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Operative Management (Bosworth Procedure) of Osgood – Schlatter Disease in an Adolescent Indian National Hockey Player: A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. Author NP designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author SV managed the analyses of the study. Author CM managed the literature searches. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Osgood-Schlatter's disease remains the most frequent cause of chronic knee pain in adolescent children although it is an uncommon disorder whose incidence is generally unknown. We report a 16-year-old boy who was national hockey player came to the clinic with his father complaining of recurrent both sided knee pain for one year without fever and limitation of ambulation. There was no history of trauma or previous injury to knees. Initially he was only aware of pain when playing hockey and relieved with rest but over time he began to experience pain at rest. Plain radiograph showed features of bilateral tibial osteochondrosis with right tubercle fragmentation suggesting Osgood-Schlatter's disease. We managed left knee conservatively and right knee surgically, both with good results.

Keywords: Young sportsperson; knee pain; bosworth procedure.

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1. INTRODUCTION

Osgood-Schlatter disease was first reported independently and simultaneously in 1903 by Robert Osgood and Carl Schlatter [1].

Osgood-Schlatter disease is a common cause of chronic knee pain in growing adolescents [2,3,4]. It is an inflammation of the area just below the knee where the tendon from the patella (patellar tendon) attaches to the shinbone (tibia).

Osgood-Schlatter disease most often occurs during growth spurts, when bones, muscles, tendons, and other structures are changing rapidly. Because physical activity puts additional stress on bones and muscles, children who participate in athletics — especially running and jumping sports - are at an increased risk for this condition. However, less active adolescents may also experience this problem [1].

The disease is self-limiting as about 90% of patients have complete symptom resolution approximately one year after onset of symptoms. In most cases of Osgood-Schlatter disease, simple measures like rest, hot fomentation, over-the-counter medication, and stretching and strengthening exercises will relieve pain and allow a return to daily activities [1,5,6].

A few cases however end up with residual anterior knee pain and problems with kneeling.

2. CASE REPORT

A 16-year-old boy who came to the clinic with his father and complaining of recurrent both sided knee pain for one year without fever and limitation of ambulation. There was no history of trauma or previous injury to knees. He first noticed pain and swelling below his patella one year before. Initially he was only aware of pain when playing hockey and relieved with rest but over time he began to experience pain at rest. He described it as a crushing pain with sharp exacerbation. Both patient and his father were concerned about his symptoms as he is a national level Hockey player.

Physical examination showed a well-nourished male adolescent in no obvious distress. Significant tenderness was noted at right knee especially at the tibial tubercles. There was however no limitation of movements around the knee joint. A tentative diagnosis of Osgood Schlatter's disease was made.

A plain radiograph of both knees joint was done. Right sided plain radiograph revealed soft tissue swelling of about 10mm thickness anterior to the tibial tuberosity. Tibial tuberosity was fragmented and non-united confirming the diagnosis of Osgood Schlatter. Osseous densities also noted in soft tissue in front of tibial tubercle. In left sided radiograph there was not any soft tissue swelling, but osseous densities were seen showing sub-acute phase of the disease.

Fig. 1. A plain radiograph of right knee showing separation of the tubercle, fragmented and non-united: Osgood Schlatter's disease

The patient received reassurance, was advised on rest and the avoidance of sporting activity and was placed on topical and oral non-steroidal anti-inflammatory drug and local ice application.

After 6 months, patient came for follow up with complaint of persisting pain over right knee. Patient had symptomatic relief over left knee. As he is a sportsperson, surgery is considered, and he was explained about the surgery. Patient was willing for surgery. Patient was admitted and planned for the surgery on next day. Routine investigations were done.

2.1 Operative Procedure (Bosworth Procedure)

Patient was given spinal anaesthesia. Scrubbing, painting and draping was done with aseptic precautions.

A 5 cm incision was taken over patellar tendon. Patellar tendon was divided longitudinally, and the tendon was elevated medially and laterally to expose superior part of tibial tuberosity. With an osteotome necrotic non united part of tuberosity was removed. Two holes were drilled into the tibial tuberosity—one near but not in contact with the proximal tibial physis and slanting proximally and laterally and the other also distal to the physis and slanting proximally and medially. 2 cm inferomedial from tibial tubercle, subcutaneous tissue separated, and bone was exposed. With an electrical saw and osteotome, two matchstick pegs 4 cm long from the tibia were cut in a way that the base of each peg remains larger than its tip. These two pegs were inserted into these holes, and their projecting ends were resected. Patellar tendon was sutured with vicryl 2-0 interrupted. Wound was closed in layers. A Light compressive dressing was applied. A slab was applied from mid-thigh to the toes for 6 weeks.

Regular follow up was done. After 6 weeks the slab was removed, and gradual physiotherapy was started.

Regular follow up was done up to six months. At 2 months the pegs are incorporated with the natural bone. And at the end of 3 months graft donor site is also reabsorbed.

At the end of six months Patient was doing full knee flexion- and relieved of all pain and started playing hockey again.

3. DISCUSSION

Since the first reports of Osgood Schlatter disease several decades ago, a characteristic clinical presentation has been observed. The disease more commonly occurs in male subjects with male to female ratio 3:1 [7].

Fig. 2. Immediate post-operative radiograph of right knee

Fig. 3. Complete knee flexion and extension without pain and healed scar mark at 6 weeks follow up

Fig. 4. A plain radiograph at the end of 6 months

The cause of the condition is thought to be excessive traction forces from the quadriceps muscle patellar ligament causing avulsion at the proximal tibial apophysis insertion; its association with the growth spurt may therefore be as a result of an imbalance between strong quadriceps contraction forces on the growing bone [8].

Generally, a relevant history and plain radiographs are often enough to make a confident diagnosis of the disease. In our patient, the combination of relevant history and the radiographic findings of fragmented tibial tubercle and patellar tendon oedema made for a straightforward diagnosis.

Regarding the treatment of patients with Osgood-Schlatter's disease, conservative measures result in excellent outcome in more than 90% of cases and comprise rest and restrain from strenuous activity for a relatively short period of time before self-resolution. Ice and non-steroidal anti-inflammatory drugs and pad to protect

tuberosity; application of a plaster cast if pain is severe.

Surgery is rarely indicated for Osgood-Schlatter disease; the disorder usually becomes asymptomatic without treatment or with simple conservative measures, such as the restriction of activities or cast immobilization for 3 to 6 weeks [9].

In cases in which pain persists into adulthood or when symptoms are uncontrolled and severe, surgery is recommended. Several surgical techniques have been described. The procedure includes removing the ossicles and/or tuber cleplasty. Surgical management of Osgood Schlatter's disease can be approached by open or arthroscopic excision.

In our patient, left sided disease was managed conservatively with good results within six months. But right sided disease remained unresolved. We performed Bosworth procedure with good results within six weeks. Both the line of treatments applied and managed successfully.

4. CONCLUSION

Though the surgery is rarely indicated, in sportsperson with unresolved sequelae of the Osgood-Schlatter's disease surgical excision of ununited ossicles should be considered keeping in mind early recovery and early mobilisation.

CONSENT

As per international standard informed and written participant consent has been collected and preserved by the authors.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Rathleff MS, Straszek CL, Blønd L, Thomsen JL. [Knee pain in children and adolescents]. Ugeskr. Laeg. 2019;181(13). [PubMed]
2. Patel DR, Villalobos A. Evaluation and management of knee pain in young athletes: Overuse injuries of the knee. Translational Pediatrics. 2017;6(3):190.
3. Oohashi Y. Developmental anomaly of ossification type patella partita. Knee Surg Sports Traumatol Arthrosc. 2015;23:1071-6.
   DOI: 10.1007/s00167-014-2887-7
4. Rothermich MA, Glaviano NR, Li J, et al. Patellofemoral pain: Epidemiology, pathophysiology, and treatment options. Clin Sports Med. 2015;34:313-27.
5. Wu M, Fallon R, Heyworth BE. Overuse injuries in the pediatric population. Sports Med Arthrosc. 2016;24:150-8.
6. Dutton RA, Khadavi MJ, Fredericson M. Patellofemoral pain. Phys Med Rehabil Clin N Am. 2016;27:31-52.
7. Murphy CE, Kenny CM. Not just for boys: A rare case of symptomatic Osgood-Schlatter disease in a skeletally mature woman. BMJ Case Rep. 2019;26:12(3). [PMC free article] [PubMed]
8. Siddiq MAB. Osgood-Schlatter Disease Unveiled Under High-frequency Ultra-sonogram. Cureus. 2018;10(10):e3411. [PMC free article] [PubMed]
9. Canale ST, Beaty JH. Campbell's operative orthopaedics e-book. Elsevier Health Sciences; 2012.

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