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Surgical management of ogden VI epiphyseal injury: A case report

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Abstract

Epiphyseal fractures represent about 15% of the pediatric fractures. Approximately 10% cause major growth disturbances, depending on the location and type of the fracture and the skeletal maturity of the child. Salter (Rang) type 6 injury of the distal femoral physis is a rare injury and we present a case report of such an injury in a 12-year adolescent male patient following indirect force due fall from scooter.

Introduction

Fractures involving the epiphyseal plate, or physis, are common musculoskeletal injuries occurring in children with open growth plates. These fractures represent about 15% of all pediatric [1-3].

In 1963, two Canadian orthopedic surgeons, Robert B. Salter (1924-2010) and W. Robert Harris (1922-2005), created a physeal fracture classification system based on anatomy, fracture pattern, and prognosis [3].

Since the landmark paper by Salter and Harris [3], which characterized five types of physeal fractures (Figure 1), various authors have expanded on the original work of Salter and Harris in attempts to be more comprehensive. Rang [4] added a sixth type of physeal injury which described damage to the perichondral ring that resulted from direct open injuries. Ogden [5] described nine types of injuries.

This type of injury involves the peripheral region of the growth plate, the zone of Ranvier. More frequently it results from a localized contusion or avulsion of that specific portion of the growth mechanism concerned with latitudinal or appositional cartilaginous growth. The injury may even result from a glancing type of trauma that primarily involves avulsion of overlying skin and subcutaneous tissues, such as might occur from a lawn mower. Peripheral osseous bridge formation may and frequently does occur, leading to peripherally localized epiphyseodesis and subsequent progressive angular deformity. While the exact mechanism is unknown these injuries have been found top also be the reason for solitary osteochondroma formation [5].

The distal femoral physis is responsible for approximately 70% of the growth of the femur and 35% of the total length of the lower extremity. It has an average growth of 1.0 cm/yr, which makes it the fastest growing physis [6-8], Children and adolescents with distal femoral physeal fractures have a high incidence rate of complications, especially of growth arrest. The SH classification and the presence of displacement were shown to significantly correlate with the incidence of complications, being excellent predictors of the outcome in both univariate and multivariate analysis [9].

Materials and methods

In this case study we study a case of a 12-year male who sustained trauma to his left knee after fall from scooter at high speed. He came with pain on lateral aspect knee held in flexion of 30°.

X-ray and CT scan was done which revealed Type VI fracture distal femoral condyle (Figures 2,3).

The patient underwent procedure for excision of the bone fragment. Knee stability was check under anesthesia and found to be stable.

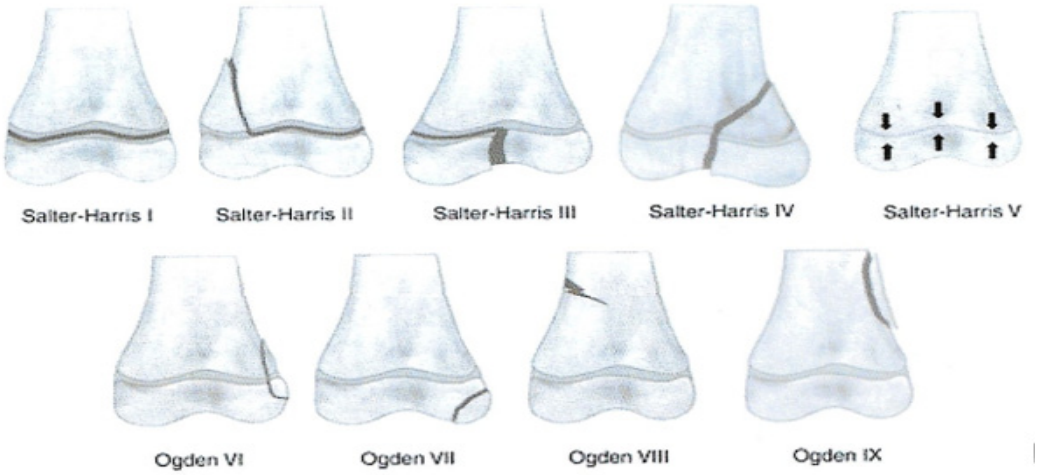

Figure 1: Clinical image.

Figure 2: Clinical image.

Figure 3: Clinical image.

Patient was mobilised weight bearing as tolerated.

Discussion

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Type 6 physeal injuries are rare. There are no fixed guidelines for treatment of such injuries. Treatment strategies for these rare type 6 injuries are usually only discussed in case reports.

Resulting callus from the bone and physeal injury makes the victim prone to asymmetric osseous bridging of the physis. This osseus bridging often leads to a progressive angular deformity due to partial physeal closure [1].

Ogden [10] warned that during open surgery care must be taken not to strip the zone of Ranvier because such stripping may disrupt the blood supply and lead to more extensive physeal damage and growth deformity.

The article publishing large series of type 6 injuries recommends that most of the closed type 6 injuries can be managed conservatively and if operative intervention needed an anticipatory Langenskiold procedure can be added. The only problem for the Langenskiold procedure is the formation of peripheral bony bridge [3]. In our case as it was a displaced fragment, we did a simple complete resection of the metaphyseal fragment.

References

1. Mizuta T, Benson WM, Foster BK, Paterson DC, Morris LL. Statistical analysis of the incidence of physeal injuries. J Pediatr Orthop. 1987; 7: S18-523.
2. Rogers LF. The radiography of epiphyseal injuries. Radiology. 1970; 96: 289-299.
3. Salter RB, Harris WR. Injuries involving the epiphyseal plate. J Bone Joint Surg Am. 1963; 45: 587- 622
4. Rang M. The Growth Plate and Its Disorders. Harcourt Brace/ Churchill Livingstone. 1968.
5. Ogden JA. Injury to the growth mechanisms of the immature skeleton. Skeletal Radiol. 1981; 6: 237-253.
6. . Sponseller PD, Stanitski CL. Distal femoral epiphyseal fractures. Sth ed. In: Beaty JH, Kasser JR. Rockwood and Wilkins_ Fractures in Children. Philadelphia, PA: Lippincott Williams & Wilkins. 2001: 982Y1010.
7. Pritchett JW. Longitudinal growth and growth-plate activity in the lower extremity. Clin Orthop. 1992; 275: 274Y279.
8. Zionts LE. Fractures around the knee in children. J Am Acad Orthop Surg. 2002; 10(5): 345Y355.
9. Arkader A, Warner WC Jr, Horn BD, Shaw RN, Wells L. Predicting the outcome of physeal fractures of the distal femur. J Pediatr Orthop. 2007; 27(6): 703-8.
10. Ogden JA. Skeletal Injury in the Child. 1st edition, Philadelphia: W.B. Saunders, 1990; 181-183.
11. DeValentine S. Foot and ankle disorders in children. New York: Churchill Livingstone. 1992.
12. Classifications in brief: Salter-Harris classification of pediatric physeal fractures. Cepela DJ, Tartaglione JP, Dooley TP, Patel PN. Clin Orthop Relat Res. 2016; 474: 2531-2537.
13. Havranek P, Pesl T. Salter (Rang) type 6 physeal injury. Eur J Pediatr Surg. 2010; 20(3): 174-7.