

Tibia and Fibular Nonunion Reconstruction

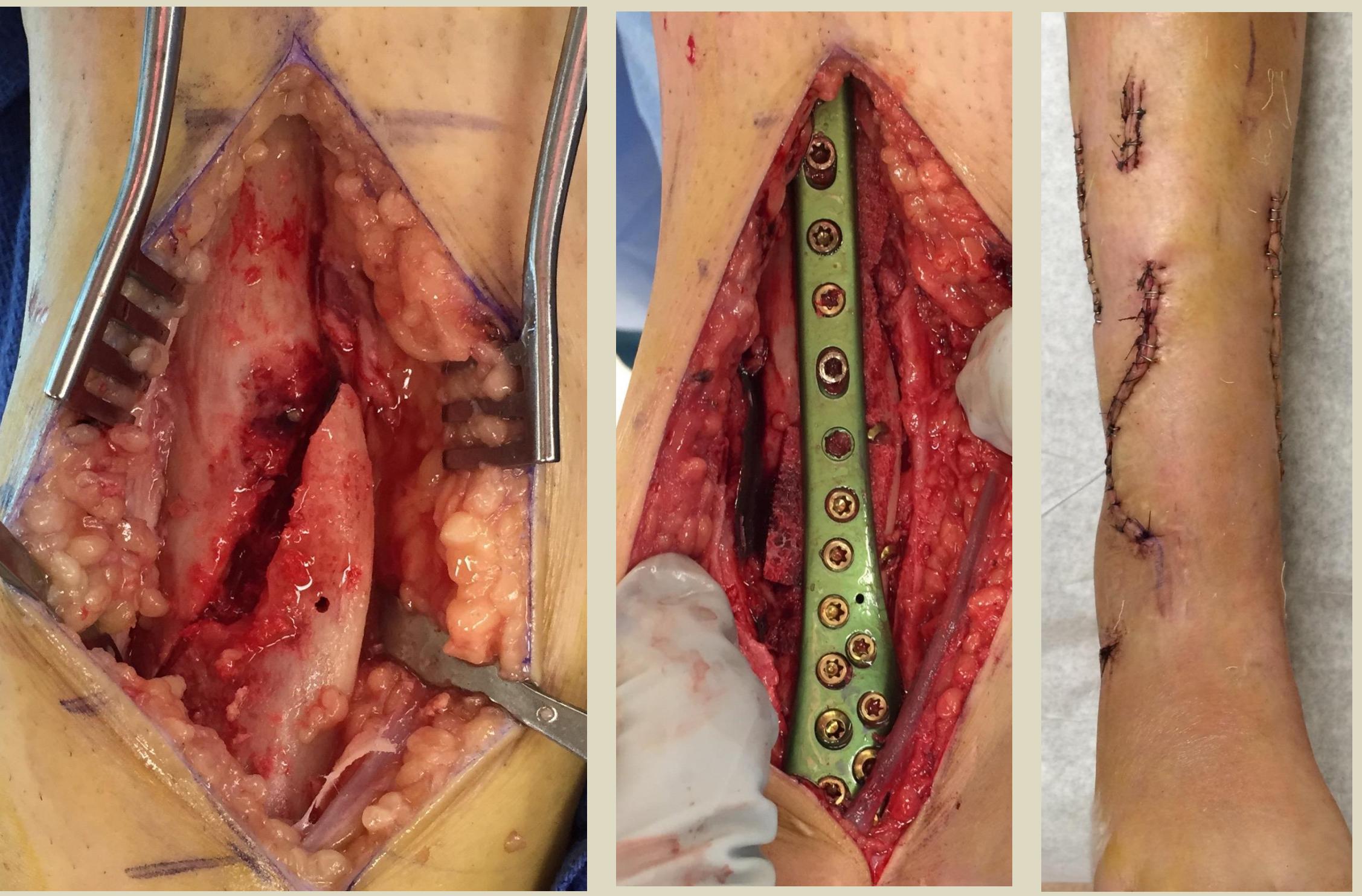
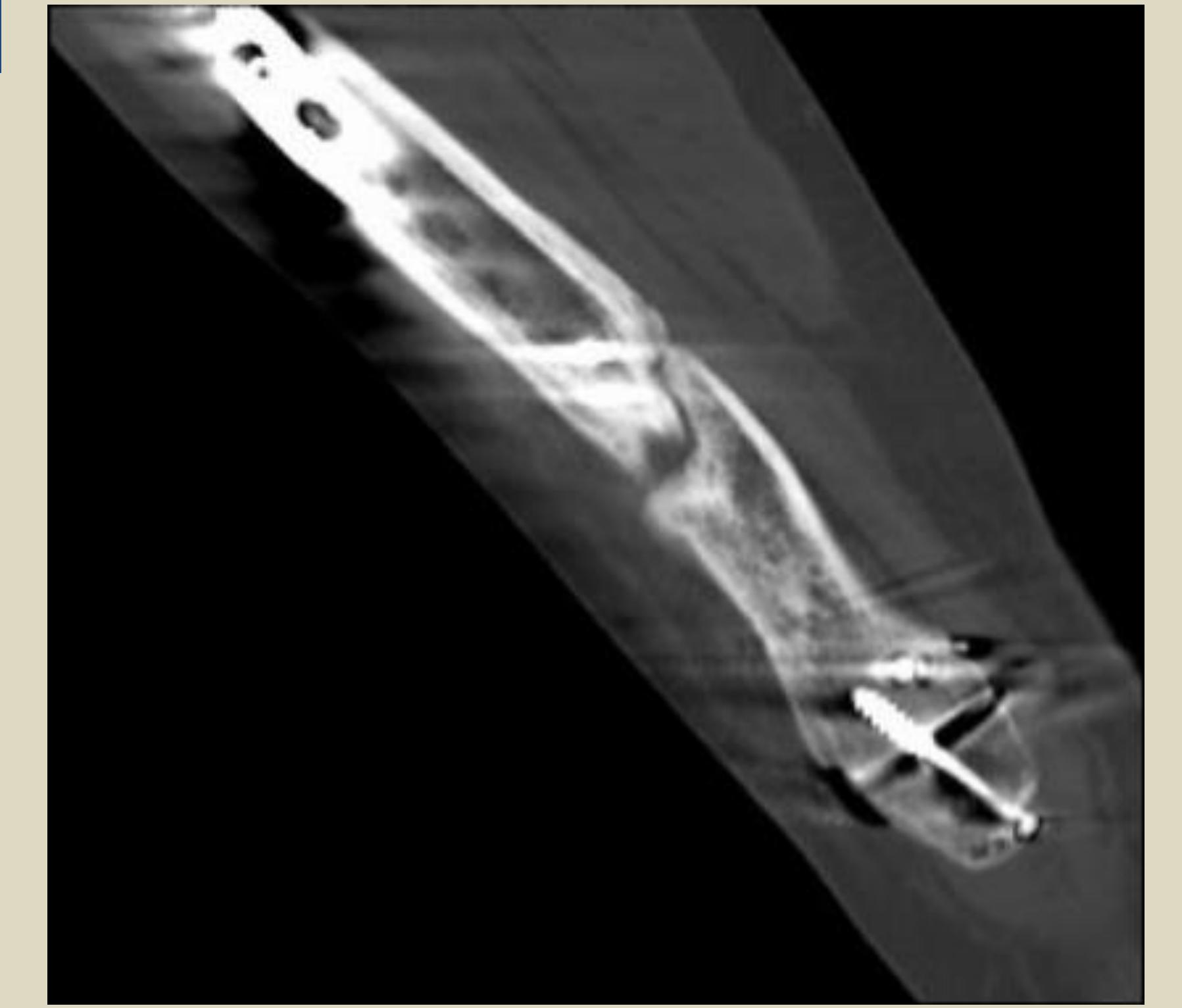
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Purpose

Tib-fib fracture nonunions cause significant pain and functional limitations. Revisional ORIF of the tibia and fibula with proximal tibial autograft can allow for resection of nonunion and keep desired length, and restore function to the patient.

Literature Review

Surgical revisions of nonunions are a challenge for every surgeon. Finding the cause of the nonunion is the first challenge, and taking the corrective steps to optimize surgical union is the second challenge. Multiple factors can cause a nonunion; systemic diseases (1), tobacco (3), excessive alcohol consumption (4), osteoporosis (2), medications, and iatrogenic causes. Conservative management can be used prior to surgical revision by attempting cessation of tobacco, functional bracing (5), external bone stimulation (6) and hyperbaric oxygen. After exhausting conservative treatment and establishing the cause of the nonunion surgical revision can be performed. The current gold standard of nonunion treatment is stable fixation and autogenous bone grafting.



Case Study

A case study is presented on a 24-year-old female who sustained a tib-fib fracture from a MVA. She was treated with ORIF of the right tibia and closed reduction of the fibula at an outside facility. She presented to our clinic with right tibial and fibular shaft pain with ambulation and palpation. A CT scan revealed a tibial and fibular nonunion. The patient was scheduled for a revisional ORIF of tibial and fibular shaft fracture with proximal tibial bone graft harvest. The x-rays showed that the tibia was not anatomically reduced and the fibula was not fixated or reduced to the anatomic length. The previous internal hardware was removed and the fracture nonunion was surgically resected. A proximal tibial bone graft harvest was performed and placed in the bone void. The tibia was realigned anatomically and stable fixation was applied. The comminuted fibular nonunion was resected and a small amount of bone graft was placed in the fracture gap after restoring the length of the fibula. Double plating fixation was used to stabilize the fibula.



Analysis/ Discussion

The patient is 10 months postop and ambulating without any pain or discomfort to the right leg. This case study demonstrates the importance of using an autograft and stable internal fixation for both revisional tibia and fibular shaft fractures. After reviewing the possible comorbidities and causes of nonunion in this patient, it was decided that the previous surgeon failed to anatomically align the fracture and apply appropriate stable fixation which led to a tibial nonunion. Also, ORIF of the fibular comminuted fracture could have been performed initially to optimize the outcome of the treatment.

References

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