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Case Report

Relationship between Patellar Instability with Recurrent Dislocation and Osgood-Schlatter Syndrome

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Abstract

We report a rare association of Osgood Schlatter's disease and recurrent patellar dislocation in a 14-year-old girl during sports activities. The surgical treatment and sport restriction while six months were done. Fifteen months later the functional outcome was excellent, no residual pain and recurrent patellar dislocation.

The objective of this article is to confirm that recurrent patellar dislocation is pathogenic factor in OSD and to review published literature regarding pathophysiology, diagnosis and treatment of this association.

Keywords: *Dislocation; Patella; Osgood Schlatter*

Introduction

Osgood Schlatter's disease, also known as osteochondrosis or traction apophysitis of the tibial tubercle, described by Osgood in 1903 and six months later by Schlatter [1].

It is a common cause of anterior knee pain in the skeletally immature athletic population. Common sports seen in association with the condition include: Gymnastics, Football, Basketball, Volleyball [2].

This pathology being the consequence of repeated microtrauma, it mainly concerns young athletes growing between 12 - 15 years [3].

It occurs secondary to repetitive strain and microtrauma from the force applied by the strong patellar tendon at its insertion into the relatively soft apophysis of the tibial tubercle [4].

The trauma like patellar dislocation in adolescent may caused Osgood Schlatter disease. This force results in irritation and severe cases partial avulsion of the tibial tubercle apophysis. Force is increased with higher levels of activity and especially after periods of rapid growth. Predisposing factors include poor flexibility of quadriceps and hamstrings or other evidence of extensor mechanism misalignment [5].

The tibial tubercle develops as a secondary ossification center that provides attachment for the patellar tendon. Bone growth exceeds the ability of the muscle-tendon unit to stretch sufficiently to maintain previous flexibility leading to increased tension across the apophy-

sis. The physic is the weakest point in the muscle-tendon-bone-attachment (as opposed to the tendon in an adult) and therefore, at risk of injury from repetitive stress. With repeated contraction of the quadriceps muscle mass, especially with repeated forced knee extension as seen in sports requiring running and jumping (basketball, football, gymnastics), softening and partial avulsion of the apophyseal ossification center may occur with a resulting osteochondritis [6].

There is no evidence to suggest that rest speeds up recovery, but activity restriction is effective in reducing pain. Patients may participate in sports as long as the pain resolves with rest and does not limit sports-associated activities. Local application of ice and NSAIDs can be used for pain relief.

A protective knee pad may be worn over tibial tubercle to protect from direct trauma. Hamstring stretching and both quadriceps stretching and strengthening exercises can be a useful adjunct. If pain does not respond to conservative measures, formal physical therapy may be warranted. In severe, prolonged cases a short period of knee immobilization may be considered. There is no evidence to recommend injection therapy or surgical intervention for Osgood-Schlatter disease. Symptoms typically are self-limiting with a resolution of pain upon closure of the apophysis. Long-term sequelae may include a thickened or prominent tibial tubercle, but this is asymptomatic in the vast majority of cases [7].

This case represents, to our knowledge, the first known report of Osgood-Schlatter syndrome associated with patellar dislocation.

Case Presentation

A 14-year-old woman visited our institution due to lateral dislocation of the right knee. The patient had a history of reccurence patellar dislocation; 3 episodes of dislocation of the patella during sports and physical activities at school; in childhood she has not presented pain in her right knee.

In the physical examination, there was significant bony prominence over the tibial tuberosity on the right knee (Figure 1). In the radiographic examination hypoplasia of the lateral femoral condyle of the knees was not observed. Patellar dislocation during flexion was confirmed after general anesthesia in operating room.

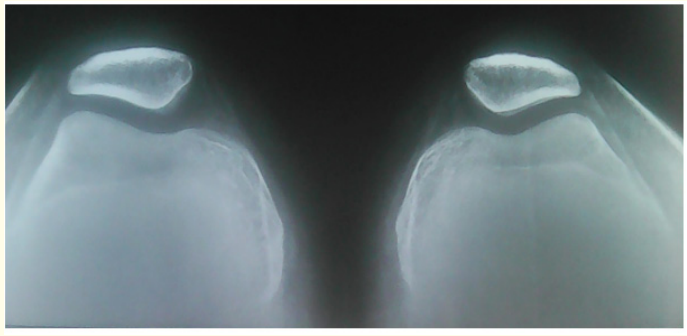

Figure 1

The patella tendon continued to track midline without lateral or medial translation. Crepitus of the patella was observed with extension and flexion. Full range of motion was intact. There was no pain with seated passive or active range of motion, however a sharp pain over the tibial tuberosity was noted with squatting.

Plain films were obtained which showed prominent tibial tubercle stage 3 according to the Ehrenborg and Lagergren classification (Figure 2) [8].

Figure 2

Patella and were treated by a modified Roux-Goldthwait procedure (lateral retinacular release, medial transfer of the lateral patellar tendon without advancement, plication of the medial retinaculum, and advancement of the vastus medialis) [9] were followed by additional procedures including trans osseous suture of TTA with PSD for to strengthen and to avoid the avulsion of TTA.

Gradual flexion exercises were started postoperatively. Complete flexion was obtained at the 3rd postoperative week.

The apprehension test for recurrent dislocation was negative.

The Kujala score [10] was 96, indicating excellent clinical results

Discussion

Osgood Schlatter's disease, also known as osteochondrosis or traction apophysitis of the tibial tubercle. It occurs secondary to repetitive strain and microtrauma from the force applied by the strong patellar tendon at its insertion into the relatively soft apophysis of the tibial tubercle. The trauma like patellar dislocation in adolescent may caused Osgood Schlatter disease. The mechanisms leading to patellar dislocation can be direct or indirect. Direct traumas arise from a sudden mechanical force exerted on the patella that causes it, in most cases, to shift laterally. The indirect mechanism (more common) mainly occurs when the foot is fixed on the ground and the knee is subjected to valgus stress and internal rotation of the femur or external rotation of the tibia. The direction of dislocation is usually medial-to-lateral and simple extension of the knee is often enough to reduce the dislocated patella [11].

The causes of habitual patellar dislocation include contracture and fibrosis of the quadriceps femoris, vastus lateralis, and lateral retinaculum, abnormal iliotibial band attachment, repeated intramuscular injections into the thigh, patella alta due to the abnormal position of an elongated patellar tendon, systemic ligament laxity, dysplastic lateral femoral condyle, and genu valgum [12]. In our case the ligament laxity caused reccurent dislocation.

Commonly, once a laterally displaced patella is reduced, a 2- to 6-week period of immobilization is preferred using either a plaster cast, a posterior splint, or a hinged knee brace [13]; the knee cap was used until 4 weeks.

Treatment includes relative rest and activity modification from the offending activity as guided by the level of pain, surgical intervention for Osgood-Schlatter disease was made because it's associated with redislocation; the re-dislocation of the patella is a strong indicator for surgical intervention [14]. In our case the patient had three episodes of re-dislocation and therefore patients with severe damage to the medial retinaculum and MPFL may require surgical stabilization [15].

A variety of surgical techniques have been introduced for the treatment of habitual dislocation of the patella. However, it has been known that combined procedures, not one single procedure, should be performed to achieve relatively satisfying treatment results. The patient was treated by a modified Roux-Goldthwait procedure (lateral retinacular release, medial transfer of the lateral patellar tendon without advancement, plication of the medial retinaculum, and advancement of the vastus medialis). Rarely the dislocation of patella may lead to full avulsion fracture in immature squeletic. For to limit the full avulsion fracture of TTA, we have reinforced the TTA with a transosseous suture. The physiotherapy combined to restriction of the physical activities while six months was done.

After 6 months, the patient's pain largely resolved and we have no recurrent dislocation of patella. The patient resumed sports activities after one year.

Conclusion

The traction and the overstress during each episode of dislocation of patella and every attempt reduction in the skeletal non matured of the distal attachment of the patellar tendon in adolescent female may caused the Osgood Schlatter's disease.

Limitation

This case report describes a single patient's experience in the diagnosis and treatment of an association recurrent dislocation of patella with Osgood Schlatter disease.

Contributors

All authors contributed the text of the manuscript.

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Competing Interests

None declared.

Patient Consent for Publication

Obtained.

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