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Osteochondroma of the Distal Tibia Complicated by a Tibialis Posterior Tendon Tear

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ABSTRACT

Osteochondroma of the bone can irritate the overlying soft tissue, resulting in pain and discomfort. Rarely, a tendon tear can occur by an impinging bony mass. We report a case of osteochondroma of the distal tibia in a 23-year-old female patient that was complicated by a partial tear of the tibialis posterior tendon. She was treated with excision of the bony mass combined with tendon debridement and repair. The follow-up examination at 5 years postoperatively showed successful results.

An osteochondroma is 1 of the most common benign bone tumors and usually occurs at the metaphyses of the long bones. The patients complain mostly of a painless mass in the involved bone. Sometimes, pain will be the main symptom, in which case the possibility of malignant transformation should be excluded. Some have reported painful snapping around the knee owing to an impinging osteochondroma (1–3). We present an interesting case of a partial tear of the tibialis posterior tendon secondary to a pedunculated osteochondroma of the distal tibia in a 23-year-old female patient. To our knowledge, this is the first report of a tear of the tibialis posterior tendon caused by an impinging osteochondroma.

Case Report

A 23-year-old female patient presented to our hospital with pain in her right ankle. She had experienced a sudden pain over the posteromedial aspect of the distal lower leg 3 weeks previously. The pain had not subsided thereafter. She recalled no history of trauma in the ankle. On physical examination, a 1 × 2 cm bony hard protrusion was noted. She could not perform a single heel rise owing to pain and weakness. Mild tenderness was present over the mass, with a weakness of ankle plantarflexion and foot inversion. Plain radiographs showed a 2-cm long, narrow-stalked bony protrusion at the posteromedial aspect of the distal tibia (Fig. 1). Magnetic resonance imaging (MRI) was performed for the suspicion of an osteochondroma combined with a possible tear of the tibialis posterior tendon. The T_1- and T_2-weighted MRI scans revealed that the bony mass was abutting the tibialis posterior tendon, in which some signal changes were noted, suggesting the possibility of a tendon tear. On the axial MRI views, splitting of the tibialis posterior tendon by the impinging bony mass was noted (Fig. 2). The cartilage cap was 3 to 4 mm thick on the T_2-weighted coronal MRI scan (Fig. 2*E*).

Fig. 1. Plain oblique radiograph of the right ankle showing a narrow, long, bony protrusion at the posteromedial aspect of the distal tibia.

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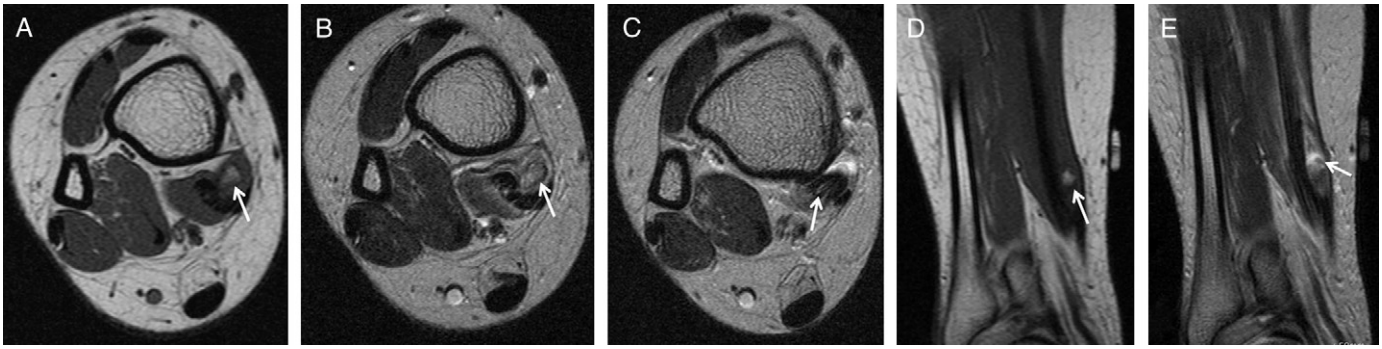

Fig. 2. (*A*) T_1-weighted axial magnetic resonance imaging (MRI) scan showing bony mass *(arrow)* displacing the tibialis posterior (TP) tendon. (*B*) T_2-weighted axial MRI scan at the same level showing the bony mass *(arrow)* and TP tendon. (*C*) T_2-weighted axial MRI scan at the level of the distal conjoined TP tendon showing the osteochondroma and TP tendon *(arrow)*, in which signal changes are noted, suggesting the tendon tear. (*D*) T_1-weighted coronal MRI scan showing tip of bony mass *(arrow)* protruding within the TP tendon and muscle. (*E*) T_2-weighted coronal MRI scan clearly showing osteochondroma *(arrow)* with overlying cartilage cap abutting the TP tendon.

With the diagnosis of an osteochondroma with a partial tear of the tibialis posterior tendon, surgery was performed. A 7-cm long longitudinal incision over the posteromedial aspect of the ankle exposed a $2 \times 1 \times 1$ cm osteocartilaginous mass (Fig. 3). The tibialis posterior tendon was torn longitudinally, with some degeneration on its surface. Marginal excision of the bony mass was performed, and the torn tendon was debrided and repaired with 3-0 absorbable suture (Fig. 3*B*). Histologic studies of the specimen confirmed the diagnosis, showing a cartilage cap and perichondrium over the bony outgrowth (Fig. 4).

Postoperatively, a short leg cast was applied for 4 weeks. Muscle-strengthening exercises and weightbearing as much as tolerated were allowed at 6 weeks postoperatively. The histologic findings confirmed the diagnosis of an osteochondroma. At 5 years postoperatively, the patient remained symptom free without any radiologic signs of tumor recurrence (Fig. 5*A*). She experienced no discomfort in her daily activities of living and could perform the single heel rise without difficulty (Fig. 5*B*).

Discussion

Osteochondromas usually arise from the metaphyses of the long bones in children and adolescents (4). A slight male predominance has been reported, with a male/female ratio of 1.6:1 (5). The bones of the lower extremities are affected more frequently than those of the upper extremities, with an approximate 2:1 ratio. Osteochondroma is classified into 2 types: a broad-based sessile type and a narrow pedunculated type with a "stalk." The latter is more commonly termed an "exostosis" (5). Rarely, malignant transformation to chondrosarcoma can occur (6,7). The prevalence of reported malignant transformation has varied from less than 1% for solitary osteochondromas to 2% to 5% for hereditary multiple exostosis (8,9). One study, however, reported that the risk of malignancy in 175 cases of hereditary multiple exostosis was quite modest (0.57%) (10). A major consideration in determining the malignant potential of an osteochondroma is the thickness of its cartilage cap; malignant transformation occurs with cartilage cap thicknesses greater than 1 to 3 cm (9,11). It is known that the cartilage cap, not typically detected on plain radiographs, is seen well on T_2-weighted MRI scans as a region of high signal owing to the high water content in the nonmineralized portions (8,12). In the present case, a cartilage cap of up to 4 mm in thickness was noted on the T_2-weighted coronal MRI scan, suggesting its benign nature.

The complications of osteochondromas include vascular compromise, neurologic disturbance, and irritation to the overlying soft tissues (4). Vascular and nerve disturbances due to osteochondromas have been reported, especially around the knee (2,13). Nerve entrapments are rarely reported for the radial and axillary nerves (14,15). Sometimes, an inflamed soft tissue covering the exostosis causes symptoms and can develop a "snapping" problem (3). Occasionally, an osteochondroma can also irritate the overlying tendon, resulting in pain or discomfort. Cho et al (16) reported an avulsed rupture of the distal biceps tendon caused by an osteochondroma of the bicipital tuberosity of the humerus. Reize and Buess (17) reported a case of subscapularis tear caused by a humeral osteochondroma. In the lower extremity, a tendon tear caused by an impinging exostosis has not been previously reported. Acute injuries of the tibialis posterior tendon are rare and

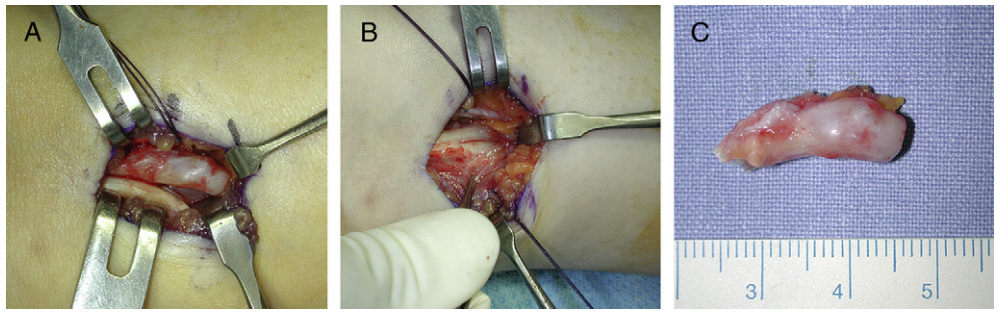

Fig. 3. Intraoperative photographs showing (*A*) a whitish osteocartilaginous mass under the tibialis posterior tendon and (*B*) longitudinally torn tibialis posterior tendon. Some abrasions were noted on the surface of the tendon. (*C*) A $2 \times 1 \times 1$ cm osteocartilaginous mass was completely excised with the surrounding perichondrium.