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Case report

Oncologic reconstructive surgery of the talus with structural allograft: Case report

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A R T I C L E I N F O

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A B S T R A C T

Introduction and importance: Introduction and importance: Bone tumors of the foot constitute 3 % of all bone tumors, within these, the location in the talus constitutes between 8 and 23 % of bone tumors. Within the oncological management of these lesions, preservation surgery has had a great boom in the last 10 years, however, the use of massive structural allograft is not a conventional surgery and there is little literature on its use, which is why we consider important to document clinical cases.
Case presentation: we document 2 clinical cases of bone tumor in the talus that were surgically managed with tumor resection plus reconstruction with total and partial talus allograft.
Clinical discussion: Bone tumors involving the talus are rare and management techniques have emphasized intralesional resection plus bone graft application. In the literature consulted, no report of reconstructive surgery was found with the use of total and partial structural talus allograft.
Conclusions: The use of structural talar allografts, both partial and total, has shown good functional results in short-term follow-up (18 months), so we consider it important to continue long-term follow-up to evaluate the evolution of this surgical technique.

1. Introduction

Bone tumors of the foot constitute 3 % of all bone tumors, tumors located in the talus constitute 8 to 23 % of bone tumors of the foot, with malignant presentation being less than 1 % [1].

Bone tumors in the talus are lesions that have the appearance and cytogenetic characteristics of neoplasia and due to their location they generate alterations in the biomechanics of gait and can greatly alter the quality of life of patients [2].

Tumors are often found in bones rich in red marrow and trabecular bone, such as the vertebrae, ribs, pelvis, and ends of long bones, but rarely occur in the bones of the hands or feet [3,4].

.Within the treatment of tumors in the talus there are several options ranging from intra-lesional resection and application of grafts to talectomy and arthrodesis. However, reconstructive surgery has currently been preferred for its potential to improve joint biomechanics and preserve the gait pattern [5].

We present two clinical cases of patients with tumor in the talus that were managed with tumor resection plus application of structural allograft, the surgical technique and the results in the follow-up time are described.

2. Case 1

27-year-old male with a 4-year history of pain in the back of his right foot.

In 2019, he consulted extra-institutionally where they took imaging studies and performed biopsy and intralesional management, with a pathology report of an osteoblastic lesion in the right talus. In December 2021, due to recurrence, they decided to resect the lesion and apply bone matrix. March 2022 re-consultation due to new appearance of mass and pain (Fig. 1).

Percutaneous biopsy of the lesion is performed (Fig. 2).

The patient is taken for surgical management using an extended medial approach with osteotomy of the medial malleolus, visualization of the tumor lesion, vertical osteotomy in the body of the talus, the

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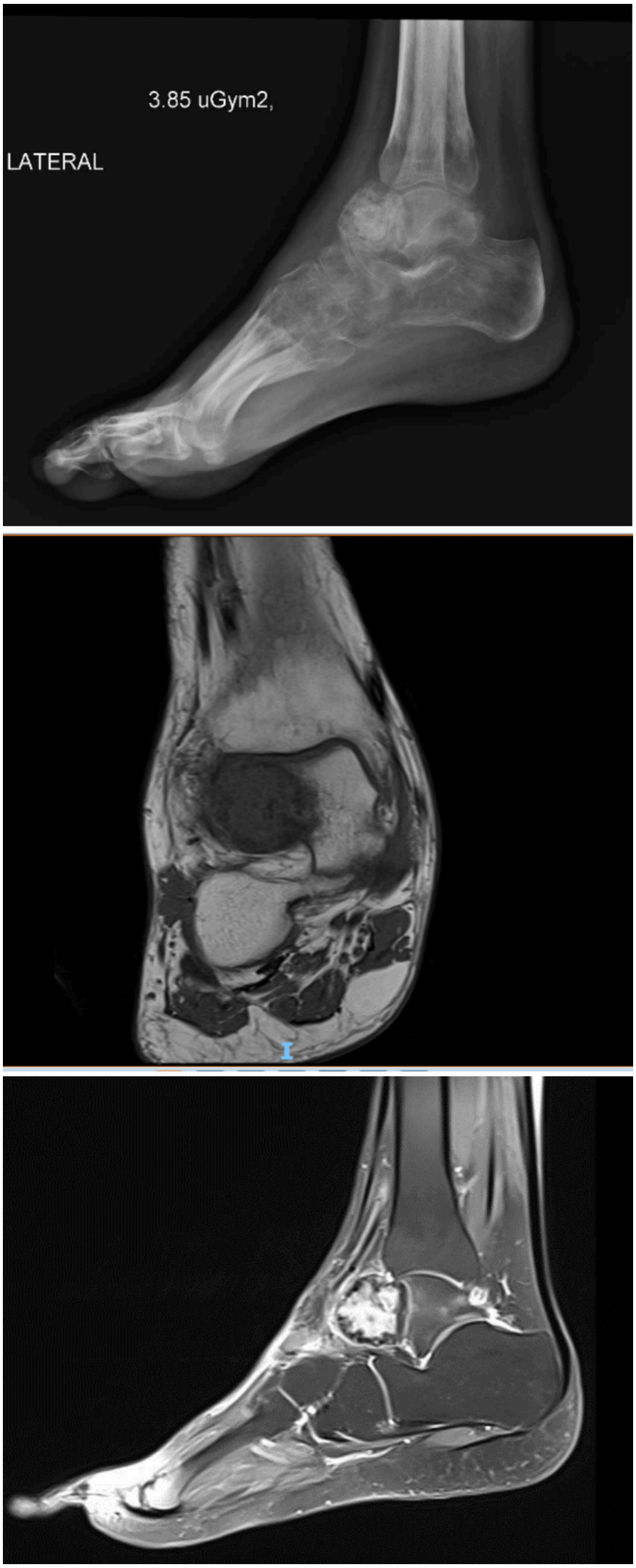

Fig. 1. RX and MRI of the right ankle showing a tumor lesion involving the head and neck of the talus.

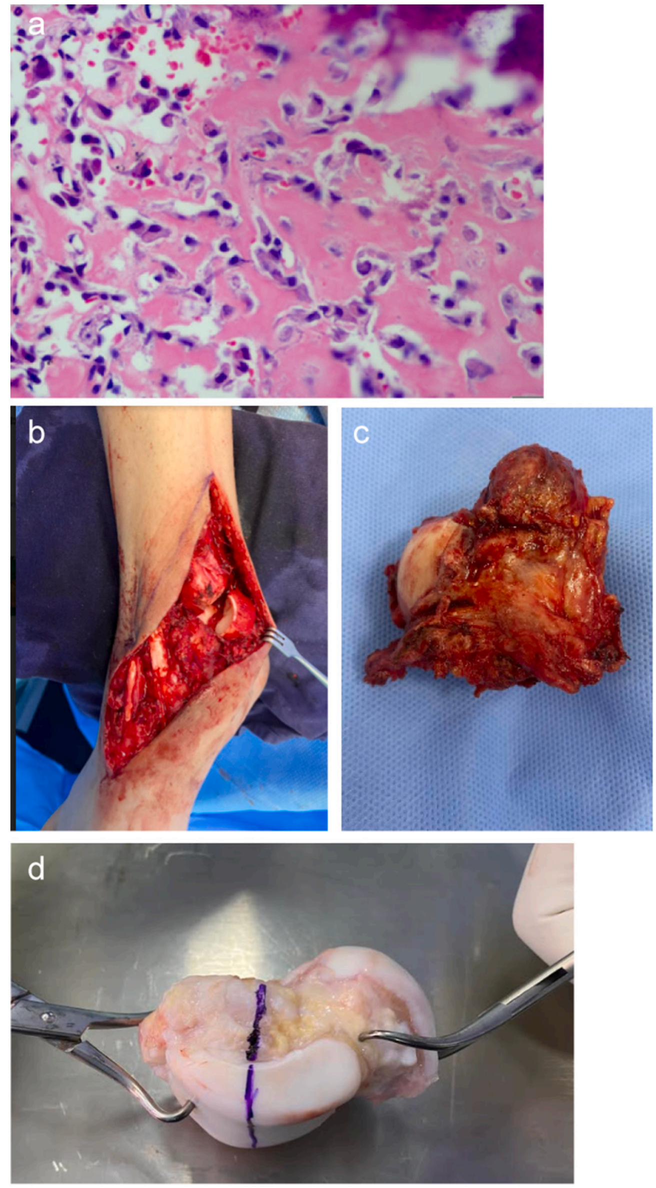

Fig. 2. a) Osteoblastic tumor pathology without cellular atypia compatible with osteoblastoma. b) Surgical approach. C). Tumor resection. D). Allograft and osteotomy preparation.

allograft is prepared, the allograft is positioned in the recipient site and provisional fixation is performed with Kirshner nails, fluoroscopic vision, definitive fixation of the allograft with cannulated screws (Fig. 2).

Follow-up at 18 months with good ankle mobility, 15° dorsiflexion, 15° plantar flexion, walking without external support, able to walk more than 5 blocks without pain, without limp, integrated allograft, without tumor recurrence (Fig. 3).

3. Case 2

44-year-old female patient with a 4-month history of left ankle pain. Imaging studies show a sclerotic lesion of the talus, with an expansive slow-growing intraosseous mass that thins and erodes the walls of the talus without calcifications inside (Fig. 4). Percutaneous biopsy of the lesion is performed (Fig. 4).

The patient is taken for surgical management using an inverted S-shaped anterior approach to the ankle, osteotomy of the medial

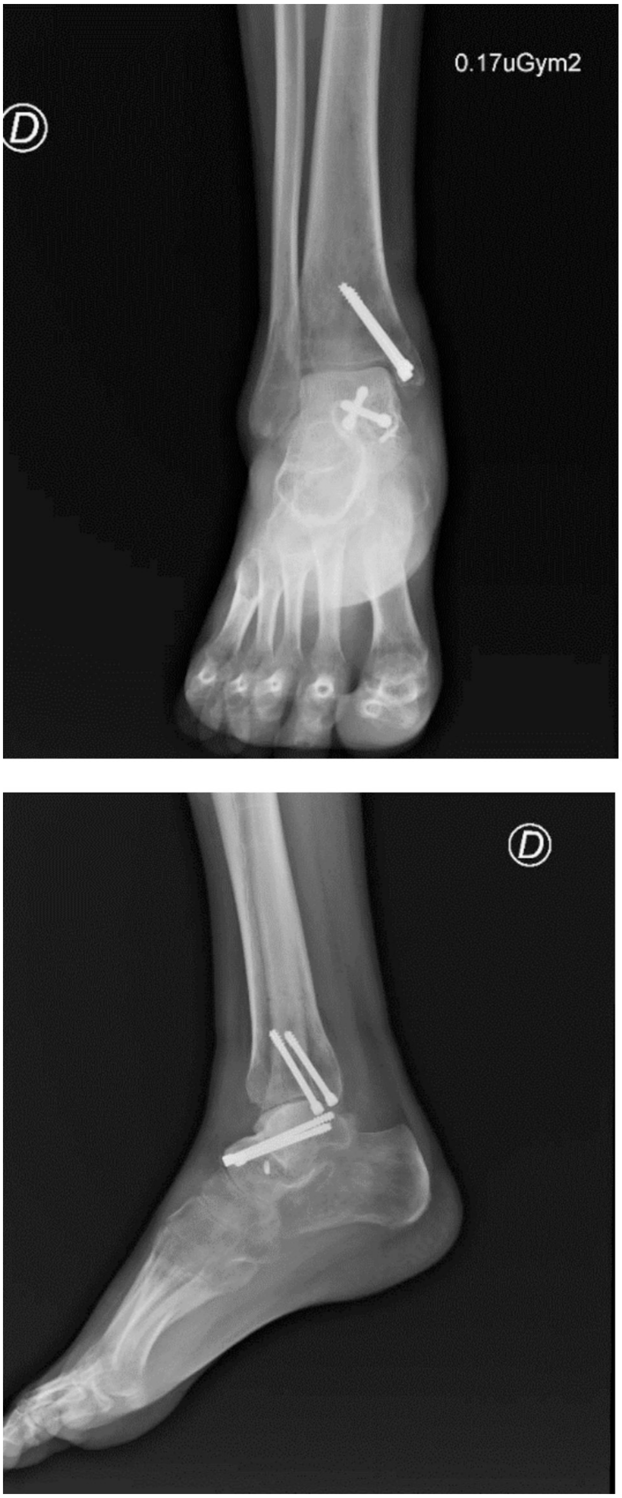

Fig. 3. X-ray at 18 months post-operative follow-up.

malleolus, visualization of the tumor lesion, total talectomy, application of allograft and fixation with anchor sutures in the Chopart joint (Fig. 5). 12-month follow-up with good ankle mobility, dorsiflexion of 5°, plantar flexion of 20°, walking without limping without pain, does not need external support, takes long walks longer than 30 min, integrated allograft, without tumor recurrence (Fig. 5).

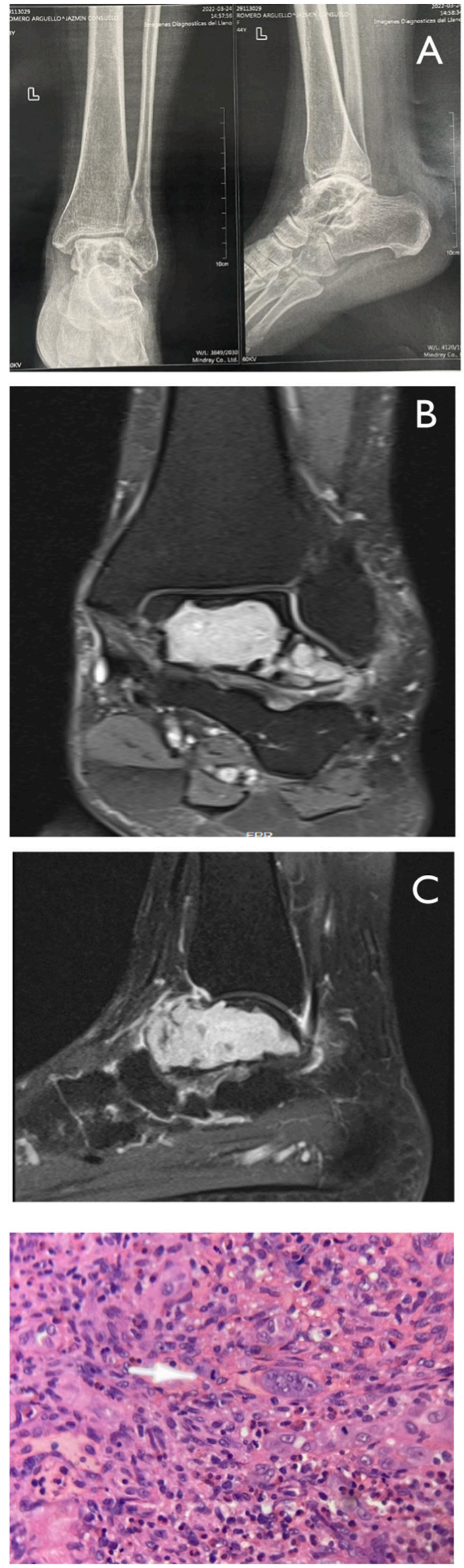

Fig. 4. A. Ankle X-ray with lytic lesion involving the body and dome of the talus B. Ankle MRI with extensive hyperintense tumor lesion in the fat suppression sequences. C. Locally aggressive neoplasm of epithelioid vascular origin posing epithelioid hemangioma vs. epithelioid hemangioendothelioma.

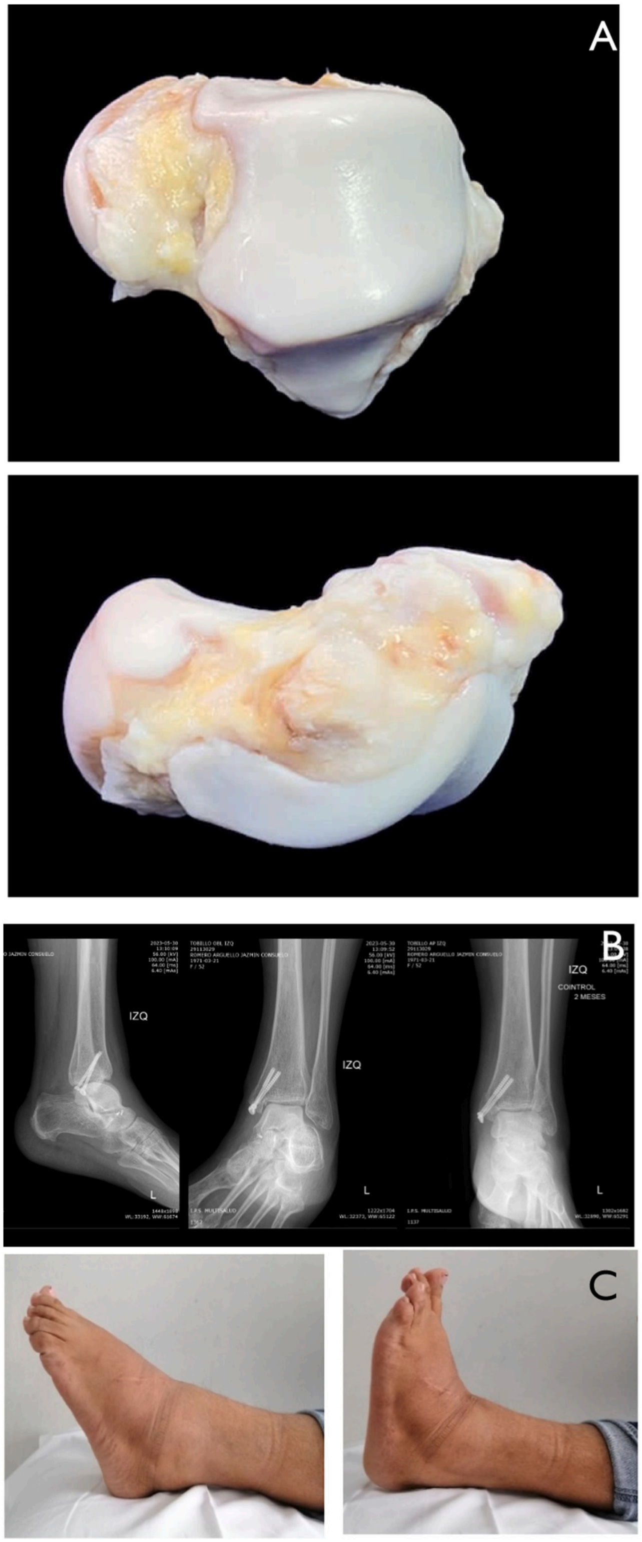

Fig. 5. A. Total allograft preparation. B. Pop control X-ray 1 year C. Arcs of mobility dorsiflexion 5°, plantiflexion 20° without pain.

4. Discussion

Bone tumors that involve the talus are rare and management techniques have emphasized intralesional resection plus application of bone graft as in the study by Moatasem et al. [6] in which they present 6 cases of benign tumors in the talus which were managed with extended intralesional curettage, drilling, adjuvant cryotherapy, and bone grafting. Similar management is documented by Yaman Karacok [3] in a study of 21 patients with benign, malignant tumors or tumor-like lesions in the talus, in which curettage + grafting was performed in 11 patients and only curettage in 3 patients. Jeffrey Thomas [7] makes a case report of a 27-year-old male patient with a diagnosis of epithelioid hemangioma in the talus where he performed intralesional management with recurrence at 17 months and involvement of the navicular, for which a new surgical intervention was performed: excision of the talus., navicular and portions of the medial cuneiform, with fusion of the midfoot and hindfoot using structural allograft of the tibial cortex, plate and intramedullary screws.

Combalía Aleu [8] presents the clinical case of a 31-year-old female patient with a diagnosis of giant cell tumor in the talus, who was treated with intralesional curettage, phenolization and application of acrylic cement. After 9 months, tumor recurrence occurred, so soft tissue resection was performed, leaving the bone cement with good evolution during follow-up. Another management alternative is the total replacement of the 3D printed talus as an alternative management for severe lesions of the talus, in this case it is documented in the treatment of avascular necrosis [9].

In the literature consulted, there is little evidence of reconstructive surgery with the use of total and partial structural talar allograft, with poor outcomes. We consider the importance of documenting our results, in such a way that they serve as a model to be taken into account in the surgical management of extensive tumor lesions in the talus.

The work has been reported in accordance with SCARE criteria [10].

5. Conclusions

The use of structural talar allografts, both partial and total, has shown good functional results in short-term follow-up (18 months), so we consider it important to continue long-term follow-up to evaluate the evolution of this surgical technique.

Credit authorship contribution statement

All authors participated significantly in the development of this work. CSM and LCGM conceived the study idea. DCP, SA and AR coordinated the data collection. DCP drafted and edited the manuscript. All authors read and approved the final manuscript.

Consent

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 on request.

Ethical approval

This study was approved by the institutional review board.

Guarantor

DAVID ALEJANDRO CORONADO PANTOJA

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Declaration of competing interest

The authors have no conflict of interest to declare.

Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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