

Total Talus Replacement for Gunshot Wound Complications: Managing Avascular Necrosis, Wound Dehiscence, and Infection through a Coordinated Approach

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Objective

To report the successful management of a gunshot wound to the foot complicated with talar avascular necrosis (AVN), wound dehiscence, and infection. This case highlights the use of total talus replacement, advanced reconstructive surgery, and innovative wound care to restore foot function and structural integrity despite significant postoperative challenges.

Introduction

Gunshot wounds to the foot and ankle, though rare, can cause severe damage to bone, soft tissue, and vasculature. The talus, vital for weight-bearing, is especially vulnerable to avascular necrosis (AVN) and post-traumatic arthritis. This case presents a 28-year-old female with a gunshot-induced talar fracture, initially treated with open reduction and internal fixation (ORIF). Progressive AVN and arthritis required total talus replacement (TTR) with subtalar and talonavicular arthrodesis. Postoperative wound dehiscence and infection complicated recovery, necessitating advanced wound care for successful healing.



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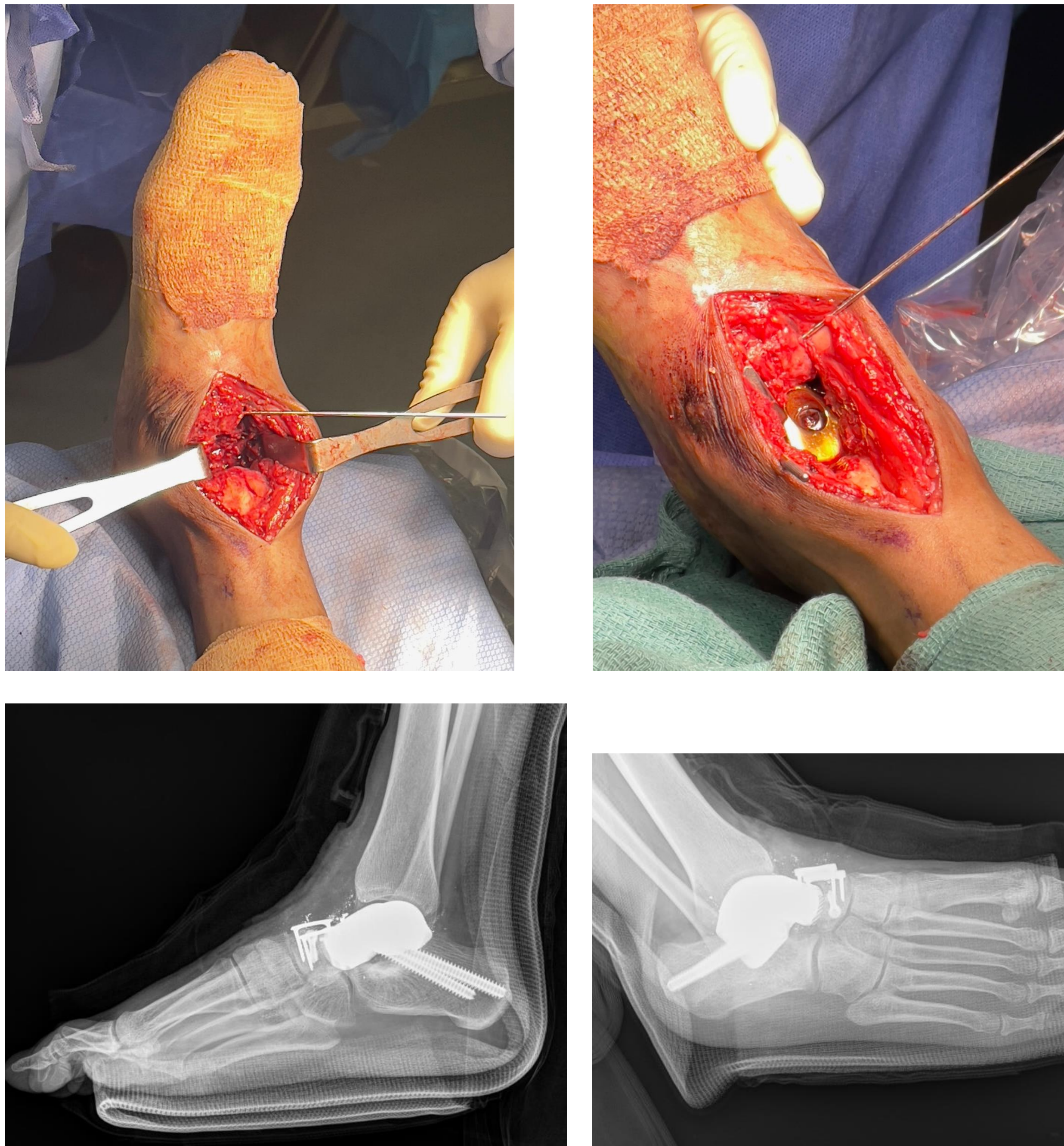
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Case Overview and Surgical Management:

A retrospective review of the patient's electronic medical records was conducted with informed consent. Nine weeks post-injury, the patient presented with worsening pain, swelling, and limited mobility. Imaging confirmed talar avascular necrosis (AVN), leading to total talus replacement (TTR) with a custom implant, along with subtalar and talonavicular arthrodesis. During surgery, residual foreign material from the gunshot was excised. Early physical therapy and partial weight-bearing contributed to wound breakdown, exposing the tibialis anterior tendon.

Initial wound management included a biologic graft and oral antibiotics. As signs of infection emerged, the patient was admitted for intravenous antibiotics and urgent debridement. Revision surgery included further debridement, vancomycin-infused antibiotic beads, additional biologic grafts, and negative pressure wound therapy (NPWT).

Hypergranulation tissue was managed with silver nitrate, and Puracol Plus dressings promoted healing. Intensive outpatient care involved repeated grafting, non-weight-bearing protocols, and regular monitoring to ensure recovery.



Results

Despite early infection and wound dehiscence, revision debridement and aggressive wound care led to full healing by week 12. Serial evaluations showed reduced drainage, healthy granulation, and complete epithelialization. Imaging confirmed stable implant alignment and fusion. The patient, despite tobacco use, progressed to assisted ambulation with notable pain relief—demonstrating the success of a coordinated management strategy.



Discussion

Managing post-traumatic complications from gunshot injuries to the ankle is complex, especially with rare interventions like total talus replacement (TTR) for AVN and arthritis. Wound dehiscence required a coordinated strategy involving revision debridement, antibiotics, biologic grafts, and NPWT. Adjuncts like silver nitrate and Puracol Plus aided healing. Despite tobacco use, adherence to non-weight-bearing and comprehensive care resulted in a favorable outcome. This case supports literature indicating that aggressive, multidisciplinary management can restore function in high-energy trauma cases.

Conclusion

This case demonstrates that even with severe complications like infection and wound dehiscence following TTR, a proactive surgical and wound care strategy can achieve wound closure and functional recovery. Despite risk factors such as tobacco use, coordinated multidisciplinary care proved effective in salvaging the reconstruction and restoring mobility.