

Case Report

Unusual presentation: fracture neck femur in 18 months old child

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ABSTRACT

An 18 months old child was brought to the emergency department with alleged history of trauma due to hit by two wheeler and sustained injury over right hip. Child was not able to move the right lower limb. Physical examination of child revealed contusion over right hip region and injury over perineal region. There was no active vaginal bleeding. Rest of the systemic examination was normal. Routine blood was normal. On X-ray of pelvis with both hip showed fracture of neck femur on right side without any pelvic injury. Patient was treated with hip spica cast and complete bed rest for 1 month. After 1 month of the treatment, on follow-up the patient was able to weight bear and fractured was united on X-ray.

Keywords: Fracture neck femur, Paediatrics, Orthopaedics

INTRODUCTION

Femur neck fracture in paediatric age group is extremely rare injury and contributes for less than 1% of all paediatric fractures because of strong and thick periosteum as well high bone density.¹ So; it requires a high energy trauma to develop femur neck fracture in this age group. It is the high complication rate related to this fracture that makes it really important to consider the treatment plan sincerely. These fractures are associated with high rates of coxa vara, delayed union and non-union, osteonecrosis, premature physal closure and limb length discrepancy depending on the treatment. Paediatric hip is anatomically different from adult hip as there is the presence of physis with growing potential. So the treatment plan for paediatric hip fracture is totally different. We have to take into consideration the physis in the treatment plan to avoid major complication. We reviewed the case retrospectively and critically analysed the complications of the treatment received. We had treated the patient conservatively with hip spica.

CASE REPORT

18 months old child presented in the emergency department of orthopaedic with complain of contusion over right hip and perineal region. Patient's mother gave the history that child was hit by two vehicle while he was walking on the road and child was not able to walk after. There was no evidence of head, chest, spine or abdominal injury. Patient was conscious. Vitals (temperature, pulse rate, respiratory rate and blood pressure) were normal. On physical examination, there was contusion over right hip and right hip was tender on examination with decreased range of motion. The right lower limb was in external rotation compared to left side. Redness was present in the perineal region but there was no vaginal injury or active bleeding on per vaginal and per rectal examination. There was no neurovascular deficit in both lower limbs. Pelvic and chest compression test was negative. Spine examination was normal.

Routine blood investigation: Haemoglobin- 9 gm. % (anaemia), total white blood cell count-7000 cells/cu.mm (normal). Pelvis with both hip X-ray showed displaced fracture neck femur in right lower limb [Figure 1].

Chest X-ray was normal. Close reduction with hip spica cast under image intensifier guidance for 1 month with complete bed rest [Figure 2]. After 1 month on follow-up of the patient; the child did not have any symptoms. Child was able to walk with normal hip range of motion. Pelvis with both hip x-rays showed union of fracture neck femur.



Figure 1: X-ray pelvis with both hip anteroposterior view showing fracture neck femur on right side.



Figure 2: Clinical image of the local area and hip spica cast.

DISCUSSION

High energy trauma is required to cause femoral neck fractures in children because of thick periosteum and hard bone.² So it might be associated with head, chest, spine or abdominal injuries that have to be considered while planning the treatment. Now days because of increased rate of vehicular accident these fractures can be seen frequently. These fractures are classified using Delbert classification³ based on the X-ray depending upon the

location of fracture line and displacement. Type I is transphyseal fracture, Type II is transcervical, Type III is cervicotrochanteric (or basicervical) and Type IV is intertrochanteric. As per the available literature, report Delbet type II fractures as the most common, followed by type III and type IV. Type I injuries (Trans epiphyseal) are very rare and it is necessary to evaluate type IA fractures for child abuse. For the diagnosis of neck femur fractures anteroposterior radiographs of with both hip and cross-table lateral is used, but for non-displaced fractures and stress fractures CT and MRI required. Non-operative treatment with spica cast in abduction, weekly radiographs for 3 weeks provide satisfactory results in Type IA, II, IV, non-displaced, and children <4 yrs. of age. Operative emergent ORIF, capsulotomy, or joint aspiration is indicated for open hip fracture, concomitant hip dislocation or significant displacement, especially type I and closed reduction internal fixation (CRIF)/ percutaneous pinning (CRPP) is used for, displaced type II, III and IV, and older children and pediatric hip screw / DHS is used for Type IV.

AVN is the most common complication.⁴ The most important factor is the severity of vascular compromise sustained at the time of trauma and the other factors are age, degree of initial displacement, type of fracture, time to surgery, and method of fixation.⁵ AVN develops in approximately 17% to 47% of the cases.⁶ This is because the blood vessels of paediatric hip cannot cross the open physis. Coxa vara (neck-shaft angle <130deg) is the second most common complication especially in type I, II and III displaced fractures if treated non-operatively. Non-union occurs less commonly in paediatric femoral neck fractures due to presence of thick periosteum. The incidence is much less than in adults due to the thick functional periosteum in children. But non-union is common with displaced fracture and AVN. Coxa vara is a complication of Type IV fractures due to premature closure of the GT apophysis. Physeal arrest may occur as a result of trauma which may lead to alone leads to leg length discrepancy in very young children. Infection is a rare complication mostly occurs after ORIF may lead to osteomyelitis, AVN, chondrolysis, premature physeal closure.

CONCLUSION

Paediatric fracture neck femur is very rare injury and always associated with high energy trauma. Consider the anatomy of paediatric hip specially physis and blood supply while treatment planning. Proper treatment according to fracture type is necessary to avoid complication like AVN, coxa vara/valga limb, non-union, length discrepancy and infection.

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