February 2004 (Vol. 53, No. 2)

FROM THE FAMILY PRACTICE INQUIRIES NETWORK

What is the best treatment for Osgood-Schlatter disease?

O. Josh Bloom, MD, MPH*Leslie Mackler, MSLS*

Moses Cone Health System, Greensboro, NC

EVIDENCE-BASED ANSWER

Osgood-Schlatter disease is a common cause of pain and tenderness at the tibial tuberosity in active adolescents. It is typically a self-limited condition that waxes and wanes, but which often takes months to years to resolve entirely. It is best managed with conservative measures (activity modification, ice, anti-inflammatory agents) and time (strength of recommendation [SOR]: **B**, several case series and retrospective studies).

In chronic cases that are refractory to conservative treatment, surgical intervention yields good results, particularly for patients with bony or cartilaginous ossicles. Excision of these ossicles produces resolution of symptoms and return to activity in several weeks (SOR: **C**, several case series). Corticosteroid injections are not recommended (SOR: **C**, case reports and expert opinion).

EVIDENCE SUMMARY

No prospective, interventional studies evaluate the treatment of Osgood-Schlatter disease. One case series followed the natural course of the disease in 261 patients (365 symptomatic knees) for 12 to 24 months; 237 (90.8%) patients responded well to restriction of sports activity and nonsteroidal anti-inflammatory agents. The 24 patients who did not improve with conservative measures underwent surgical excision of ossicles, and all returned to normal activities (mean time, 4.5 weeks).[1]

In another case series of 118 patients (151 knees), 88% responded to intermittent limitation of activity (weeks to months) or cylinder casting if limiting activity was ineffective. The remaining 14 patients showed no improvement from these measures; all had surgical excision of an ossicle, sometimes combined with a tubercle-thinning procedure. Only 1 of these patients (7%) did not have complete relief and return to full activities at 6 weeks.[2]

Retrospective analyses also support a conservative approach. One retrospective survey of 68 young athletes with Osgood-Schlatter found they required an average of 3.2 months off all training and 7.3 months of some activity restrictions.[3] In another survey, 20 of 22 (91%) adolescent athletes with Osgood-Schlatter were able to

manage their symptoms with ice, aspirin, and mild activity modification. Only 2 needed to stop playing all sports for any period of time, and none required surgery.[4]

Another retrospective review analyzed 50 patients with Osgood-Schlatter (69 knees) for an average of 9 years. No treatments or activity restrictions were recommended. At time of follow-up, 36 (76%) had no limitations, but kneeling continued to be uncomfortable in 60%.[5]

No interventional studies have explicitly evaluated commonly recommended conservative treatments such as ice, analgesics, activity restriction, stretching, strengthening, or anti-inflammatory medication. Corticosteroid injections are generally not recommended, due to case reports of complications, primarily related to subcutaneous atrophy.[6] One small case series demonstrated improvement in Osgood-Schlatter disease pain in 19 of 24 (79%) knees after using an infrapatellar strap for 6 to 8 weeks.[7]

Refractory cases have been treated with a variety of surgical interventions. In 1 case series, 67 patients (70 knees) (mean age 19.6, 77% male) with at least 18 months of symptoms despite conservative treatment underwent resection of an ossicle (62 cases) or excision of prominent tibial tubercle (8 cases). These patients were followed for 2.2 years, with 56 (90%) patients with ossicle-resection able to return to maximal sports activity without pain, tenderness, loss of motion, or atrophy.[8]

Another case series compared 22 patients who1 underwent drilling of the tibial tubercle (with or without the removal of the tibial tubercle) with 22 patients who had excision of loose ossicles or cartilage. Seventeen of the 22 (77%) patients with ossicle excision had complete resolution of symptoms compared with 8 of the 22 (36%) in the patients who underwent tibial tubercle drilling.[9]

One surgical series evaluated excision of tibial tuberosity in 35 patients (42 knees) who did not improve with conservative treatment for an average of 13.25 months. For 37 of 42 knees (88%), patients reported complete relief of pain, and all returned to activity without limitation. The average time to return to sports was 15.2 weeks.[10]

RECOMMENDATIONS FROM OTHERS

The American Academy of Orthopaedic Surgeons and the American Academy of Family Practice recommend activity limitation, ice, anti-inflammatories, protective padding, quadriceps/hamstring strengthening, and time in the management of Osgood-Schlatter disease.[11,12]

CLINICAL COMMENTARY

James Barbee, MD

John Peter Smith Family Practice Residency Program, Ft. Worth, Tex

Few patients have poor results with conservative measures

Osgood-Schlatter disease is a common problem that all primary care physicians must be ready to recognize and treat. While the research (primarily surgical series) indicates that 10% to 12% of patients may not improve with conservative measures, I have not had

nearly that high a percentage of patients who require surgical intervention. Surgery is only offered after the tubercle attaches to the femur, or the tubercle fails to attach at all. In fact, I do not x-ray typical cases of Osgood-Schlatter disease unless evidence suggests patella tendon avulsion, or if parental concern is high. This means that, in most cases, the primary care physician has quite a while to try conservative measures before incurring the expense of radiography or an orthopedic consultation.

REFERENCES

1. Hussain A, Hagroo GA. Osgood-Schlatter disease. *Sports Exer Injury* 1996;2:202–206.
2. Mital MA, Matza RA, Cohen J. The so-called unresolved Osgood-Schlatter lesion. *J Bone Joint Surg Am* 1980;62:732–739.
3. Kujala UM, Kvist M, Heinonen O. Osgood-Schlatter's disease in adolescent athletes. Retrospective study of incidence and duration. *Am J Sports Med* 1985;13:236–241.
4. Beovich R, Fricker PA. Osgood-Schlatter's disease. A review of the literature and an Australian series. *Aust J Sci Med Sport* 1988;20:11–13.
5. Krause BL, Williams JP, Catterall A. Natural history of Osgood-Schlatter disease. *J Pediatr Orthop* 1990;10:65–68.
6. Rostron PK, Calver RF. Subcutaneous atrophy following methylprednisolone injection in Osgood-Schlatter epi-physitis. *J Bone Joint Surg Am* 1979;61:627–628.
7. Levine J, Kashyap S. A new conservative treatment of Osgood-Schlatter disease. *Clin Orthop* 1981;158:126–128.
8. Orava S, Malinen L, Karpakka JJ , et al. Results of surgical treatment of unresolved Osgood-Schlatter lesion. *Ann Chir Gynaecol* 2000;89:298–302.
9. Glynn MK, Regan BF. Surgical treatment of Osgood-Schlatter's disease. *J Pediatr Orthop* 1983;3:216–219.
10. Flowers MJ, Bhadreshwar DR. Tibial tuberosity excision for symptomatic Osgood-Schlatter disease. *J Pediatr Orthop* 1995;15:292–297.
11. Osgood-Schlatter disease (knee pain). American Academy of Orthopaedic Surgeons Web site. Last updated July 2000. Available at: **orthoinfo.aaos.org/fact/thr_report**. cfm?Thread_ID=145&topcategory=Knee. Accessed on January 14, 2004.
12. Osgood-Schlatter. Disease: A cause of knee pain in children. American Academy of Family Physicians Web site. Last updated March 2002. Available at: **familydoctor.org/handouts/135.html**. Accessed on January 14, 2004.

DRUG BRAND NAMES

Candesartan • Atacand
Felodipine • Plendil

Spironolactone • Aldactone

Valsartan • Diovan