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Resection and Reconstruction of Ewing Sarcoma of the Cuboid Utilizing Vascularized Fibular Autograft: A Case Report

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Resection and Reconstruction of Ewing Sarcoma of the Cuboid Utilizing Vascularized Fibular Autograft: A Case Report

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INTRODUCTION

Ewing Sarcoma (EWS) is a malignant bone tumor that primarily affects children and young adults. It frequently arises in the diaphysis of long bones, particularly the femur, humerus, and tibia. Management is multimodal with chemotherapy, surgical resection (preferably limb salvage), and/or radiation therapy. EWS originating in the bones of the foot is extremely rare, accounting for only 3% of all primary EWS tumors. To our knowledge, there has only been one case report of EWS originating in the cuboid. Because of the complex anatomy of the foot, conservative surgical treatment or partial amputation is difficult to achieve without significantly impairing physiologic function, therefore below-knee amputation is often preferred. EWS's high metastatic potential, risk of recurrence, and improved survival rate with complete tumor excision factors into the preference for below-knee amputation.

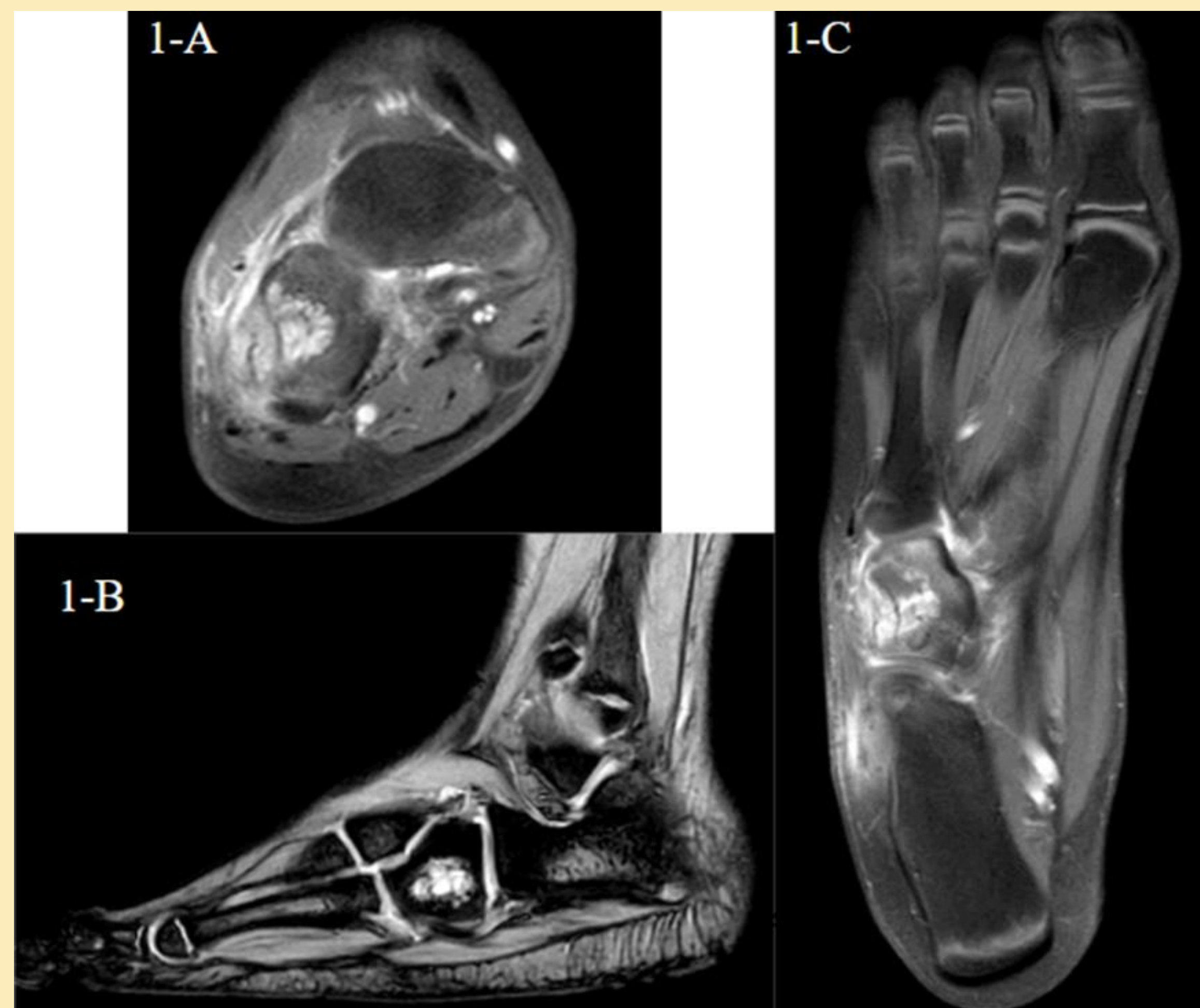
Based on a favorable clinical course, local control with limb salvage was offered and carried out. The procedure involved a radical resection of the right cuboid, followed by reconstruction with fusion of the calcaneocuboid joint using a tricortical iliac allograft and internal fixation. Seven months after the limb salvage surgery, a CT scan revealed no signs of local recurrence, but limited healing at the calcaneocuboid junction. Clinically, there was no significant pain, but she developed a gait abnormality, avoiding any pressure on the side of the foot. Repair of the nonunion was completed using an ipsilateral iliac crest autograft.

Two years later, the patient developed intermittent pain with walking and physical activity. There was no local recurrence of the tumor, however, resorption of the cuboid allograft led to severe instability of the lateral foot and talonavicular joint. Due to the previous nonunion and eventual failure of the iliac allograft, an autograft vascularized fibula from the ipsilateral limb was utilized to reconstruct the foot. Six months post-surgery, the patient had improved function and no longer experienced any pain. At the 18 months post-op mark, she had regained the ability to walk and run without any functional issues or pain. The patient is now more than 5 year removed from her initial presentation and has no evidence of disease.



DISCUSSION

When considering surgical intervention in cases of EWS in the foot, limb salvage is the preferred approach for many patients, as it maintains comparable survival rates and yields improved functional outcomes over amputation. Improved lower limb functionality is strongly associated with a higher quality of life, especially in pediatric patient populations. The benefits of reconstruction with a vascularized fibula include accelerated healing, improved bone regeneration and graft longevity, and greater versatility in reconstructive options for limb salvage. Additionally, and especially relevant in this case, a vascularized fibula graft reduces the risk of nonunion, infection, and other complications commonly associated with bone grafting. **This case demonstrates the novel and successful utilization of free vascularized fibular autograft in the reconstructive surgery of Ewing Sarcoma of the cuboid.**



CASE REPORT

A 7-year-old girl presented with complaints of pain and redness in the lateral aspect of the right foot. Initial evaluation suggested osteomyelitis affecting the right cuboid. Following treatment with antibiotics and surgical drainage, the patient returned with recurrent symptoms, prompting additional treatment and biopsy. Pathologic findings were consistent with early-stage Ewing Sarcoma.

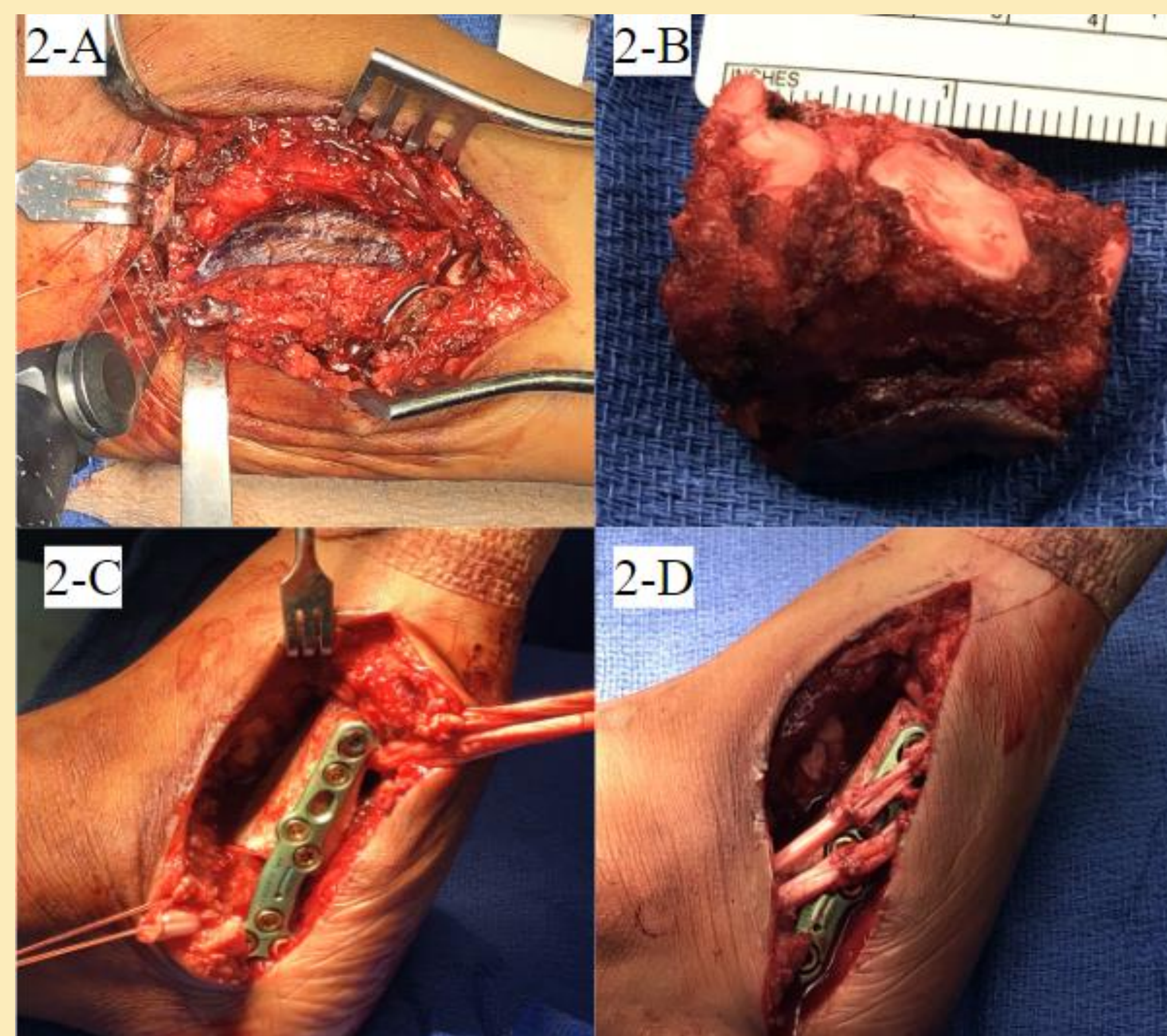


FIGURE LEGEND AND REFERENCES

