

Nondisplaced Transverse Patellar Fracture in a Child: A Case Report

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ABSTRACT

Fractures of the patella are rare in children, as the patella is largely cartilaginous and has great mobility. Our case is a transverse patellar fracture is rarer than other patellar fractures. Diagnosis is the main problem for patellar fracture. Although, diagnosis can be suggested by clinical and radiographic evaluation, this fracture may not be diagnosed, particularly if there is a large hemarthrosis so X-ray studies cannot clearly show the bone fragment distally withdrawn. Besides because of ossification is completed about the age of puberty, child patella is mostly cartilaginous so X-ray may not show fragments. The case was 7 years old boy. Patient fall onto his knees two weeks before to refer us. He said that he had minimal effusion and pain on knee after fall down and he was continuing to walking and other exercises. On physical examination there was minimal effusion and pain on patella. The passive and active range of motion was full but painful. We seen a suspicious fracture line on X-ray. We took MRI and there was a transverse fracture. We limit the range of motion of knee with a immobiliser during two weeks. After a knee trauma in children a X-ray should be taken. In clinical suspicion even so there is no finding on X-ray, we should take advanced investigation like MRI.

Key words: Children, fracture, patella, transverse

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INTRODUCTION

The patella is between quadriceps and patellar tendon and it is the largest sesamoid bone in the body¹. Patellar fractures occur approximately at rate of 1% of total pediatric fractures². Patellar fractures are common in adults but in children are rare^{3,4}. The flexible stabilizing soft tissue structures around patella decrease the mechanical stress peaks in case of traumas. Furthermore, the thick cartilage layer is acting as a buffer in case of direct impact^{4,5}.

Transverse fracture of patella as in our case is rarely seen. We present that case because of being rarely seen and we also draw attention to hard diagnosis of patellar fractures.

CASE REPORT

Our case is a seven years old boy. He was falling down on his knees two weeks before to admitted us. He said that he has pain and minimal swelling at prepatellar area but he could continue to walking. He admitted us

with his parents because of continuing complaints. On physical examination, there was minimal swelling at prepatellar area, pain on patella with palpation. Active and passive range of motion of knee was full but painful. We saw a suspicious transverse fracture line at middle of patella (Fig. 1), we took Magnetic Resonance Imaging (MRI) and fracture line was seen clearer (Fig. 2, 3). Patient knee was stabilized with a immobiliser for two weeks.

DISCUSSION

Fractures of the patella are rare injuries in children because of some anatomic and biomechanic conditions^{3,4}. Ligaments, tendons, capsule, cartilage and other soft tissues are more flexible in children so joint laxity increases. Furthermore, the thick cartilage layer is acting as a buffer in case of direct impact and it also protect the patella^{4,5}.

Most of patellar fractures in children are sleeve fractures and occurs because of indirect traumas. Grogan *et al.*⁶ subclassified avulsion fractures as superior (most rarely seen), inferior, medial and lateral^{2,6,7}. Sleeve fractures are 57% of all patellar fractures in children and mostly located at the distal pole^{8,9}. It usually between age of 8-12.

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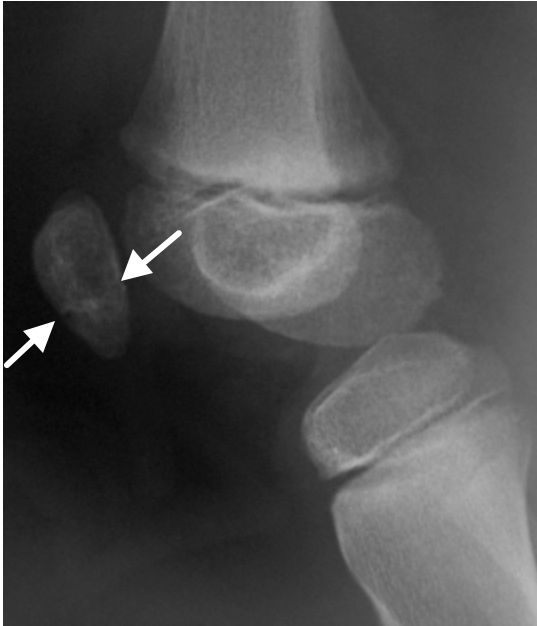


Fig. 1: Suspicious fracture line is shown with arrows



Fig. 3: Fracture is seen on coronal section of MRI



Fig. 2: Fracture is seen on sagittal section of MRI

The main problem at patellar fractures is hard diagnosis. Sinding-larsen-Johansson disease and the bipartite patella should be taken in consideration when evaluating radiographs of the patella^{4,10}. If the avulsed bone fragment is small it may not be seen on X-ray because of hematoma formation. Besides because of ossification is completed about the age of puberty, child patella is mostly cartilaginous it also cause difficult diagnosis on X-ray^{11,12}. Wessel *et al.*¹³ demonstrated that in 51 patients older than 14 years old with acute knee trauma, a positive simple X-ray image could only be seen in 16 of them.

Diagnosis can be clarified with ultrasonography and MRI in case of doubt. Early diagnosis affects the results of surgical treatment. Clinical results of early reconstruction are better than those with late.

Transverse fracture of the patella fractures are rarer than avulsion fractures. It is a result of compression of patella against the distal femur because of direct blows⁴. 3 mm separation between the bone fragments defined as of a displaced fracture¹. Displacement was less than 3 mm in our case. There is no such case reported in the literature. On x-ray fracture was suspected but with MRI diagnosis was clarified.

As a result, as can be seen in our case, although there are no obvious clinical findings support the patellar fracture in children with a history of trauma and knee pain, there should be taken a X-ray. Though not seen fracture on x-ray, further testing should be done in case of clinical doubt.

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