



POSNA

The Core Curriculum

Osgood-Schlatter disease

Objectives

1. Define Osgood-Schlatter disease
2. Describe clinical symptoms and signs of Osgood-Schlatter disease
3. Describe the natural history of Osgood-Schlatter disease
4. Discuss imaging of Osgood-Schlatter disease
5. Discuss treatment of Osgood-Schlatter disease
6. Describe the ossification process of the tibial tubercle

Discussion

Osgood-Schlatter (OS) disease obviously retains the eponymic label from the first two men to describe the condition almost 100 years ago, even though it is not a disease. It is common, and usually presents between the ages of 10-15. Clinically, it is characterized by well localized pain to the patellar tubercle. The growth plate of the tibial tuberosity is unique, in that it is composed primarily of fibrocartilage and fibrous tissue. As the apophysis matures, ossification changes from membranous to enchondral. During the enchondral phase, the physis is less resistant to tensile stress, and failure may be manifested by fragmentation of bone at this site. Osgood-Schlatter disease is characterized by pain with kneeling and/or pain with activity involving quadriceps contraction. The relation of the patellar tendon to the patella has been studied rather extensively. Using the Insall-Salvati method, patella infera was noted with OS disease; using the Caton-Deschamps method, patella alta was noted. Those using the Caton-Deschamps method feel it is more suitable for skeletally immature patients. Dejour and Caton felt patella alta was part of a regional patellofemoral dysplasia. Radiographically, OS disease is characterized by fragmentation and/or prominence of the tibial tuberosity. Radiographic findings do not necessarily correlate with clinical symptoms and add little to management unless the diagnosis of OS disease is erroneous. The clinical picture of OS disease is so characteristic that a diagnosis can be made without radiography. Soft tissue changes, especially retropatellar bursitis have been noted on MRI, and it has been suggested that the soft tissue component is primarily responsible for symptoms rather than the bony fragmentation. Ultrasound can also reveal inflammatory changes.

The natural history of OS disease is benign, with almost all cases asymptomatic by skeletal maturity. Treatment is thus symptomatic, avoidance of kneeling or knee pads, maintenance of quadriceps strength by straight leg raising exercises, and rarely immobilization. Surgical treatment has been described for excision of a residual loose ossicle remaining at skeletal maturity with good results. Surgical treatment has also been described for the skeletally immature with refractory symptoms. The procedure, originally described by Fericot, consists of mobilizing the patellar tendon and excising the tibial tuberosity prominence. Series reporting favorable and unfavorable

results are listed in the references. Most authors do not consider surgery until skeletally maturity, and then only in a small minority.

References

1. Aparicio G, Abril JC, Calvo E, Alvarez L. Radiologic study of patellar height in Osgood-Schlatter disease. *Journal of Pediatric Orthopedics* 1997;17(1):63-6.
2. Binazzi R, Felli L, Vaccari V, Borelli P. Surgical treatment of unresolved Osgood-Schlatter lesion. *Clinical Orthopaedics & Related Research* 1993(289):202-4.
3. Caton J, Deschamps G, Chambat P, Lerat JL, Dejour H. [Patella infera. Apropos of 128 cases]. *Revue de Chirurgie Orthopedique et Reparatrice de l Appareil Moteur* 1982;68(5):317-25.
4. Caton J, Mironneau A, Walch G, Levigne C, Michel CR. [Idiopathic high patella in adolescents. Apropos of 61 surgical cases]. *Revue de Chirurgie Orthopedique et Reparatrice de l Appareil Moteur* 1990;76(4):253-60.
5. De Flaviis L, Nessi R, Scaglione P, Balconi G, Albisetti W, Derchi LE. Ultrasonic diagnosis of Osgood-Schlatter and Sinding-Larsen-Johansson diseases of the knee. *Skeletal Radiology* 1989;18(3):193-7.
6. Flowers MJ, Bhadreshwar DR. Tibial tuberosity excision for symptomatic Osgood-Schlatter disease. *Journal of Pediatric Orthopedics* 1995;15(3):292-7.
7. Jakob RP, von Gumpfenberg S, Engelhardt P. Does Osgood-Schlatter disease influence the position of the patella? *Journal of Bone & Joint Surgery - British Volume* 1981;63B(4):579-82.
8. Krause BL, Williams JP, Catterall A. Natural history of Osgood-Schlatter disease. *Journal of Pediatric Orthopedics* 1990;10(1):65-8.
9. Lancourt JE, Cristini JA. Patella alta and patella infera. Their etiological role in patellar dislocation, chondromalacia, and apophysitis of the tibial tubercle. *Journal of Bone & Joint Surgery - American Volume* 1975;57(8):1112-5.
10. Lanning P, Heikkinen E. Ultrasonic features of the Osgood-Schlatter lesion. *Journal of Pediatric Orthopedics* 1991;11(4):538-40.
11. Mital MA, Matza RA, Cohen J. The so-called unresolved Osgood-Schlatter lesion: a concept based on fifteen surgically treated lesions. *Journal of Bone & Joint Surgery - American Volume* 1980;62(5):732-9.
12. Nordstrom P, Nordstrom G, Thorsen K, Lorentzon R. Local bone mineral density, muscle strength, and exercise in adolescent boys: a comparative study of two groups with different muscle strength and exercise levels. *Calcified Tissue International* 1996;58(6):402-8.
13. Ogden JA, Southwick WO. Osgood-Schlatter's disease and tibial tuberosity development. *Clinical Orthopaedics & Related Research* 1976(116):180-9.
14. Ogden JA. Radiology of postnatal skeletal development. X. Patella and tibial tuberosity. *Skeletal Radiology* 1984;11(4):246-57.

15. Rosenberg ZS, Kawelblum M, Cheung YY, Beltran J, Lehman WB, Grant AD. Osgood-Schlatter lesion: fracture or tendinitis? Scintigraphic, CT, and MR imaging features. *Radiology* 1992;185(3):853-8.
16. Sen RK, Sharma LR, Thakur SR, Lakhanpal VP. Patellar angle in Osgood-Schlatter disease. *Acta Orthopaedica Scandinavica* 1989;60(1):26-7.
17. Trail IA. Tibial sequestrectomy in the management of Osgood-Schlatter disease. *Journal of Pediatric Orthopedics* 1988;8(5):554-7.
18. Yashar A, Loder RT, Hensinger RN. Determination of skeletal age in children with Osgood-Schlatter disease by using radiographs of the knee. *Journal of Pediatric Orthopedics* 1995;15(3):298-301.