Solitary Osteochondroma of the Distal Tibia

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Abstract: Osteochondroma or exostosis is one of the most common benign tumors of the bone; it occurs usually on the metaphysis of long bones, mainly the distal femur, proximal tibia and proximal humerus, and rarely observed around the ankle. We describe an unusual solitary osteochondroma of distal tibia affecting the lateral malleolus of a young man. Although the radiographic characteristics of the lesion were indicative of osteochondroma, a typically asymptomatic tumor that is usually identified as an incidental finding, the rare location and the symptoms described in this case make it rather unusual, in particular pain and impending fibula fracture necessitated surgical intervention.

Keywords: Ankle, Osteochondroma, Exostosis, Benign bone tumors.

INTRODUCTION
Osteochondromas account for 12% of all bone tumors and about 45% of benign bone tumors [1]. Also known as exostosis, osteochondroma is a benign bone tumor consisting of a bony outgrowth covered by a cartilage cap that occurs commonly in the metaphysis of long bones and pelvis, they are mostly asymptomatic and can, therefore, be managed conservatively [2,3]. Osteochondromas are rarely localized in the foot and ankle, except in cases of Multiple Hereditary Exostoses. We describe an unusual case of a solitary distal tibia osteochondroma affecting the lateral malleolus of a young adult male.

CASE REPORT
A twenty-year-old male came to us for evaluation of his painful right ankle. He related a chief complaint of an approximately 4-year history of right ankle pain, and the pain had progressively worsened over the 6 months before his presentation.

On physical examination, right ankle tenderness was elicited upon direct palpation of the anterior aspect of the distal tibiofibular junction, and right ankle range of motion was limited secondary to antalgic guarding.

There was no ankle instability or neurovascular impairment. An X-ray was performed showing a well-defined outgrowth arising from the distal aspect of the tibia, causing pressure erosion and impending fracture of the distal fibula (Fig. 1). The CT scan depicted the lesion and the erosion of the fibula (Figs. 2 and 3). The initial diagnosis was osteochondroma of the distal tibia and no other exostoses were found in the patient's limbs.

A surgical excision of the lesion, due to the risk of having a fibula fracture was recommended and the patient underwent simple removal through an anterior approach. Intraoperative, we found a sessile exostosis with a broad base resembling a cauliflower, eroding the fibula, which was quite thin (Fig. 4), but we could preserve it during the removal of the tumor. Subsequent histopathology exam confirmed the osteochondroma with a 0.6 cm thick cap of benign hyaline cartilage. The patient was maintained non-weight bearing for the first 6 weeks following the operation, and used a walking cast from the sixth to eighth weeks, at which time the patient resumed normal activities and displayed pain-free and full ankle range of motion.
Fig-1: X-ray showing the lesion causing erosion of the fibula

Fig-2: CT scan showing the exostosis producing erosion and impending fibula fracture

Fig-3: 3D image demonstrating the lesion
DISCUSSION

Considered to be the most common benign bone tumor, the osteochondroma or osteocartilaginous exostosis is a benign surface lesion of bone consisting of a bony outgrowth covered by a cartilage cap [1-3]. It may occur at any location in any bone that develops from cartilage, but is usually found in an area of active metaphyseal growth in long tubular bones near the epiphyseal plate [1,4–6] and most typically occurs in the distal femur and proximal tibia [5,7]. Osteochondromas around the ankle are very uncommon except in cases of Multiple Hereditary Exostoses [8]. If they affect the ankle, they are mainly found arising from the interosseous border, deforming distal tibia and fibula and occurring prior to physeal fusion, as have been reported by Wani et al [9].

Although the most of osteochondromas are asymptomatic benign tumors and never identified, there is always a rare possibility of malignant change (<1%) and the lesions that are incidentally discovered in asymptomatic patients are managed with observation. Early signs of malignancy include pain, continued growth beyond skeletal maturation, and irregularity and thickening of the cartilaginous cap to a thickness greater than 2 cm [1,4,6].

The main symptoms of symptomatic osteochondroma are related to its size and location: irritation of nearby structures, bursitis due to chronic friction or stalk fracture secondary to traumatisms [3,10].

Resection is indicated for patients with a symptomatic lesion secondary to irritation of the surrounding soft tissue, for a lesion in a location that is subjected to minor trauma, for a lesion causing a cosmetic deformity or potential damage to surrounding joints or neurovascular structures, and for a lesion that has characteristics of malignant transformation. [10,11–15]. If possible, resection of an osteochondroma in a child should be postponed until skeletal maturity because the cartilage cap will become smaller and will be farther from the growth plate [11].

When neglected, osteochondroma arising from the distal aspect of either the tibia or the fibula can lead to plastic deformation, stress fracture, mechanical blocking of joint motion, syndesmotic problems (synostosis or diastasis), varus or valgus deformities of the ankle and subsequent degenerative changes in the ankle joint [10,15-17]. For our patient, due to the likelihood of an impending displaced fibular fracture, surgical treatment was decided.

Surgical treatment of osteochondromas consists of simple removal; Mirra reiterated the importance of complete resection of the cartilaginous cap to prevent recurrence [18]. Anterior, posterior and transfibular approach has been described in the literature [16]. The anterior approach used in this case is associated with the least amount of postoperative morbidity, as have been used by Wani et al [9]. There is still little information of the natural evolution after treatment of osteochondromas arising from the distal aspect of either the tibia or the fibula [15,17].

CONCLUSION

Solitary osteochondromas of the ankle are very uncommon, those affecting the distal tibia or fibula
should be treated with surgical excision in order to prevent syndesmotic lesions or even fracture due to the expanding nature of this benign tumor.

REFERENCES: