Complete anterior dislocation of distal femoral epiphysis

S Gangoo, S Naqvi, S Mirza

Citation

S Gangoo, S Naqvi, S Mirza. *Complete anterior dislocation of distal femoral epiphysis*. The Internet Journal of Orthopedic Surgery. 2008 Volume 14 Number 1.

Abstract

Fractures involving the distal femoral epiphysis are rare but have a high rate of complications.[1] Ligaments in the immature skeleton are more resistant to tensile stresses than are physeal plates, trauma leads to physeal separation not seen in skeletally mature patients.[2]Fracture separation of distal femoral epiphysis has a bimodal frequency distribution; one at birth and the other, the most common between 11 and 15 years of age.[3-4] Classification of these injuries is commonly reported using the Salter-Harris classification of epiphysis fractures.

CASE

A 14 year old boy presented to ED following a hypextension injury to right knee. While running on the rocks on the beach he slipped and received a jerk to the right leg. He immediately complained of pain behind the right knee and was unable to weight bear. The patient was wheeled into ED nearly 5 hours after injury.

On examination knee was swollen with fullness in the popliteal fossa and held in 30 degree flexion. He could move 10 degrees in either direction, range of motion (ROM) 20 to 40 degrees. He had 1+ joint effusion which was mildly tense and moderately painful. There was tenderness on palpation in the popliteal region and along the medial and lateral aspects of the supracondylar femur at the attachments points for the medial and lateral collateral ligaments. His skin had no bruising, was pink and warm, and had a strong dorsalis pedis and posterior tibial pulses. Ankle –brachial indices were more than 1.0 bilaterally.

Radiographs revealed complete anterior dislocation of distal femoral ephysis.

Closed reduction under general anaesthesia was performed . A good reduction was obtained and leg immobilised in a long leg cast with advice to non weight bear for 4 weeks. On regular follow ups he demonstrated clinical and radiological evidence of healing and had no signs of ligament instability.

12 months post injury, and at writing this report there are no adverse sequelae. The child has resumed full sporting activity and radiographs showed no changes to the physis.

DISCUSSION

Distal femoral fractures account for fewer than 1% of all fractures in children.[5-6]

Fractures involving physes around the knee are particularly prone to complications and must be approached with care to prevent devastating consequences.

Incidence of complications following separation of distal femoral epiphysis in clinical reviews include popliteal artey injury 1%, peroneal nerve injury 3% , angular deformity 19%, leg length discrepancy 24%, and knee stiffness 16%.[7-11]

Our patient suffered a complete anterior dislocation of distal femoral epiphysis, Salter-Harris type I fracture. The fracture traverses through the physis without exiting through the metaphysis, a rare injury pattern. To our knowledge there is not a reported case of complete anterior dislocation of distal femoral epihysis without exiting through metaphysis.

CONCLUSION

Recognition of severity of injury in Emergency Department and timely intervention is essential to prevent complications. Immediate anatomic reduction and maintaining joint congruity is required to prevent complications. Typically growth arrest is noticed less than 12 months after injury. Therefore these patients should be seen frequently in fracture clinics and have radiographs documenting adequate bone healing.

Figure 1

X rays on arrival to ED

Figure 2

Figure 3

Complete anterior dislocation of distal femoral epiphysis.

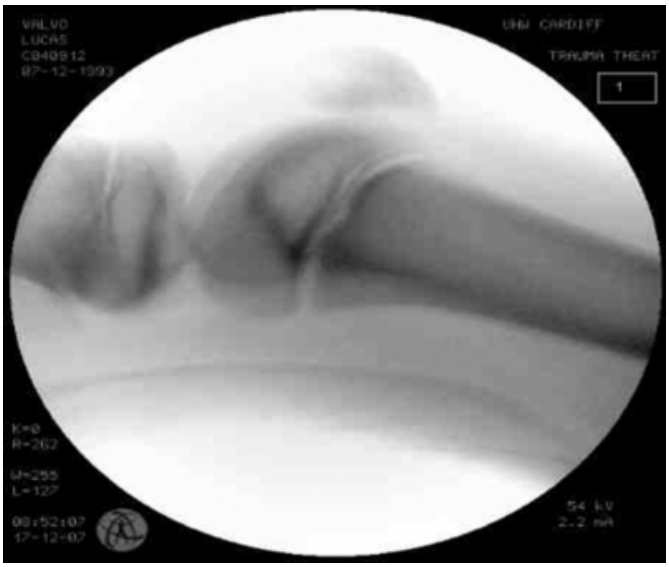

Figure 4

X rays post reduction

References

1. Arkader A, Warner WC Jr, Horn BD, Shaw RN, Wells L, J Pediatr Orthop. 2007 Sep;27(6):703-8
2. Edwards PH Jr, Grana WA, Physeal Fractures About the Knee, J Am Acad Orthop Surg. 1995 Mar;3(2):63-69
3. Tachdjian MO, Paediatric Orthopaedics. Vol4, 2nd Philadelphia, pa WB Saunders Co. 1990; 3274-82
4. Rockwood CA, Wilkins KE, King PE, Fractures in Children. Vo 3.New York; Lippincott 1990;367-71, 776-8
5. Peterson HA, Madhok R, Benson JT et al, Physeal fractures Part1, Epidemiology in Olmsted County, Minnesota 1979-88, J Pediatr Orthop 1994;14;423-430
6. Eid AM, Hafez MA, Traumatic injuries of the distal femoral physis,
Injury,2002 Apr;33(3):251-5
7. Aitken and H. Kelvin Magill, Fractures involving the distal femoral epiphysis
J Bone Joint Surg Am. 1952;34:96-108.
8. Lombardo and JP Harvey, Fractures of the distal femoral epiphyses. Factors influencing prognosis: a review of thirty-four cases, The Journal of Bone and Joint Surgery, Vol 59, Issue 6 742-751,1997.
9. Stephens DC, Louis E, Louis DS, Traumatic separation of the distal femoral epiphyseal cartilage plate. J Bone Joint Surg Am. 1974 Oct;56(7):1383-90
10. David C. Stephens and Dean S. Louis ., Traumatic Separation of the Distal Femoral Epiphyseal Cartilage Plate, Journal of Bone and Joint Surgery, 1974;56:1383-1390
11. Neer CS 2nd., Separation of the lower femoral epiphysis. Am J Surg. 1960 May;99:756-61

Author Information

Shafat Gangoo, MRCS
Registrar, Trauma and Orthopaedics, Weston General Hospital

Syed Naqvi, MRCS
Registrar, Trauma and Orthopaedics, Weston General Hospital

Saquib Mirza, MRCS
Registrar, Trauma and Orthopaedics, Weston General Hospital