Spontaneous avulsion of the tibial tubercle following Osgood-Schlatter lesion in an adult

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Abstract

Background and aim:

Osgood- Schlatter disease occurs predominantly in adolescent boys involved in active sports. Avulsion of tibial tuberosity with Osgood-Schlatter disease is rare but can occur in adolescence or younger.

Case report:

We describe the case of spontaneous avulsion of tibial tuberosity in a 49-year-old healthy male patient with no prior symptoms of this disease. After simple excision of the ossicle and uneventful postoperative care with partial weight bearing of 20 kg using two crutches for 4 weeks the patient had no more complaints at his final follow-up after 6 years.

Conclusion:

To our knowledge the reported case is the first one of spontaneous avulsion of the tibial tubercle following OSD in an adult. Simple excision of the fragment led to an excellent result and can be recommended.

Keywords: Osgood-Schlatter, spontaneous avulsion, tibial tubercle operation

Introduction

Osgood-Schlatter's disease (OSD) is characterized by pain, swelling, and tenderness in the anterior aspect of the proximal tibia. In boys, the condition appears between the ages of ten and fifteen years and especially affects those actively participating in sports. Surgical treatment of OSD, albeit rare, may occasionally be warranted if disabling symptoms persist (1 - 4). In previous literature, excision of the ossicle(s), with or without resection of the tibial tubercle prominence has been shown to yield better results than other methods (2, 3) (drilling, bone grafting, or refixation of the ossicle). Binazzi et al (5) examined the results of twenty-six knees, in both skeletally immature and mature patients, at an average of thirteen years after surgical treatment. They found that excision of the ossicles, with or without removal

of the prominent tibial tubercle, clearly yielded better results than did various other procedures. Spontaneous avulsion of the tibial tuberosity after skeletal maturity following OSD is an extremely rare condition (6). We describe here the first occurrence of this condition.

Case presentation

A 49-year-old healthy man with no medical history of OSD suffered spontaneous sharp pain in his left knee and consecutive swelling when walking on even ground. The patient's height was 183 cm, he weighed 85 kg with a body mass index of 25.4. There were no signs of osteochondrodysplasia and there was no history of fracture. He had no early history of trauma or unaccustomed heavy work. Physical examination revealed swelling and tenderness in the region of the tibial tuberosity. No effusion of the knee joint could be palpated; collateral and cruciate ligaments were stable; range of motion was limited to extension / flexion 0/0/40°. The patient could lift his stretched left leg. Lateral x- ray of the left knee (Fig.1) and MRI (Fig.2) showed avulsion of the tibial tuberosity of an unresolved OSD. After simple excision of the ossicle and uneventful postoperative care and partial weight bearing of 20 kg using two crutches for 4 weeks, the patient had no more complaints at his last follow-up after 6 years. Lateral X-ray revealed (Fig.3) the status after excision of the ossicle. At the final follow-up there was no local tenderness and the range of motion of the left knee was extension / flexion 5/0/140°. The stretched left leg could be raised easily. When walking, the patient did not limp.

Discussion

Osgood-Schlatter's disease (OSD) was first described a little more than 100 years ago as chronic avulsion injury caused by repetitive microtrauma and traction of tibial tuberosity (7). It almost always occurs in adolescents involved in sports activities and can be bilateral in 50 % of cases (8). Although various theories about its cause exist, most recent focus has been on the soft tissue component with the suggestion that insult occurs at the anterior aspect of the tibial tubercle where the patellar tendon attaches to the tibia (9) in contrast to the generally accepted theory of Ogden and Southwick who described avulsion of secondary ossification centre of the tibial tuberosity (10). The radiographs may be either normal or show fragmentation of tibial

tuberosity with ossicles. Although conservative treatment is the mainstay and symptoms usually subside with rest and restriction of sports in the majority of patients, surgery is advisable when conservative treatment fails (11). Pihlajamäki HK et al (1) made a large retrospective study of 107 patients who had been managed surgically by excision of the ossicle(s) with or without resection of prominent tibial tuberosity, and they found good long term results with no deleterious results. The median age of surgery in their group was 20 (range 18 - 29) with the duration of their symptoms ranging from 1 - 14 years. The main indication for surgery in their group was persistent symptoms despite conservative treatment.

Avulsion fractures of tibial tuberosity occurring after forceful physical activity or violent trauma (12) such as a fall from a height are rare but have been reported even bilaterally in a few cases (13). The usual age group of occurrence is adolescence and usually patients have been found to indulge in strenuous activities despite medical advice to the contrary. All previous cases published cases were symptomatic and had been diagnosed in the past except for one case of asymptomatic bilateral avulsion with preexisting OSD reported by Ogden et al (14). The patient had not been diagnosed prior to presentation which is similar to our case but of younger age. Our case depicts an atypical presentation approximately more than 30 years after the occurrence of OSD with no history of trauma or forceful knee contraction.

However, in a few cases knee pain has been found to persist whether treatment is conservative or surgical (1,15). Despite resolution of symptoms, mobile osseous fragments fail to unite in approximately 10% of cases and cause pain during direct pressure on the tubercle and upon kneeling, as reported in a few studies (4). Despite surgical removal of ossicles, recurrent ossicle formation has been found with the passage of time in a few patients, but most were asymptomatic (1). In our patient there were no symptoms or any prior surgery for OSD or any knee pain which is quite different from cases already published in the literature.

The period between a diagnosis of OSD and the occurrence of avulsion fracture ranges from a few weeks to 1 year (16, 17). Therefore a period of relative rest is advised with restricted sports activity until there is physeal fusion or radiological healing, since, as a rule, there is healing at skeletal maturity. In our case the patient

had an avulsion fracture at 49 years of age which was unusual and which had not been reported before. We agree with Niremberg et al (18) that surgical excision of the symptomatic mobile fragment should be undertaken. At his 6 years' follow-up our patient had normal quadriceps strength and normal range of motion.

Conclusion: To our knowledge the reported case is the first one of spontaneous avulsion of the tibial tubercle following OSD in a healthy adult. Simple excision of the fragment led to an excellent result and can be recommended.

Consent Disclaimer:

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

Ethical Disclaimer:

As per international standard or university standard written ethical permission has been collected and preserved by the author(s).

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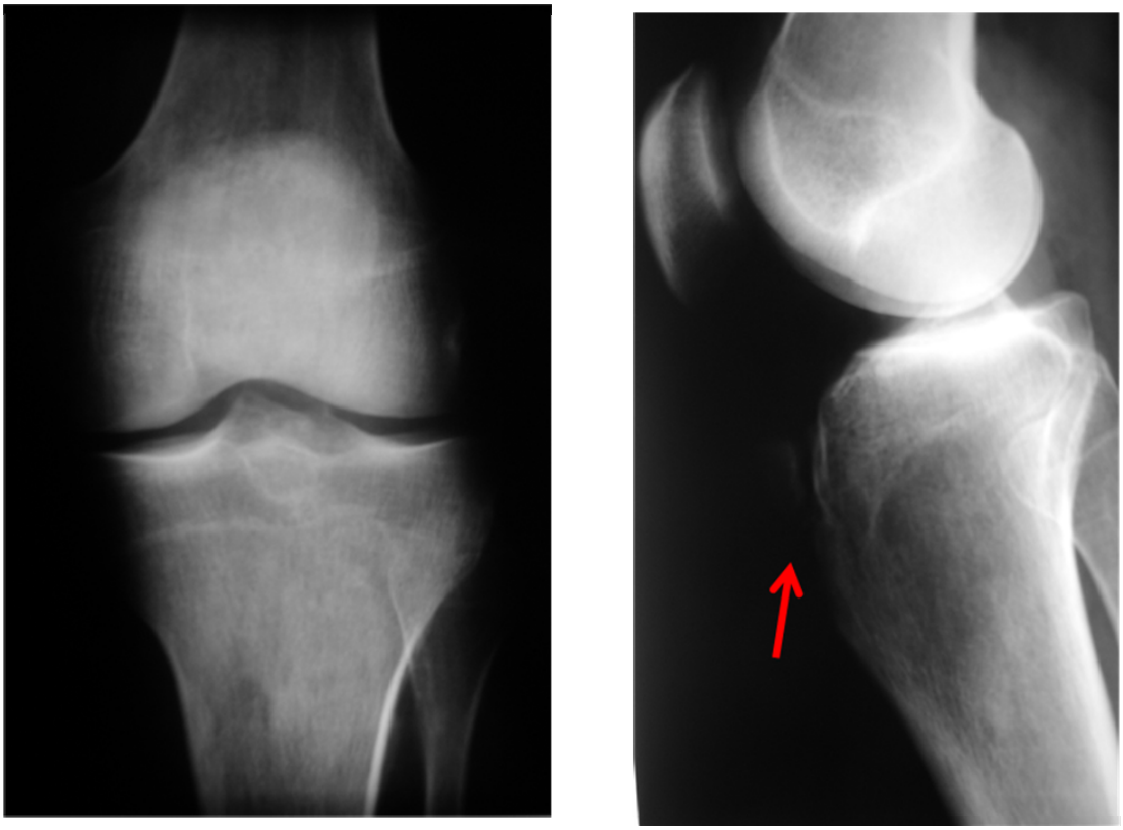
187 Figures



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189 Figure 1: X- ray of the left knee ap (a). The lateral view (b) shows an avulsion of the

190 tibial tubercle following Osgood- Schlatter's disease (red arrow)

1

Figure 2: MRI of the left knee reveals an avulsion of the tibial tubercle following Osgood- Schlatter's disease with surrounding fluid

Figure 3:

Lateral X-ray of the left knee shows the status after excision of the unresolved Osgood-Schlatter.