

Failed Subtalar and Ankle Fusion x 5- Converted to IM Nail with Proximal Tibia Graft Harvest

J. Joseph Anderson, DPM, FACFAS; Devin Bland, DPM, AAFAS; Daniel Wright, DPM; Loren K. Spencer, DPM, FACFAS; Hilda Bartel, RN, BSN

Purpose

Despite all modern-day advances in fixation and biologics even in the best hands many times fusions do not heal and bridge across with solid bone. Arthrodesis continues to be the gold standard in obese and neuropathic patients and those with severe concurrent deformity of the foot and ankle. Unfortunately utilizing all proper techniques in fixation and maximizing all perioperative care is not enough in many patients in which they simply go on to a nonunion with no distinct cause. In patients with nonunions of the ankle and or subtalar joint intramedullary nail fixation can serve as a rigid construct to allow for a maximum opportunity for fusion to take place. This allows the surgeon to maintain a plantigrade foot and ankle with optimal position for function and optimal pain relief.

Literature Review

Hindfoot arthrodesis with an intramedullary nail has been effective in physiologic preservation of the extremity. In cases with significant bone loss due to failed ankle and subtalar fusion intramedullary arthrodesis becomes an essential salvage tool. Patients have been shown to respond favorably to this procedure with significant increase in subjective scores postoperatively along with up to 100 percent fusion rates (1-5). Schill's single non-union in a cohort of 15 patients who underwent intramedullary hindfoot arthrodesis secondary to infected ankle implants further speaks to the stability and predictability of the procedure (2). In 16 patients with failed total ankle replacements, Kotnis et al showed more favorable outcomes with patients who underwent hindfoot fusions versus revisions total ankle replacements (3). At this point, the literature supports this method of therapy in providing a stable extremity capable of facilitating pain-free ambulation. This is especially true in patients with poor bone stock and those with relative contraindications to TAR such as Obesity, Hep C, Diabetes, Osteoporosis and Poor talar bone quality with surrounding deformity (4).

Case Study

A 62-year-old obese female presented with persistent Right foot and ankle pain and inability to walk of exercise. She previously had 3 subtalar fusion attempts and 2 ankle fusion attempts in the past 8 years by outside surgeons. The patient is now having persistent pain in the ankle radiating to the knee. She can no longer ambulate without the assistance of a walker. She has a medical history of sleep apnea, diabetes mellitus, hypertension, hepatitis, thyroid disease and vitamin D deficiency. Ankle / STJ range of motion is limited due to pain. Radiological findings show loss of joint surface and loosening of previous hardware. These findings were confirmed on CT scan showing nonunion of previously fused joints. After a thorough medical optimization with HgA1C of 6.5, vitamin D increased to 40, arterial dopplers were evaluated and appeared normal, patient also lost 40 pounds with dietary control, she was returned to surgery for: hardware removal with ankle / STJ arthrodesis via intramedullary nail along with tibial bone graft harvest and tricortical bone graft use. Post-operatively, patient was placed in a non-weight bearing for 20 weeks and then transitioned to a walking boot for an additional 8 weeks. She was then allowed to bear weight in regular shoe gear at 29 weeks post-op.

Analysis/ Discussion

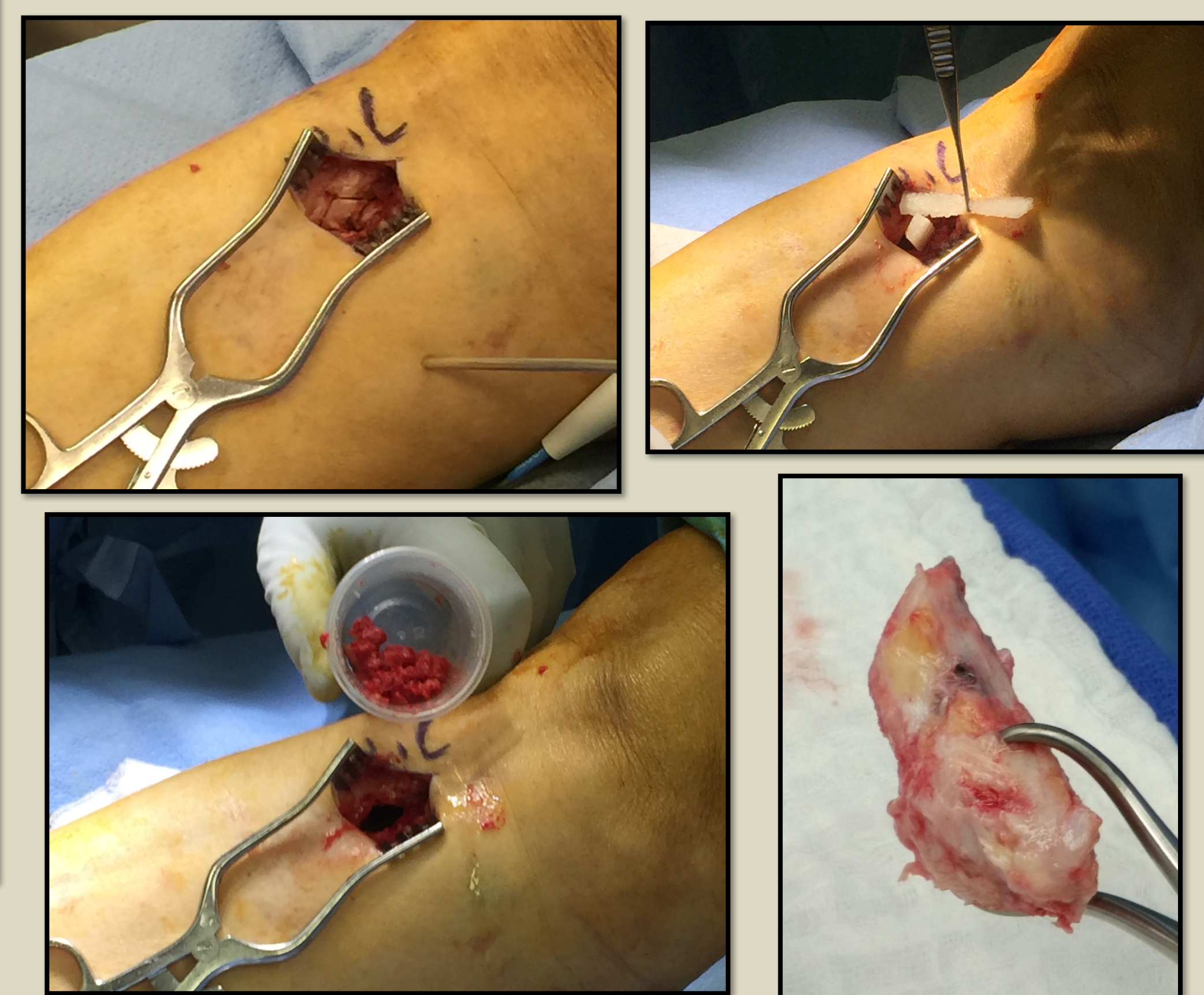
The patient is now 36 months post-op and is ambulating with minimal pain (1 on scale from 1-10). She has had an uncomplicated postoperative course and continues the use of compressive stockings for edema control. The patient did require multiple rounds of physical therapy but is very satisfied at this point. In the case of ankle and subtalar joint fusion Multiple failures, it is important to establish long-term functional and quality of life goals. These goals can aid the foot and ankle surgeon in deciding on continuing with a repeat arthrodesis procedure attempt or moving to more definitive surgery such as amputation. All aspects and contributions factors must be addressed. Compliance, bloodflow, weight loss, Vitamin D, control of comorbid conditions, nutritional status, pre-surgical Non-Weight bearing gait and DME training and last the optimal grafting and Implant Techniques. In the case presented, the patient had extensive Vitamin D therapy, weight loss regimen, Hepatitis with a non-detectable level, Diabetic and endocrine consults, Prolonged Non-Weight bearing to allow for fusion, Optimal Grafting with extensive onlay fibula and proximal tibia harvesting, and last IM Nailing. Appreciating the whole patient and not just the technical aspects of the surgery lead to the choice of an arthrodesising procedure with and IM Nail. She is extremely satisfied with her ability to walk, exercise, and live with a very minimal amount of pain.



Pre-Op



Proximal Tibia Bone Graft and Fibula Strut



36 months Post-Op

References

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