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Removal of osteoblastoma of the talar neck using standard anterior ankle Arthroscopy:A case report

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ABSTRACT

INTRODUCTION: Osteoblastoma of the talus, a benign tumor, is rare in orthopedics. The choice of treatment is usually open surgery for excision of tumor. Limited data is available concerning arthroscopic approaches.

PRESENTATION OF CASE: A 36-year-old male patient was evaluated for pain and swelling of the left ankle joint. Based on the findings of physical examination, X-rays and MRI investigations, the tumor was isolated. Standard anterior arthroscopic surgery was performed due to ankle pain. A diagnosis of osteoblastoma of the talar neck was made following the pathological survey. He had no recurrent pain and normal joint mobility 5 years postoperatively during he was regularly followed up.

DISCUSSION: Osteoblastoma of the talar neck is slowly progressive and it is a palpable painful mass. Open or arthroscopic surgery can be performed. Treatment strategies are decided on according to the tumor's location, extent and size. Some advantages of arthroscopic surgery are wide visualization areas, minimally invasion, low morbidity, no necessity for casting and immobilization, early rehabilitation and quick recovery.

CONCLUSION: In conclusion, arthroscopic management can be successful in selected patients with small benign tumor localized to the ankle joint.

1. Introduction

Osteoblastoma, a benign tumor, is common in orthopedics. But location of the talus is rare [1–6]. The patient seeks medical care usually due to ankle pain and/or a palpable painful mass. Conventional X-rays typically do not reveal the mass, however magnetic resonance imaging clearly reveals the tumor [7]. Current accepted surgical treatment involves removal of the osteoblastoma with complete and immediate pain relief. The surgical treatment has been historically described utilizing an open approach. [8–12].

Arthroscopic surgery is widely used in treating ankle impingement syndrome, osteochondral lesions and other diseases [13–18]. Due to minor surgical trauma, the ankle function is more quickly restored following arthroscopic surgery. We would be able to achieve complete surgical resection with decreased moribidity with an arthroscopic approach based on our practice. We present the first, to our knowledge, case of osteoblastoma of the talar that was excised using standard anterior ankle arthroscopy. The patient agreed to the publication of the data concerning the case.

2. Presentation of case

A 36-year-old male peasant was admitted to our department due to left ankle pain for two years. Preoperative examination revealed a palpable mass (approximately 1 cm in diameter) on the anterolateral aspect of the right ankle, with obvious tenderness to palpation and percussion. The range of motion of the ankle joint was normal. X-rays showed no osseous lesions of the ankle joint. MRI suggested a space-occupying lesion on the anteromedial aspect of the talus, ankle joint hydrops (Fig. 1), and abnormal diffuse signals of the talus. After a complete diagnostic workup, we decided to proceed with excision of the tumor using ankle arthroscopy. Under nerve blocking anesthesia, ankle arthroscopic exploration was performed, followed by removal of the space-occupying lesion.

In detail, the patient was placed in a supine position, with the left buttock raised. The patient's thigh was wrapped with a tourniquet, and his knee was flexed moderately with the use of a bracket. The ankle joint was placed in a neutral position. After routine skin preparation, conventional anteromedial and anterolateral incisions were made in the ankle joint. The ankle joint was explored with a 2.7 mm arthroscope. Arthroscopy revealed osteochondral destruction of the anteromedial part of the talus, and a soft hypervascular mass (approximately 1.0 cm in diameter). The mass did not adhere to synovial membrane, but adjacent synovial membrane presented with hyperemia and hyperplasia. The articular surface of the ankle

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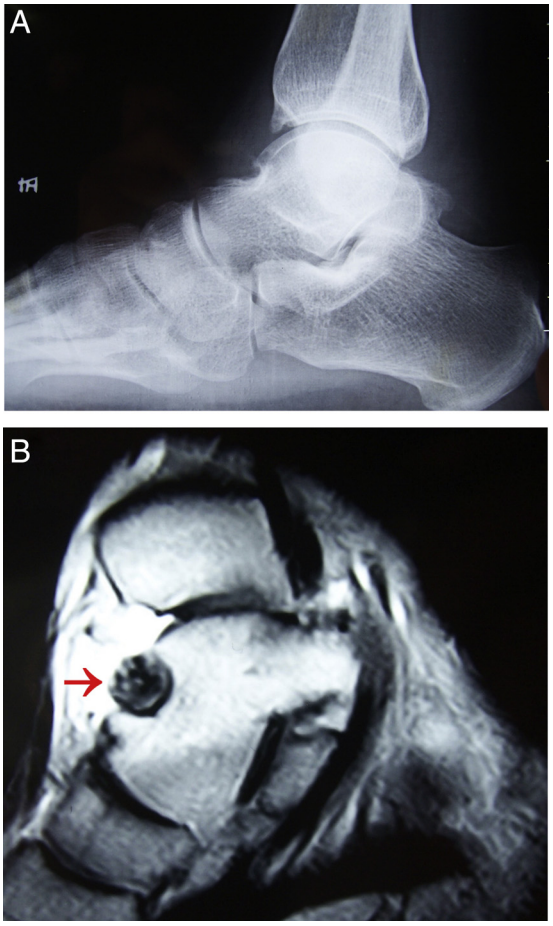

Fig. 1. Preoperative X-rays do not reveal the mass (A), but MRI suggesting talar destruction (red arrow) and joint hydrops (B). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article).

joint was not destroyed. The mass was resected completely under arthroscopy: 1. synovectomy to expose the mass well; 2. biopsy performed with a pair of nucleus pulposus forceps to obtain tissue specimens for histopathologic analysis; 3. the remainder of the lesion was debrided with a shaver (2.9 mm in diameter), 4. treatment of the damaged surface with Arthrocare 2000 System (Fig. 2). The surgical procedure was conducted under arthroscopy to prevent mass debris from falling into the articular space. Otherwise tissue debris in the articular space must be removed. The space of ankle joint was flushed repeatedly, and was inspected carefully for tissue debris. Then, a drainage tube was placed in the articular space. The surgical procedure lasted 68 min. The pathologic findings of the resected tissue showed a richly vascularized stroma and newly formed bone trabeculae with excessive osteoblastic activity. These histologic findings are typical of a nidus and in accordance

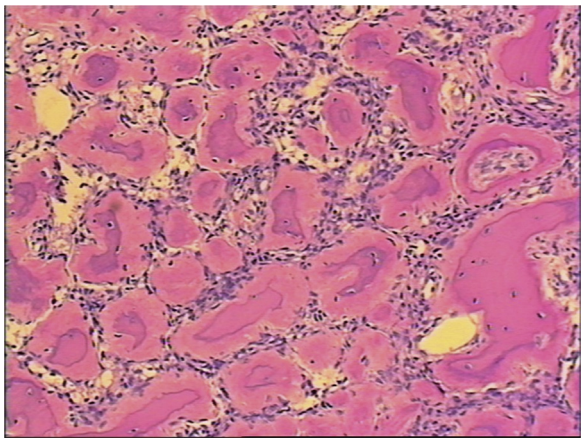

Fig. 3. Pathologic study of talar tumor showing interconnecting trabeculae of woven bone with prominent osteoblastic rimming (HE, × 200).

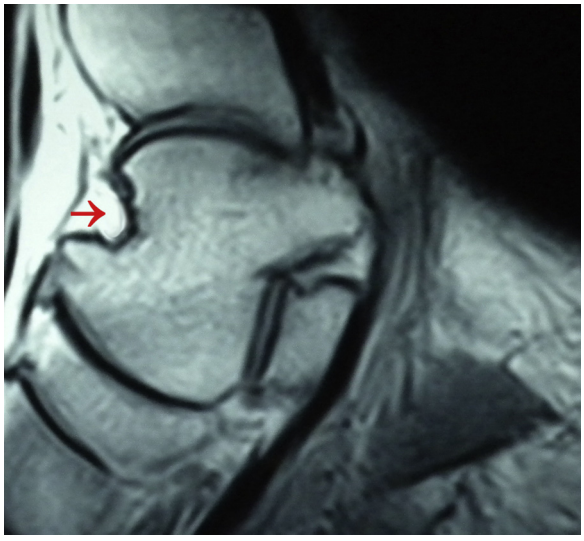

Fig. 4. MRI performed three years after surgery suggested a little fibrous scar tissue in the lesion of left talus (red arrow), without tumor tissue recurrence. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article).

with our preliminary diagnosis of osteoblastoma (Fig. 3). The postoperative clinical course was uneventful, and the patient reported immediate pain relief after the procedure and was rapidly allowed to place weight on the foot. MRI performed three years after surgery suggested a little fibrous scar tissue in the lesion of left talus, without tumor tissue recurrence (Fig. 4). He had no recurrent pain and normal joint mobility 5 years postoperatively (Fig. 5) during he was regularly followed up.

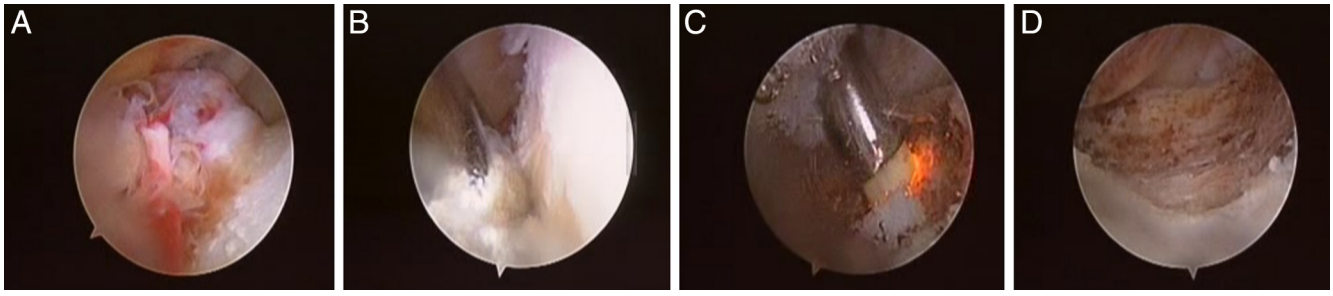

Fig. 2. Cherry-red elevated tumor in the anteromedial portion of the talus (A) removed using combination of shaver (B) and arthrocare (C), leaving 12-mm crater (D).

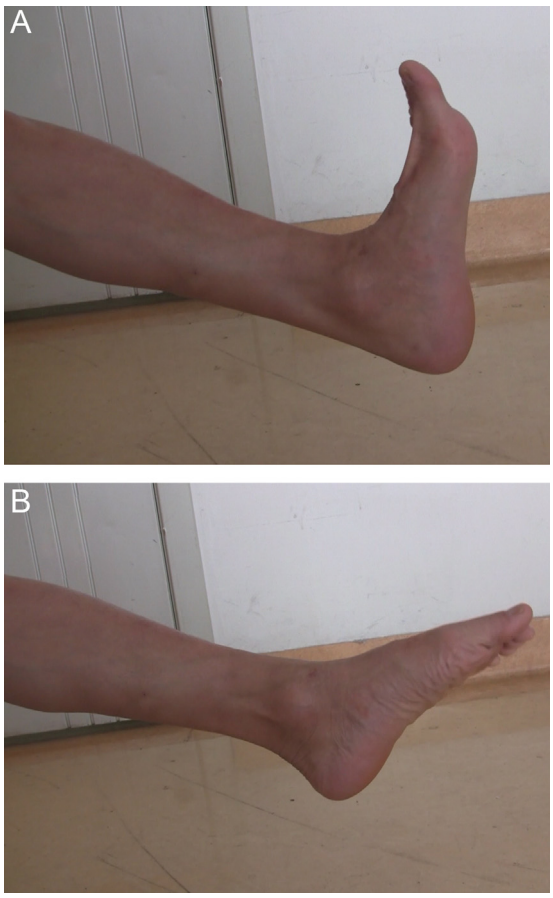

Fig. 5. The left ankle joint appeared normal and functioned normally after surgery. (A and B).

3. Discussion

3.1. Surgical indications

Ankle joint tumors are usually removed by open surgery, which facilitates exposure and complete resection [2,5]. Since 1995, when Resnick et al. first introduced arthroscopic resection of an osteoid osteoma in the ankle, an increasing number of cases treated in this manner have been reported with successful outcomes [19–25]. Arthroscopy is a minimally invasive surgical method offering the advantages of a shorter hospitalization time, a reduced risk of infection, and a reduced need for long postoperative rehabilitation [26]. Because synovitis can accompany tumor, it can be easily managed with arthroscopic synovectomy. The general benefits of arthroscopic surgery, together with our experience, prompted us to perform this procedure and remove the osteoblastoma using standard anterior ankle arthroscopy. There have not been reports on arthroscopic resection of osteoblastoma of the talus. In our opinion, arthroscopic resection of tumors may be considered in the following conditions: (1) The mass is not big, usually it is smaller than 2 cm square. (2) Pre-op MRI shows no obvious adhesions of the lesion with the surrounding synovial membrane, because enough space is need for arthroscopic manipulations. If there are adhesions intra-operation and you could not observe the mass well, I recommend stopping the arthroscopy and performing an open resection. In addition, the surgeon must be skilled in arthroscopic surgical techniques, and have experience in arthroscopic surgery of the ankle. Berry et al. reported that curettage and packing were successful in many patients with an open approach [2]. If the mass is not easy to remove using ankle arthroscopy, the procedure should be converted to an open approach.

4. Surgical techniques

Similar to open surgery, arthroscopic resection of benign tumors requires adequate exposure, complete resection and prevention of tumor tissue dissemination [16,20,23]. In order to achieve optimal exposure and a wider space for manipulation, synovial membrane anterior to the ankle joint must be trimmed first. In order to prevent tumor tissue dissemination, each step must be conducted visibly. The tissue specimens should be obtained using a pair of nucleus pulposus foeceps and then pulled out of the articular space. Soft tumor tissues are preferentially trimmed with a shave under continuous vacuum aspiration. During lesion tissue resection, the working channel can be alternated between the anteromedial and anterolateral incisions. After resection, the affected talar surface was cauterized by radiofreqency treatment using Arthrocare 2000 System.We hope to kill any remaining tumor to prevent recurrence with this procedure. Then the ankle was flushed with ample saline. Any debris in the articular space must be removed. Shears et al. [3] support the view that bone grafting is not a necessary adjunct to the curettage of talar lesions for benign talar tumors.

In conclusion, when performed by an experienced arthroscopist, ankle arthroscopy is a safe technique with very few complications. Given these advantages, we support the view that ankle arthroscopy should be applied when the appropriate criteria, which primarily concern tumor location, have been met.

Conflict of interest

None.

Funding

None.

Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal upon request.

Author contributions

Xiaojun Duan and Liu Yang took part in surgical procedure. Xiaojun Duan took part in literature search, preparation of the paper and review.

Guarantor

Xiaojun Duan.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.ijscr.2016.03.013.

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