



## OSGOOD SCHLATTER DISEASE: A RARE CONDITION- A CASE STUDY

## Orthopaedics

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## ABSTRACT

**BACKGROUND:** Osgood Schlatter disease (OSD) classified as an apophysitis of the anterior aspect of the tibial tuberosity (ATT) is a rare condition in an active young athletes and is associated with growth spurts. The symptoms of Osgood Schlatter Disease imitate different condition and thus it has to be diagnosed rationally. Clinical features include mild to severe and intermittent or continuous pain, tenderness, swelling and limp while walking. Radiological features include enlarged and fragmented tibial tubercle. Treatment of Protection, Rest, Ice, Compression and Elevation (PRICE) protocol is generally given in the initial stages followed by the complete rehabilitation of person into sports.

**METHODS:** I present the case of a patient, fifteen-year-old boy presenting the symptoms of pain, tenderness, swelling and limp while walking. He was referred by general practitioner and he was on analgesics. His detailed evaluation was carried out and was diagnosed based on history, clinical findings and radiographic investigations as Osgood Schlatter Disease.

**TREATMENT:** A three phase rehabilitation treatment plan was developed which was typically aimed at return of patient as early as he can to the daily routine. In Acute phase, Ice and rest was given; In Recovery phase, strengthening of surrounding musculature was given.

**CONCLUSION:** Initial assessment, PRICE Protocol helps in treating Osgood Schlatter Disease. The causative factor must be looked upon while treating this condition.

## KEYWORDS

Osgood Schlatter disease, PRICE protocol, Patellar tendon, Tibial tuberosity.

## INTRODUCTION

Osgood-Schlatter disease (OSD) was first described by Robert Osgood and Carl Schlatter as painful overuse condition of the tibial tuberosity in 1903<sup>1</sup>. It is now classified as an apophysitis of the anterior aspect of the tibial tuberosity (ATT)<sup>2</sup>. It is a common condition in an active youth population<sup>3,4</sup>. The disease is associated with growth spurts, and may be bilateral in up to 30% of cases<sup>5</sup>. Boys are commonly affected than girls; in girls the condition appears at an early age around 11-13 years while in boys tend to appear 1-2 years later<sup>6</sup>. The prevalence is of 21% in group of athletic adolescents while it is 4.5% in same age group of non-athletic adolescents<sup>7</sup>. Sports where jumps (basketball, long jump), running (athletics), repeated contractions of knee extension apparatus (soccer, kick-box, dancing, skiing) are predominant, are considered to be important external risk-factor which could cause occurrence of Osgood-Schlatter disease<sup>7</sup>.

The initial hypothesis described the repetitive traction of the patellar tendon on the distal insertion as the main area of secondary ossification centre fragmentation and transitory necrosis<sup>8,9</sup>. The fragmentation of the ossification centre has been questioned as a definitive sign of OSD and has been seen as a normal development of the anterior tibial tubercle (ATT)<sup>10</sup>.

Factors which increase the likelihood of Osgood-Schlatter disease may include tight quadriceps (front thigh) muscle and tight hamstrings (back thigh) muscles. The clinical symptoms range from aching and soreness to swelling, severe pain and limping. The onset is gradual with mild intermittent pain, but in acute phase the pain may become severe and continuous<sup>1,2,10,11,12</sup>. The pain is exacerbated by physical activity that involves running, jumping and kneeling. On examination the findings are generally pain, tenderness and local swelling over the patellar tendon and tibial tuberosity<sup>12</sup>.

There is a three stage classification of Osgood Schlatter disease by Eric J. Wall<sup>13</sup>.

Diagnosis is made after clinical examination. The main feature of the clinical examination is painful and enlarged tibial tubercle with the surrounding soft tissue swelling, and painful and restricted mobility<sup>7</sup>. Before definitive diagnosis of OSD, other possible diseases must be considered in differential diagnosis for pain in front of the knee like Osteochondritis dissecans (OCD), Tibial tubercle avulsion fracture and Sinding-Larson-Johansson syndrome (SLJS)<sup>14</sup>.

Laboratory test are not required for diagnosis of OSD unless there is suspected inflammatory or other disease aetiology<sup>15</sup>. Knee x-ray examination snapshot shows enlarged and fragmented tibial tubercle<sup>15</sup>.

In most medical centres clinical examination of OSD diagnosis is sufficient and even routine ultrasound examination is not recommended. However, many authors believe that ultrasound examination should be

first option. Treatment for Osgood-Schlatter disease consists of reduced physical activity, analgesia and physical therapy.

Symptoms are typically self-limited, and patients can be instructed to gradually return to activity once the pain improves.

Complete recovery is expected when the tibial growth plate closes, although some patients who have recurrent symptoms into adulthood may require surgical treatment<sup>16</sup>.

## CASE STUDY

A 15-year-old boy came to our OPD complaining of right knee pain since 3 days which was progressively increasing with activities. The patient was a basketball player and there was no history about any trauma or knee pain. There were no systemic symptoms like fever. The patient gave the history of knee pain at first. Initially, there was less and tolerable pain, so he continued playing but later in the day the pain worsened. Later, walking got painful, so he went to a physician, who advised Physical Therapy and gave medications. The patient is on Diclofenac for two days, with no decrease in pain symptoms.

When he came to the OPD, the first sign was a limp in walking. Moreover, there was no complete knee extension while walking, the patient kept knee around 20°-30° of flexion. On palpation, there was warmth around the anterior aspect of knee below patella. There was tenderness over the patellar tendon and upper anterior tibia near tibial tuberosity. There was a localized soft fluctuating swelling around the patellar tendon and tibial tuberosity. Examination revealed no decrease in Range of Motion (ROM) and Strength, but movements were painful. Lateral view knee radiograph showed mild avulsion of tibial tuberosity.



Figure 1: Antero posterior view of the knee



Figure 2 Lateral view of knee demonstrating patellar tendon oedema (small arrow) and a sliver-like osseous density anterior to apophysis of the tibial tuberosity (large arrow).

Treatment was divided into Acute and Recovery period. In the acute period (3 weeks), the treatment consisted of PRICE protocol. The patient was asked to avoid the sporting activities and vigorous activities, Rest, icing for about 20 minutes, Immobilization for about 3 weeks and Elevation of the part was done. In the recovery period (2 weeks), the strengthening of quadriceps and hamstrings was incorporated with other exercises of hip and ankle with the infrapatellar strap.

Strapping reduces the force that is transmitted through the tendon to the Tibial Tuberosity. This 'off-loading' reduces the strain on the tendon which helps to relieve the symptoms of OSD. Further, infrapatellar strap was continued with proper warm up and strengthening of the corresponding musculature was recommended to avoid repetitive strains over the left knee.

#### DISCUSSION

Osgood-Schlatter Disease is the condition which occurs due to repetitive tensile-compressive stress and strain over the patellar tendon leading to fragmentation of ossification centre around tibial tuberosity. The clinical symptoms, examination and radiographic investigations are one of the important features to diagnose this condition.

The treatment of Osgood-Schlatter disease is symptomatic which includes administration of NSAID's and Physical Therapy. The treatment approach should also aim at reintroduction of player into the sports arena. When pain becomes tolerable it should be considered gradual increases in exercise levels, depending to symptoms, adjusting levels, and repeating this process as required. While the initial treatment serves favourable for PRICE protocol.

It is very important to educate the young athletes regarding important muscles for the sport, correct technique and balanced posture from the beginning, to avoid such conditions.

#### CONCLUSION

Clinical Presentations, History, Examination and Radiography are one of the important tools for diagnosis of this disease. The initial treatment with PRICE protocol is effective following up with the rehabilitation of athlete back into sports with the help of other members.

#### REFERENCES

1. Maher PJ, Ilgen JS. Osgood Schlatter Disease. BMJ Case Report. 2013.
2. Saily M, Whiteley R, Johnson A. Doppler ultrasound and tibial tuberosity maturation status predicts pain in adolescent male athletes with Osgood-Schlatter's disease: a case series with comparison group and clinical interpretation. British Journal of Sports Medicine. 2013; 47(2):93-97.
3. Caine D, DiFiori J, Maffulli N. Physical injuries in children's and youth sports: reasons for concern? British Journal of Sports Medicine. 2006; 40(9):749-60.
4. De Lucena GL, Dos Santos Gomes C, Guerra RO. Prevalence and associated factors of Osgood-Schlatter syndrome in a population-based sample of Brazilian adolescents. American Journal of Sports Medicine. 2011; 39(2):415-20.

5. Gholve PA, Scher DM, Khakharia S, et al. Osgood Schlatter syndrome. Current Opinion Pediatrics. 2007; 19(1):44-50.
6. Stanitski CL. Anterior Knee Pain Syndromes in adolescents. The Journal of Bone and Joint Surgery. 1993; 75(9):1407-1416.
7. Halilbasic .H, Avdic. D, Kreso. A, Begovic .B, Jaganjac .A, Maric .M. Importance of clinical examination in diagnostics of Osgood-Schlatter Disease in boys playing soccer or basketball. Journal of Health Sciences. 2012; 2(1): 21-28.
8. Kujala UM, Kvist M, Heinonen O. Osgood-Schlatter's disease in adolescent athletes. Retrospective study of incidence and duration. American Journal of Sports Medicine. 1985; 13(4):236-41.
9. Katz JF. Nonarticular osteochondroses. Clinical Orthopedic Related Research. 1981; 158:70-6.
10. Ducher G, Cook J, Lammers G. The ultrasound appearance of the patellar tendon attachment to the tibia in young athletes is conditional on gender and pubertal stage. Journal of Science Medicine and Sport. 2010; 13(1):20-23.
11. Hanada .M, Koyama .H, takahashi .M, Matsuyama.Y. Relationship between the clinical findings and radiographic severity in Osgood-Schlatter disease. Journal of Sports Medicine. 2012; 3: 17-20.
12. Kaya DO, Toprak U, Baltaci G, Yosmaoglu B, Ozer H. Long-term functional and sonographic outcomes in Osgood-Schlatter Disease. Knee Surgery Sports Traumatology and Arthroscopy. 2013; 21(5):1131-9.
13. Wall EJ. Osgood-Schlatter Disease: Practical treatment for a self-limiting condition. Physical Sports medicine. 1998; 26(3):29-34.
14. Lau LL, Mahadev A, Hui JH. Common Lower Limb Sports-related Overuse Injuries in Young Athletes. Annals Academy of Medicine. 2008; 37(4):315-319.
15. Bloom OJ, Mackler L, Barbee J. Clinical inquiries. What is the best treatment for Osgood-Schlatter disease? Journal of Family Practice. 2004; 53(2):153-156.
16. Weiler R, Ingram M, Wolman R. 10-Minute consultation. Osgood-Schlatter disease. BMJ. 2011; 343.
17. Cassas KJ, Cassettari-Wayhs A. Childhood and Adolescent Sports-Related Overuse Injuries. American Family Physician. 2006; 73(6):1014-1022.