Recurrent Distal Tibia Giant Cell Tumor of Bone

Jason Miller, DPM, Josh Hollinger, DPM, Paxon Riding, DPM PGY3, Sarah Morrison, DPM PGY1

Main Line Health Systems

Introduction

Giant cell tumor of bone (GCTB) represents about 5% of primary bone tumors and 20% of all benign bone tumors, usually occurring in adults ages 20-40, affecting the epimetaphyseal regions of long bones. Recurrence of the bone tumor after initial treatment is a common complication, reportedly in up to 65-75% of patients. Malignant transformation is rare but has also been reported as a secondary phenomenon after previous resection or irradiation of benign GCT. Conventional GCTB's can also show symplastic or pseudoanaplastic change mimicking sarcomatous transformation.

Traditional treatments for GCTB's are surgical curettage or en bloc resection with or without the use of adjunct treatment such as bone cement, bone graft, or chemical cautery. Radiotherapy and RANKL inhibitor, such as denosumab, are also reported as adjunct treatments.

Our case study reports on an active 49 year old, healthy male with a recurrent lytic lesion of the right distal medial tibia, suspected to be a giant cell tumor of bone.

Case Presentation

An active 49 year old male presented to our office with a recurrent lytic lesion of the distal medial tibia who underwent multiple resections of the bone with separate applications of bone cement in 2005 at another facility and bone graft for treatment in 2016.

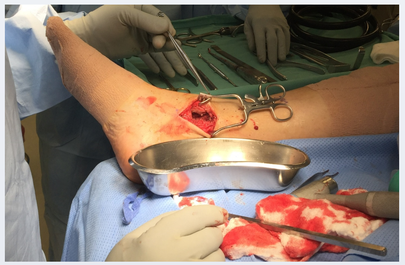
Original bone biopsy from the first resection in 2005 resulted in a confirmed diagnosis of giant cell tumor of bone at the distal medial tibia.

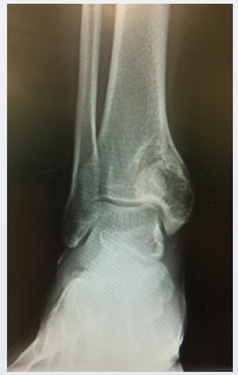
The patient was asymptomatic until 2016 at which time he presented to our care with sudden onset of pain to the medial ankle. Radiographs of the right ankle revealed severe lucency at the medial malleolus with possible pathologic fracture, and MRI reported enhancing lesion at the distal medial tibia concerning for recurrence of giant cell tumor.

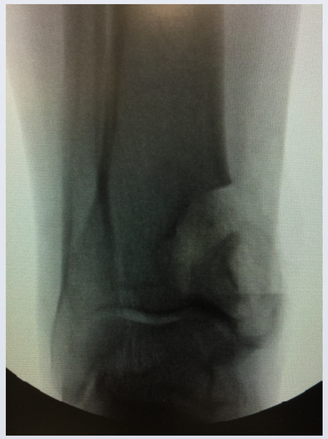
Bone biopsy performed in September of 2016 was reported negative for active tumor. However, based on the patient's clinical symptoms and radiographic findings, the decision was made for radical wide excision of the lesion with debridement of all questionable bone and residual bone cement with bone graft filler for the surgical defect in combination with ORIF of the medial tibia.

Results

The pathology report from our institution of the resected material could not provide a definitive diagnosis. Subsequently, histological slides and specimens were sent to various leading pathology departments around the country for expert evaluation. Only one of these facilities returned with an official pathology report with a potential diagnosis, concerning for neoplasm of bone including chondroblastic osteosarcoma.







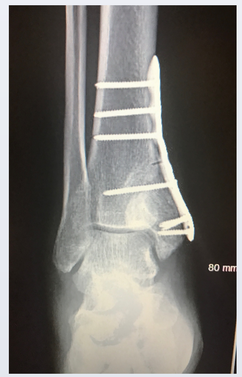
Figures :
Top Left : Intra-op excision of tumor and non-viable bone cement
Bottom Left : Intra-op view of resected tumor and bone cement
Right : Pre-op x-ray of the right ankle showing extensive recurrent lytic lesion

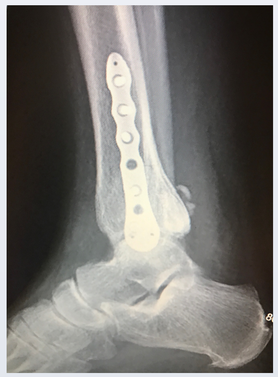
Discussion

After several weeks of uncomplicated post-operative follow up appointments with our office, the patient went on to follow up with an orthoopedic surgical oncologist at Jefferson University in Philadelphia, Pennsylvania.

Conclusion

This case study details our treatment of a rare occurrence in the distal lower extremity, giant cell tumor of bone, with wide excision of bone and application of bone graft with tibial ORIF for stability and fixation. Our surgical principles and techniques for this case are presented, and our goal of the study is to assist in the future approach to treatment options for primary giant cell tumors of bone as well as assisting in prevention of recurrence of this type of bone tumor with hopes in reducing the risk of transformation into more aggressive, malignant tumors.





Figures : AP and Lateral views of Right ankle post-op ORIF after resection of tumor and bone cement with re-filling using bone graft.

Resources

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