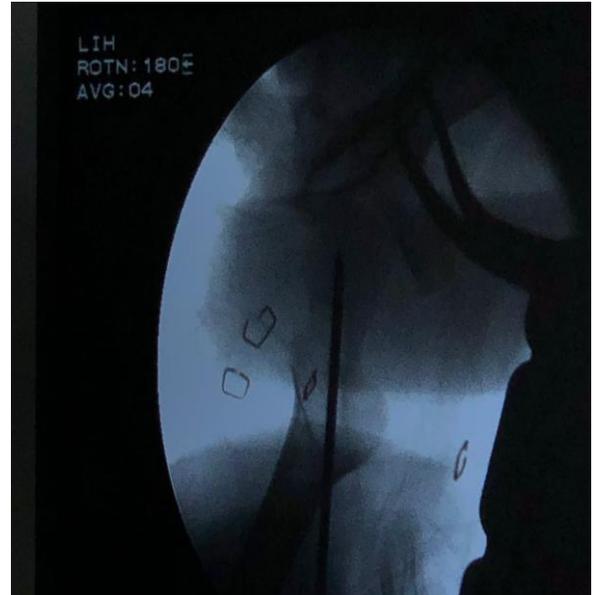
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**Fig 1:** X-ray of pelvis with bilateral hip in AP view shows fracture neck of femur Type III cervico trochanteric according to Delbert classification.

Patient was diagnosed with right side cervicotrochanteric fracture of femur for which patient was treated temporarily with above knee skin traction and analgesics. Meanwhile blood reports came within normal limit and fitness for operation from pediatrician was taken.

Patient was operated after 1 day of admission. Patient was put on supine position on fracture table and closed reduction of the fracture was done by manipulation and reduction was confirmed under C-ARM guidance in both AP and Lateral view. Next a stab incision was given over the right greater trochanter and internally fixed with one Moore's spin and one K-wire under CM guidance and checked the position of pins in both AP and Lateral view. Wound closed and dressing done. Then hip spica cast was applied and window was made for changing the dressing. Post-operative period was uneventful.



**Fig 2b:** Intraoperative Lateral view



**Fig 2c:** intraoperative AP view after internal



**Fig 2a:** Intraoperative AP view after putting k-wire



**Fig 3:** Postoperative xray with hip spica cast fixing with pins.

## Discussion

High incidence of osteonecrosis, coxa vara, and other complications leads to the exploration of new methods of treatment like Austin moore's pins and Knowles pins. Smooth pins (Moore or Knowles pins) are the choice of treatment for children.<sup>2</sup>

K.S. Song *et al.* studied 27 cases between 1989 and 2007 retrospectively and divided the patients into three groups according to the quality of the reduction (anatomical, acceptable, and unacceptable) and the clinical results into two groups (satisfactory and unsatisfactory). It concluded that anatomical ORIF is a more reliable form of treatment than CRIF for displaced fractures in children, producing good results and reducing the rate of AVN and other complications.<sup>7</sup>

Nagakumar J. S *et al.* in 2013 reported a case on management of neglected femoral neck fractures which concluded that accurate anatomical reduction with stable internal fixation to reduce the incidence of fracture healing complications like avascular necrosis and nonunion. In children femoral head salvage should be considered. Dynamic hip screw is reliable method with noble long term functional outcomes<sup>[8]</sup>.

Sahu RL *et al.* studied 16 children who sustained femoral neck fractures and completed an average follow-up of 28 months. The children were treated with anatomical reduction and internal fixation with partially threaded cancellous screws. Coxa- vara was the most common complication seen. All children achieved union in a mean time of 10 weeks except two cases. Full weight bearing was possible in a mean time of 8.8 weeks.<sup>2</sup>

## Conclusion

The goal of treatment of children hip fractures are to achieve anatomic reduction and provide stability to fracture fragments to allow complete fracture healing. The most important factor to be considered are age of the child, type of fracture and displacement. In case of displaced cervicotrochanteric fracture of femur, internal fixation gives the better results.

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