

Osteochondroma of the medial malleolus: a case report

Osteocondroma do maléolo medial: relato de caso

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ABSTRACT

Osteochondroma is the most common benign bone tumor. It is normally asymptomatic, and diagnosed incidentally. It rarely affects the ankle or foot, except in cases of Multiple Hereditary Exostoses. This study describes the clinical and radiographic characteristics of a solitary osteochondroma in the medial malleolus, the surgical treatment carried out, and the patient's evolution after the procedure. A male patient, 13 years of age, with complaint of pain and increased volume in the medial region of the right ankle for one year. In the physical examination, the tumor was palpable over the medial malleolus, painful, but without affecting joint mobility. In the imaging exams, compromise of most of the medial malleolus was visualized. The treatment conducted was complete resection of the tumor, with reconstruction of the medial ligament. The sample was sent for diagnostic confirmation by histological study. At the three-and-a-half year postoperative follow-up visit, there were no signs of recurrence of the tumor, residual pain, or residual joint instability.

Keywords:

Bone Neoplasms; Medial Malleolus; Osteochondroma

INTRODUCTION

Osteochondromas (OCs) are the most common benign bone tumors and account for about 15% of all bone tumors and 50% of benign bone tumors⁽¹⁾. They consist of osteo-cartilaginous exostoses, normally detected in childhood and adolescence⁽²⁾. Most occur around the knee and only

RESUMO

O osteocondroma é o tumor ósseo benigno mais comum. Normalmente são assintomáticos e diagnosticados incidentalmente. Raramente acometem o tornozelo ou o pé, exceto nos casos de Exostoses Múltiplas Hereditárias. O estudo descreve as características clínicas e radiográficas de um osteocondroma solitário no maléolo medial, o tratamento cirúrgico realizado e a evolução do paciente após o procedimento. Paciente do sexo masculino, 13 anos, com queixa de dor e aumento de volume na região medial do tornozelo direito há 1 ano. No exame físico, a tumoração era palpável sobre o maléolo medial, dolorosa mas sem comprometimento da mobilidade articular. Nos exames de imagem foi visualizado o acometimento da maior parte do maléolo medial. O tratamento realizado foi a ressecção total do tumor, com reconstrução ligamentar medial e envio da peça para confirmação diagnóstica pelo estudo histológico. No seguimento pós-operatório de 3 anos e 6 meses não foram evidenciados sinais de recidiva do tumor, dor residual ou instabilidade articular remanescente.

Descritores:

Neoplasias ósseas; Maléolo medial; Osteocondroma

10% can arise in the foot or ankle^(1,3). Their etiology is unknown, but possibly derives from the change in the direction of growth of the epiphyseal plate, which begins to produce histologically disarranged spongy bone covered by a cartilaginous layer and, at its base, by contiguous periosteum⁽¹⁾. Solitary OCs have a risk of malignancy <1%⁽¹⁾.

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The thickness of the cartilage layer is related to malignancy, which can occur when it is greater than 1 to 3cm^(2,4).

OCs are usually asymptomatic and are diagnosed incidentally on radiographic examination⁽³⁾. Pain may occur at the site after direct trauma or compression of adjacent structures such as bursae, muscles, tendons, or nerves^(3,5,6).

This article aims to describe the clinical and radiographic characteristics of a case of solitary osteochondroma located in the medial malleolus, the treatment performed and the progress of the patient 3 years and 6 months after the procedure.

CASE REPORT

A 13-year-old male patient had his first consultation in 2012, when he complained of pain and increased medial volume in the right ankle that had lasted for a year, and a previous history of two sprains. In the first episode, he was treated with a non-hormonal anti-inflammatory drug (NSAID) and long-leg plaster cast for five days, with partial relief of the pain. A few months later, he suffered another sprain, with worsening pain that made it difficult to walk over short distances.

Upon physical examination of the ankle, the patient presented with painful and enlarged medial malleolus (Figure 1). He manifested pain both on palpation and on tibiotalar mobilization, without limitation to flexion-extension and slightly asymmetrical feet, with mild valgus of the right hindfoot.

Ankle radiographs were taken initially in the anteroposterior (AP) and lateral (L) projections, showing a tumor covering most of the medial malleolus (Figure 2). A Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) scans were then requested for a better understanding of the tumor. The scans showed osteocartilaginous

involvement, with irregularities on the malleolar articular surface and the presence of dorsomedial osteophyte in the neck of the talus, possibly resulting from the bone impact with the tumor (Figures 3 and 4).



Figure 2 | Radiographic Tests (A) Radiographs in anteroposterior and lateral (B) views of the feet and ankles, showing bone tumor in the right medial malleolus.

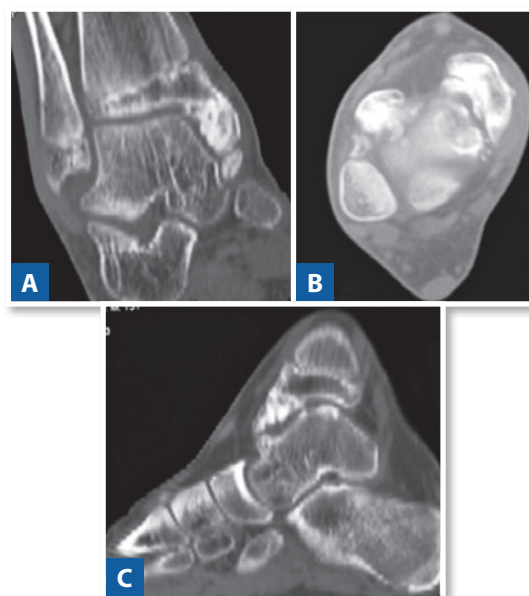


Figure 3 | CT images of the right ankle. (A) Coronal (B) Axial and (C) Sagittal.



Figure 1 | Clinical appearance of the right ankle. A and B: anterior and posterior views, respectively, with increased volume in the region of the medial malleolus.

Marginal resection of the tumor was performed in May 2013. The anteromedial approach was chosen, as it allows adequate visualization of the medial portion of the tibiotalar joint (Figure 5). The incision is oblique, adjacent to the medial border of the anterior tibial tendon, centered in the medial portion of the joint.

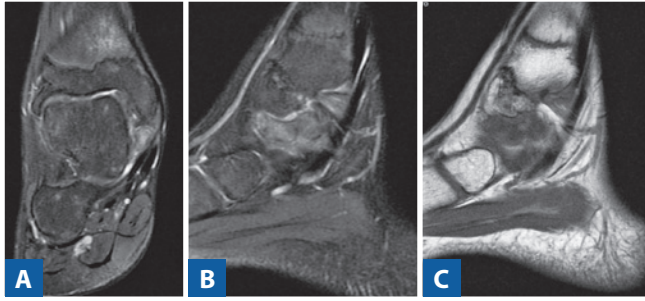


Figure 4 | MRI. (A) Coronal (B) Sagittal T2 and (C) Sagittal T1.

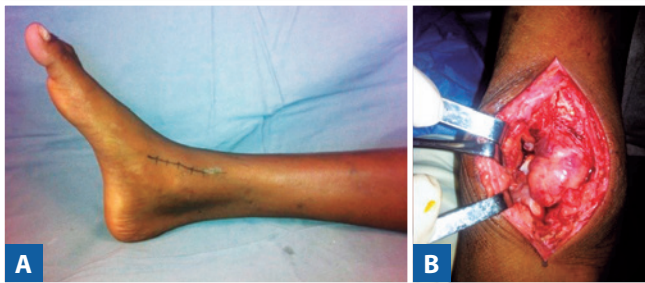


Figure 5 | Intraoperative appearance. (A) approach (B) intraoperative appearance of the tumor resection, with macroscopic evidence of the osteocartilaginous tumor.

A lesion of hardened consistency with well-delimited margins was observed during the intraoperative period, with scope for total resection (Figure 5). The remaining soft parts were then used for medial ligament reconstruction with fixation by means of two 2.0mm anchors and two introsseous bridges. There was no joint instability in either the intra or immediate postoperative periods. The anatomic pathology report confirmed the diagnosis of OC, with no evidence of malignancy (Figure 6).

After 3 years and 6 months of outpatient follow-up, there are no signs of recurrence and the patient is asymptomatic, without functional limitations or joint instability (Figure 7).

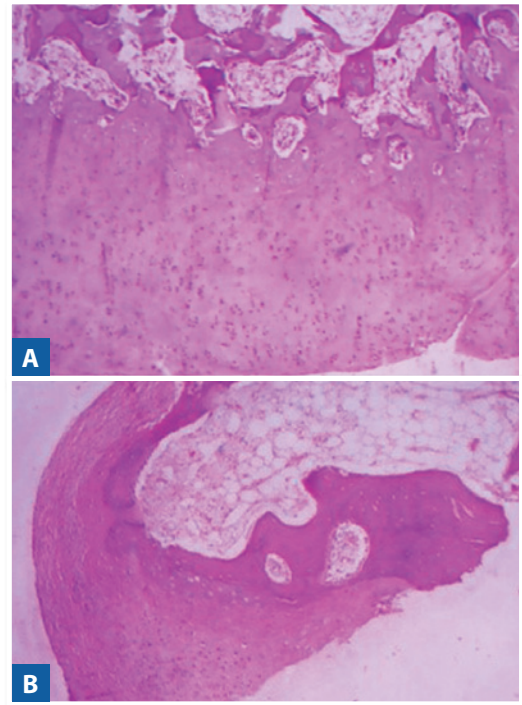


Figure 6 | Micrographic photos of the osteochondroma show cartilage proliferation.

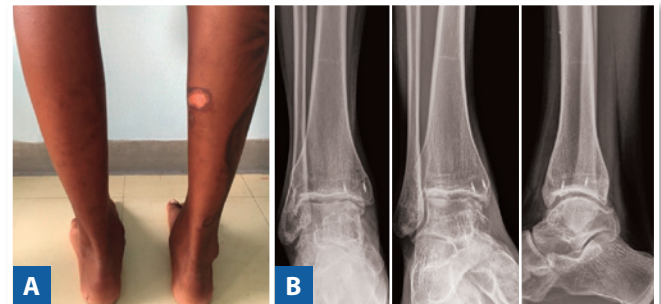


Figure 7 | 3 years and 6 months after surgery. (A) Clinical appearance: maintains preoperative alignment (B) Radiographic appearance: maintains foot alignment and range of symmetrical motion.

DISCUSSION

The decision to undertake surgical treatment led to reflection on some important aspects, related to both the tumor characteristics and ankle anatomy and stability.

Regarding the tumor characteristics, no similar case involving the epiphyseal region or the medial malleolus was found in the literature in different sources of research (Cochrane, Medline, Scielo, Embase). There are some reports

of osteochondromas in the foot and ankle, but these affect the metaphyseal region of the distal tibia, the distal fibula, the calcaneus and the talus^(1,3,5,7). Distal tibia involvement is uncommon, corresponding to approximately 4%, according to a study with 1937 resected lesions^(7,8).

OCs are benign bone tumors that require surgical treatment only when there are symptoms: vascular and/or nerve compression, articular blockage or degeneration, interference in the growth of the extremity (deformities with mechanical and functional changes), and malignancy, which is characterized by a cartilaginous covering that is more than 2 cm thick and bone erosion.^(6,8) Surgical treatment consists of total resection of the tumor and complete removal of the cartilaginous covering to prevent recurrence⁽⁸⁾.

In this case, the patient complained of superficial joint pain in the ankle, with an increase in local volume and without articular blockage. Due to the persistent pain and increase of the lesion during its outpatient follow-up for an average period of 6 months, the decision was made to undertake surgical treatment. Despite this increase, there was no evidence of tumor malignancy in the anatomic pathology report (Figure 6).

With the decision for surgical treatment defined, we discussed the need for intervention in a benign tumor and the risks involved in the surgery. Even after complete resection of the tumor and adequate medial ligament reconstruction, there are concerns regarding the occurrence of late deformity or instability of the ankle joint, since little is known about the postoperative progress of osteochondromas affecting the distal tibia⁽⁸⁾. Some authors report that total resection of bone tumors in the ankle in children usually shows good long-term results due to the capacity for bone remodeling. In adults, since this remodeling does not take place, resection can lead to joint instability^(9,10).

CONCLUSION

OCs are rare tumors in the ankle that occasionally become symptomatic. Surgical treatment with total resection of the tumor can be performed, but there must be a careful study of the affected site to prevent biomechanical changes and bone growth of the ankle causing late functional disability and deformity. In the patient in question, the result of total resection of the tumor and most of the medial malleolus was satisfactory, with no signs of tumor recurrence, residual pain, or remaining joint instability after 3 years and 6 months of postoperative follow-up.

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