

CASE REPORT

Extensive Osteochondroma of Talus Presenting as Tarsal Tunnel Syndrome: Report of a case and Literature Review

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Abstract

Osteochondroma or exostosis is the most common benign bone tumor, and occurring frequently in the proximal humerus, tibia, and distal femur. It rarely affects talus. Osteochondroma of talus is a very rare etiology of tarsal tunnel syndrome (TTS). We report a rare case of extensive osteochondroma of the talus in a 60 year old female presenting with multiple swellings around the ankle and symptoms suggestive of tarsal tunnel syndrome. En-block excision of the multiple masses was done. Histopathological examination confirmed the diagnosis of osteochondroma. Although most of the osteochondromas are being treated conservatively, those presenting with multiple swellings, restriction of movements and compressive neuropathies should be treated with surgical excision. Excision is a successful method of treatment for symptomatic osteochondromas with low recurrence.

Key Words: Exostosis, Osteochondroma, Talus, Tarsal tunnel syndrome

Introduction

An osteochondroma or exostosis is a benign bone tumour consisting of a bony outgrowth covered by a cartilage cap that occurs commonly in the metaphysis of long bones such as distal femur, proximal tibia, proximal humerus and in the pelvis (1). Osteochondroma is the most common benign tumor of bone. It is commonly seen in children and young adults (2). An osteochondroma occurring in the talus is very rare. There are only a few case reports of solitary talar osteochondroma. We report an elderly patient with extensive multiple osteochondromas of the talus presenting as tarsal tunnel syndrome.

Case description

A 60 year old female complained of pain, swelling, burning sensation and tingling over the right foot since one year. She also had numbness in the right foot radiating to the first toe. Pain was insidious in onset, dull aching, radiating to the leg and toes; aggravated on walking initially and gradually progressed in severity to rest pain.

Patient also complained of swelling around the ankle

[Figure 1]. The swelling was initially little and progressed gradually to the size of marbles. Pain appeared much before the swelling. There was occasional edema of the foot that increased with walking and reduced with rest and limb elevation.

Patient's history and a positive Tinel's sign suggested the possibility of tarsal tunnel syndrome.

On examination there were multiple bony hard swellings felt around the ankle just below the medial and lateral malleolus. Range of motion of the ankle was restricted. Patient had 5 degrees of dorsiflexion and 10 degrees of plantar flexion with firm end points. The tibialis posterior, dorsalis pedis and tibialis anterior arteries were well felt. Reduced sensation over the first three toes was noted. There was no motor weakness.

Routine laboratory investigations were within normal limits. Radiographs showed multiple bony growths of various sizes from the talar body, neck and anterior process [Figure 2]. A CT scan with 3D-reconstruction was done, which showed the presence of multiple exophytic growth from the talus more on the lateral and posterior aspect of talus extending into the surrounding soft-tissue in all directions; smallest being 2mm x 6 mm and

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Figure 1. Clinical photograph of the right heel showing the swelling around the ankle.

the largest 3 cm x 4 cm arising from the posterior aspect of the body of the talus [Figure 3; 4]. The tibio-talar, subtalar, talo-navicular joint space and surrounding bones were relatively normal. A possible diagnosis of multiple extensive exostosis of talus was made.

With a clinical diagnosis of tarsal tunnel syndrome, an MRI was planned to assess for surrounding soft-tissues and nerve compression, but the patient was claustrophobic, hence MRI was deferred.

Nerve conduction studies showed slowing of the motor and sensory latencies of the posterior tibial nerve indicating focal compression of the nerve at the ankle.

Patient was taken up for excision of exostosis. In view of extensive exostosis on the posterior and lateral side of the talus, it was decided to approach the talus from the postero-lateral side. A 10 cm curvilinear incision



Figure 2. Radiographs of the antero-posterior view of the ankle showing a bony outgrowth from the lateral aspect of talus just below the lateral malleolus (arrow). Lateral view shows a large bony outgrowth from the posterior aspect of the body of the talus (arrow).

was made on the lateral aspect of the ankle extending 6 cm proximal and 4 cm distal to the lateral malleolus about 1.5 cm behind the posterior border of fibula. Extensive growth of cartilage capped bony masses were seen encompassing the peroneal tendons [Figure 5]. The outgrowths from the talar posterior and lateral side were removed en-bloc.

Medial curvilinear incision measuring about 8 cms was made on the postero-medial side of the ankle extending 4 cms proximal and 4 cms distal to the medial malleolus about 1.5 cms behind the posterior border of tibia. The posterior tibial artery, tibial nerve, and tendons of the tibialis posterior, flexor digitorum longus, and flexor hallucis longus muscle tendons which travel as a bundle through the tarsal tunnel were found entrapped between the medial malleolus and the exophytic masses. The outgrowths from the talar postero-medial and medial surface were removed en-bloc.

About 10-12 pieces of bony outgrowths were removed [Figure 6]. The completeness of removal was checked under C-arm fluoroscopy.

Histopathological examination revealed characteristic mature primary trabecular bone covered with cartilaginous cap consisting of hyaline cartilage with well-defined perichondrium around the cartilage cap. Linear clusters of active chondrocytes were seen having thin cartilaginous cap covering the lesion only 2-3 mm thick [Figure 7], suggestive of osteochondroma. No signs of malignant transformation were seen in any of the resected specimens.

Post-operative period was uneventful. Post-operative radiographs showed complete excision of the mass [Figure 8]. Patient's symptoms subsided post-operatively. Patient was started on full weight bearing on the 3rd post-operative day. At the end of 2 years of follow-up, patient was asymptomatic with ankle range of motion of 30 degrees of dorsiflexion and 40 degrees of plantar flexion. Radiographs showed no recurrences.

Discussion

Tarsal tunnel syndrome (TTS), also known as posterior tibial neuralgia, is a condition in which there is painful compression neuropathy of foot where the tibial nerve is compressed as it travels through the tarsal tunnel. The posterior tibial artery, tibial nerve and tendons of the tibialis posterior, flexor digitorum longus, and flexor hallucis longus travel in the flexor retinaculum through the tarsal tunnel. Inside the tunnel, the nerve divides into three branches. One branch (calcaneal) continues to the heel, the other two (medial and lateral plantar nerves) continue on to the bottom of the foot on either sides. Some of the common causes for TTS are inflammation of the tendon sheath, nerve ganglions, cysts, bone spurs, or malunion of medial malleolus fracture (3). In our case, the patient presented to us with painful hard swellings around the ankle with a limitation of ankle motion. She had numbness in the right foot radiating to the first toe. Tinel's sign was positive suggestive of tarsal tunnel syndrome. Osteochondroma of the talus is a very rare cause of TTS and to our knowledge, osteochondroma of the talus presenting as TTS has not been reported

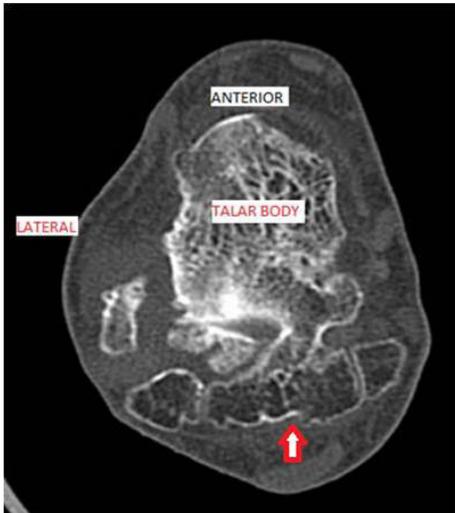


Figure 3. Computerized Tomography (CT) image of axial section of talus demonstrating a well-defined pedunculated bony outgrowth with irregular margins arising from the posterior part of talus (Arrow).



Figure 4. Coronal CT image of right ankle joint showing a bony outgrowth from the lateral aspect of the body of talus (circled).



Figure 5. Intra-operative photograph of the lateral approach showing the peroneal tendons (dotted lines) being entrapped between the osteochondral mass.



Figure 6. Excised multiple bony outgrowths from the talus.

previously in the literature.

Osteochondromas are solitary or multiple, pedunculated or sessile exophytic outgrowths from the bone surface that are composed of cortical and medullary bone with an overlying hyaline cartilage cap, representing the most common primary bone tumors (5). It constitutes about 36% to 41% of all benign bone tumors (5). In a report of series of 783 osteochondromas, only 15 osteochondromas were encountered in the tarsal region, and 10 of these were in the calcaneus (6). An osteochondroma in the talus is very rare (4).

An osteochondroma of the talus was first reported in 1984 by Fuselier et al. (7). In 1987, Chioros et al. (8)

reported an atypical osteochondroma that originated from the posterior aspect of the talus in a 34-year-old male. Erler et al. (9) reported a case of an osteochondroma located on the dorsum of the talus.

Most of the cases reported in literature suggest solitary sessile or pedunculated osteochondroma arising from the neck or body of the talus whereas we encountered multiple bony outgrowths from the talus resulting in TTS and restriction of range of motion.

Osteochondromas are usually asymptomatic. Pain is usually caused by pressure and friction against the nerves and bones resulting in possible nerve irritation or a block of joint motion (5).

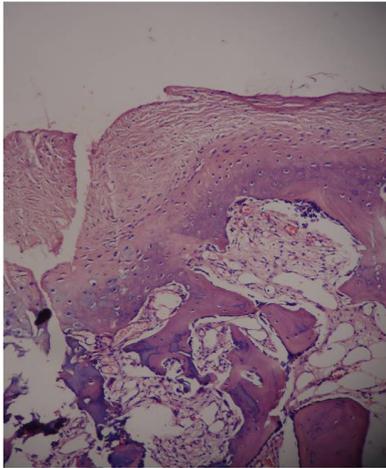


Figure 7. Decalcified section with Haematoxylin & Eosin staining showing fibrous covering, cartilaginous cap with underlying mature bony trabeculae.

Surgical treatment of osteochondromas consists of simple removal; Boya et al. reiterated the importance of extra- periosteal complete resection of the cartilaginous cap to prevent recurrence (10). In our case excision was done, the bony outgrowths were removed from the medial, lateral and posterior aspect of the talus.

Conclusion

Osteochondromas of the talus presenting as TTS is a rarity by itself. Although most of the osteochondromas are being treated conservatively, those presenting with multiple swellings, restriction of joint movements and



Figure 8. Post operative radiographs showing the complete excision of the tumor.

presenting as compressive neuropathies should be treated with surgical excision. Excision is a successful method of treatment for symptomatic osteochondromas with low recurrence.

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