DOI: https://doi.org/10.30795/jfootankle.2022.v16.1605

Case Report

Posterior osteochondroma of the talus as posterior ankle impingement syndrome: a case report

Eli Ávila Souza Júnior[1]

1. Universidade Federal de Alfenas, Alfenas, Minas Gerais, Brazil.

Abstract

Posterior ankle impingement syndrome is a common cause of ankle pain. Posterior osteochondroma of the talus is very rare and scarcely described in the literature, although it should always be considered an etiological hypothesis of posterior impingement. As for surgical treatment, both endoscopic and open approaches are reported as therapeutic options. The endoscopic approach, however, provides advantages over open procedures. Although little data has been published, it is believed that the former has more advantages. I report a rare case of posterior osteochondroma of the talus in a young man, clinically manifested as posterior ankle impingement syndrome and treated endoscopically.

Level of Evidence V; Diagnostic Studies; Expert Opinion.

Keywords: Ankle joint; Arthroscopy; Osteochondroma.

Introduction

Posterior ankle impingement syndrome is a common cause of ankle pain. Symptoms include pain, hyperesthesia in the posterior aspect of the ankle, and limited range of motion for plantar flexion[1] . An os trigonum is a major etiological hypothesis, as it originates from a stress fracture of the Stieda process or failed fusion of the secondary ossification center of the lateral tubercle of the talus[1].

Osteochondroma is a very common bone tumor, accounting for 20-50% of all benign bone tumors, and 10-15% of all bone tumors[2]. However, posterior talus osteochondroma is particularly rare and poorly described in the literature[3]. Fuselier et al.[4] first described it in 1984.

I report a rare case of posterior osteochondroma of the talus manifested as posterior ankle impingement syndrome.

Case description

This case report was approved by the Research Ethics Committee linked to the Plataforma Brasil of the institution.

A 30-year-old man with hypertension, working as an automotive mechanic, reported pain and discomfort in the posterolateral region of the right ankle for 1 year in 2017. He rated his pain as 8 out of 10 on a visual analog scale (VAS). He had no history of trauma or incidents. The patient reported that the pain increased with walking, standing upright, and applying manual pressure on the posterolateral region of the ankle. Six months earlier, he had noticed a small mass in the posterolateral region with occasional instances of inflammation at the site, when he made his first appointment to see an orthopedist. He received medical treatment from other orthopedists for 6 months, including physiotherapeutic measures, immobilization, and the use of nonsteroidal anti-inflammatory drugs, with no improvement.

Clinical evaluation showed a normal gait pattern without claudication and no foot deformity with weight-bearing. Physical examination revealed edema in the posterolateral region of the right ankle. No mass lesion was palpated on the ankle, but his pain increased with palpation of the posterolateral margin of the tibiotarsal joint. Regarding mobility, a 10-degree restriction of ankle plantar-flexion was observed, with increased pain with forced flexion of the ankle. Neurovascular examination was unremarkable.

Study performed at the School of Medicine, Universidade Federal de Alfenas, Alfenas, Minas Gerais, Brazil.

Correspondence: Eli Ávila Souza Júnior. Alameda Libânio, 72, Jardim da Colina, Alfenas, 37133-624, MG, Brazil. **E-mail:** elijr42@yahoo.com.br. **Conflicts of interest:** none. **Source of funding:** none. **Date received:** January 18, 2022. **Date accepted:** March 04, 2022. **Online:** April 30, 2022.

How to cite this article: Souza Júnior EA. Posterior osteochondroma of the talus as posterior ankle impingement syndrome: a case report. J Foot Ankle. 2022;16(1):85-8.

Ankle radiographs showed a well-defined, extra-articular, radiopaque mass in the posterior aspect of the ankle (Figure 1). Magnetic resonance imaging (MRI) showed a well-defined mass with a characteristic bone signal surrounded by a lamina seen as a cartilage-like signal, with adjacent T2-weighted hypersignal typical of inflammatory fluid (Figure 2).

Given the clinical and imaging suspicion of posterior ankle impingement syndrome due to a benign-looking tumor with evident mass effect of unknown etiology, a posterior endoscopic approach was recommended for simultaneous diagnostic and therapeutic applications.

In May 2021, the patient underwent posterior endoscopy of the right ankle using the standard posterolateral and posteromedial portals, as described by van Dijk et al.[5] (Figure 3). An extensive extra-articular inflammatory process was visible in the posterior aspect of the ankle, in addition to a well-defined bone mass surrounded by cartilage and adjacent to the posterolateral process of the talus.

Extensive extra-articular debridement of the posterior aspect of the ankle was performed. The bone mass was fragmented to 2 small fragments and 1 main segment for removal. The resected material was sent for histopathological examination in a laboratory (Figure 4).

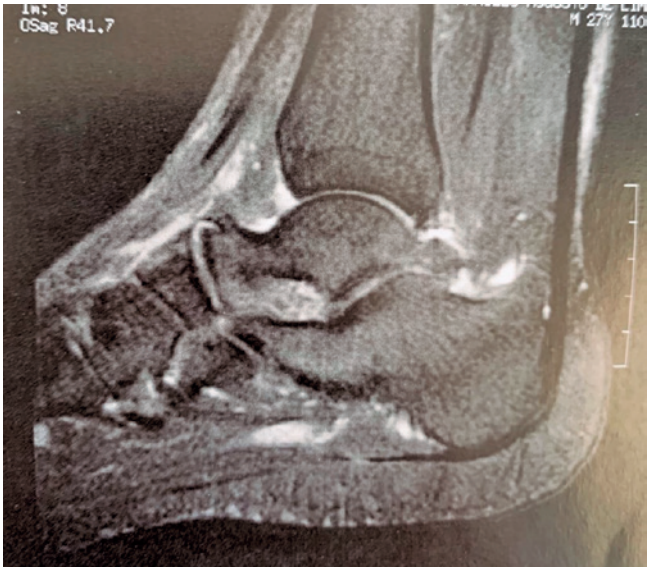

Figure 2. T2-weighted sagittal MRI scan showing a mass with a signal compatible with bone surrounded by cartilage and inflammatory fluid.

Figure 1. Lateral radiograph of the right ankle showing a well-defined, extra-articular, radiopaque mass in the posterior aspect of the ankle.

Figure 3. Two-portal (posterolateral and posteromedial) endoscopic approach of the ankle.

One week later, at the first follow-up visit, the patient reported improvement in pain and satisfaction with reduced hypersensitivity of the posterior ankle. At the 3-week follow-up visit, histopathology revealed 3 fragments of mature neoplastic mesenchymal cells with proliferation of trabecular bone covered with hyaline cartilage cap, measuring 2.0 x 2.0 x 0.5cm. There was no evidence of malignancy, and the findings were compatible with osteochondroma. Three months later, after physical therapy, the patient had significant improvement of the impingement syndrome symptoms, with no significant pain or functional complaints, with a VAS pain score of 1 out of 10. There was complete recovery of range of motion, which was symmetric to the contralateral side. An ankle radiograph showed no evidence of tumor recurrence (Figure 5).

Discussion

Posterior ankle impingement syndrome is a common cause of chronic ankle pain. It results from compression of osseous structures or soft tissues during plantar flexion. The causes and anatomical and pathological conditions are heterogeneous, as several pathological conditions can cause posterior impingement syndrome. Os trigonum, malunion of posterior malleolus fractures, increased posterior tibial slope, and talocalcaneal coalition are some of these causes[1]. This case report shows that, although rare, a benign bone tumor of the talus should be considered an etiological hypothesis.

Most osteochondromas are asymptomatic and often diagnosed incidentally. In general, they are more common in the knee, but when located in the talus, they occur more frequently in the dorsal region[6]. As reported here, in the posterior region, they can manifest as posterior ankle impingement syndrome causing pain, edema, and hypersensitivity, which worsen with prolonged standing and maximal forced plantar flexion. In 1984, Fuselier et al.[4] published the first case report of osteochondroma of the talus and conducted a review of cases with symptoms similar to those reported in this case.

An os trigonum is undoubtedly one of the most prevalent etiological hypotheses of posterior impingement syndrome. Radiographic studies of normal feet and ankles have shown a prevalence of os trigonum of 14% to 25% in the general population[1]. The clinical and imaging features of os trigonum and posterior talus osteochondroma may be very much alike; however, to date, no study has explored their differences, especially in terms of anatomy and pathology. An os trigonum can be seen on MRI as fibrous, fibrocartilaginous, or cartilaginous tissue, connected or not to the talus[1]. As described in the present case, the osteochondroma was histopathologically classified as a mature mesenchymal neoplasm characterized by proliferation of trabecular bone covered with hyaline cartilage cap, with no evidence of malignancy.

The reported incidence of malignant transformation of solitary osteochondromas ranges from 1% to 2%[7]. There are no reports of malignant transformation of solitary osteochondromas of the talus. In the case reported by Kulkarni[8], because there was no evidence of increase in pain or local swelling,

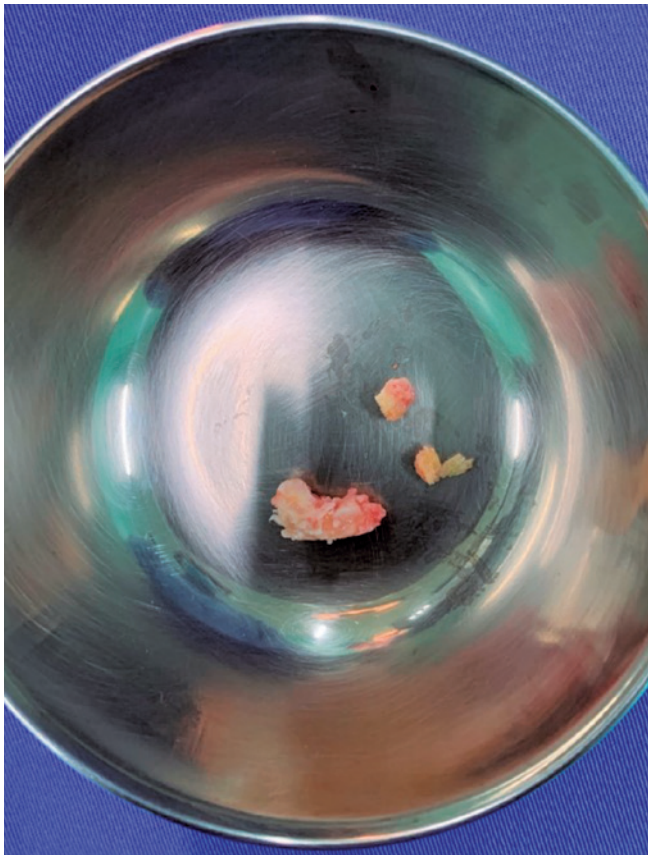

Figure 4. Bone specimens collected during endoscopy for histopathological examination.

Figure 5. Lateral radiograph of the ankle with no evidence of tumor recurrence.

skin changes, or malignancy on radiographs and MRI, total excision of the lesion was planned, requiring no previous biopsy. In the present report, following the same reasoning, total excision was planned for both diagnostic and therapeutic purposes.

Open surgery for the treatment of posterior ankle osteochondroma has been described in the literature[9]. However, endoscopic approaches have gained popularity in recent decades due to advantages such as better visualization of anatomical structures, lower risk of complications, minimal postoperative pain, less dissection, and the possibility of earlier return to daily activities[5]. In a series of 36 patients treated with hindfoot endoscopy for symptomatic os trigonum and osteophytes, VAS pain scores improved significantly from 7.2 to 1.3, although paresthesia in the sural nerve territory was reported in 2 cases[10]. In the present report, pain relief was also significant, improving from 8/10 to 1/10 after the endoscopic approach, with no complications associated with the technique. Consistent with this finding, in another series of 16 posterior ankle endoscopic procedures performed at 32-month follow-up, all patients had good to excellent results in their postoperative quality of life[11].

Conclusion

Osteochondroma is a rare neoplastic condition in the talus, and even more uncommon in its posterior portion. Therefore, it should always be considered an etiological hypothesis of posterior ankle impingement syndrome.

Author's contributions: The author contributed individually and significantly to the development of this article: EASJ *(https://orcid.org/0000-0002-5054-874X) conceived and planned the activities that led to the study, wrote the article, participated in the review process, approved the final version. The author read and approved the final manuscript. *ORCID (Open Researcher and Contributor ID).

References

1. Giannini S, Buda R, Mosca M, Parma A, Di Caprio F. Posterior ankle impingement. Foot Ankle Int. 2013;34(3):459-65.
2. Murphey MD, Choi JJ, Kransdorf MJ, Flemming DJ, Gannon FH. Imaging of osteochondroma: variants and complications with radiologic-pathologic correlation. Radiographics. 2000;20(5):1407-34.
3. Kulkarni AG, Kulkarni GK. Paraarticular osteochondroma of talocalcaneal joint: a case report. Foot 2004;14:210–3.
4. Fuselier CO, Binning T, Kushner D, Kirchwehm WW, Rice JR, Hetherington V, et al. Solitary osteochondroma of the foot: an in-depth study with case reports. J Foot Surg. 1984;23(1):3-24.
5. van Dijk CN, Scholten PE, Krips R. A 2-portal endoscopic approach for diagnosis and treatment of posterior ankle pathology. Arthroscopy. 2000;16(8):871-6.
6. Atik OS, Sarikaya B, Kunat C, Muradi R, Ocaktan B, Topçu H. Osteochondroma of the talus. Eklem Hastalik Cerrahisi. 2010; 21(2):116-7.
7. Bottner F, Rodl R, Kordish I, Winklemann W, Gosheger G, Lindner N. Surgical treatment of symptomatic osteochondroma. A three-to eight-year follow-up study. J Bone Joint Surg Br. 2003;85(8):1161-5.
8. Kulkarni U, Kulkarni A. Posterior talus osteochondroma a rare location, treated by posterior ankle arthroscopy. Foot Ankle Surg. 2015;21(3):e51-4.
9. Song MH, Cheon JE, Moon KC, Lee DY, Choi IH. Secondary synovial osteochondromatosis of the ankle in a child. Pediatr Radiol. 2013; 43(12):1642-6.
10. Galla M, Lobenhoffer P. Technique and results of arthroscopic treatment of posterior ankle impingement. Foot Ankle Surg. 2011; 17(2):79-84.
11. Willits K, Sonneveld H, Amendola A, Giffin JR, Griffin S, Fowler PJ. Outcome of posterior ankle arthroscopy for hindfoot impingement. Arthroscopy. 2008;24(2):196-202.