

Patella Sleeve Fracture In Children A Case Report

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INTRODUCTION

Patella is a sesamoid bone. Ossification of the immature patella starts at 3 to 6 years of age. So, the incidence of patella fracture in pediatric patient is low. However patella sleeve fracture is the most common patella fracture encountered in paediatric population. It is easily missed even with plain radiograph.

CASE REPORT

We present a case of a 10-year-old boy who presented with left knee pain after fall from stairs and landed to ground in kneeling position. Post trauma, patient unable to ambulate, unable to flex and extend the left knee. Clinical examination notice extension lag of 30 degrees. Plain radiographs of left knee, showing patella alta and small distal fracture (figure 1). The injured knee had an Insall-Salvati ratio of 2.34 compare with 1.09 for the contralateral knee. After 4 days, patient underwent patella tendon tenodesis. During the operation, it was found the patient got avulsion fracture of the inferior pole of patella. Tenodesis was done by using Ethibond suture with Krowkow method. The Insall-Salvati ratio of injured knee post operation is 1.13. Post operation, he was put on a cylinder cast for a total of 6 weeks. Subsequently he was started on physiotherapy. Three months after injury, patient had achieve union and had an acceptable active range of motion of 15° to 90° in flexion.

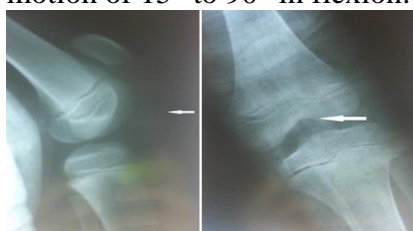


Fig 1: Radiographs of a displaced sleeve patellar fracture; the distal fragment is indicated by arrows.



Fig 2: post-operation radiograph showed reduction of fragment and corrected insall salvati ratio.

DISCUSSION

Patellar fracture in skeletally immature patients is uncommon. It is because secondary ossification of the patella occurs at 5 to 6 years of age¹. The immature patella is surrounded by a thick layer of protective cartilage¹. It is caused by rapid and forceful extension force of the knee quadriceps².

Sleeve fracture is classified according to its location. Grogan et al. described 4 patterns of avulsion (sleeve) fractures, inferior (acute injury); medial (associated with lateral dislocation of patella); lateral (caused by repetitive tensile pull from vastus lateralis muscle) and superior which is the least common³. It can be difficult to diagnose in view of radiologically unable to visualize fragment or small fragment. The fragment is mainly composed of un-ossified peripheral cartilage¹. Surgical intervention for severely displaced sleeve fracture is required to restore the extensor mechanism. The indication is displacement more than 2mm with loss of extensor mechanism³.

Avascular necrosis of the patella is a well-known complication. It is because the entire blood supply of the patella comes from the anterior surface of the distal pole, with essentially no supply from the medial, proximal, or lateral patellar margins. So sleeve fracture of the anterior and distal pole will cause the avascular necrosis over the proximal pole. Fortunately, this does not occur in this case.

CONCLUSION

A patella sleeve fracture can occur in paediatric patient. It may easily be missed on plain radiograph. Radiographic parameters should be carefully evaluated in suspicious cases. For undisplaced fractures, conservative management usually produces good outcome. For severely displaced fractures, early surgical intervention can achieve good results and early mobilization.

REFERENCE

1. Gx Gao et al, Sleeve fracture of the patella in children . Journal of Orthopaedic Surgery 2008;16(1):43-6
2. Wu et al . Sleeve fracture of the patella in children .A report of five cases. The American Journal of Sport Medicine .1991 Vol 19. No 5 . 525-8 3. Shu-Yuan Lin , Wei-Chun Lin , Jing-Wein Wang . Inferior sleeve fracture of the patella. Journal of the Chinese Medical Association 2011; 98 -101
3. Schmal et al .Fractures of the patella in children and adolescents .Acta Orthop. Belg. 2010;76; 644-50