Reconstruction of the Extruded Talus with Large Allograft Interfaces: A Report of 3 Cases

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Although replant of the extruded talus would be preferable at the time of initial management, some patients present with a talus that had not been recovered. A series of 3 cases of the extruded talus that were reconstructed with large allograft interfaces are presented. Two of the cases had femoral head allografts and the other used morcellized cancellous allograft. Several orthobiologic substances were used in various proportions for each case. All 3 resulted in a solid union with minimal shortening of the extremity. Level of Clinical Evidence: 4 (The Journal of Foot & Ankle Surgery 47(5):476–482, 2008)

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Complete extrusion of the talar body is an uncommon injury. Although there is continued controversy regarding the management of these severe talar body extrusion injuries, definitive treatment ultimately depends on the extent of extruded talus recovery and retention of the talar head and neck (1–19). Recently, protocols for the treatment of the extruded talus have been better established and when the talus is re-implanted, satisfactory outcomes have been reported (4–8). Maintenance of the native bony substrate allows for future reconstructive procedures and likely decreases the complication rate (4–8). Regardless of injury pattern, when recovery and re-implantation of the talar body is not possible, patient outcomes often have fared poorly due to altered limb length and the loss of both subtalar and ankle motion (9, 11, 16). The loss of the vital bony substrate and linkage between the foot and leg imposes reconstructive difficulty as well.

Salvage of the completely extruded talus has been attempted with tibiocalcaneal arthrodesis using an intramedullary nail (9), creation of a tibiocalcaneal psuedoarthrosis (13), and custom talar prosthesis (14). If talar extrusion is incomplete with retention of the talar head and neck, Blair fusion has been described (10). The outcomes and repercussions of each of these vary from loss of joint mobility, limb length discrepancy due to loss of talar height, continued pain, and dysfunction.

Although salvage of the native talus and re-implantation is considered the treatment of choice (3–8), there are situations where the talus is not recovered or is severely damaged. Further, the risk of infection and talar necrosis has discouraged some surgeons from re-implantation (1, 17, 18). As such, some patients still present with absence of the talar body and require reconstruction. In order to minimize the consequence of loss of limb stature, we have used allograft materials to bridge the resultant defect. The feasibility of large allograft implantation for this type of injury has not been previously reported to the authors' knowledge. We present a series of 3 cases (in 2 patients) of an absent talar body that were reconstructed with minimal loss of height through the use of allograft materials.

Case Series

Case 1

A 38-year-old female was involved in a high-speed motor vehicle accident as a restrained driver. She suffered a Grade III open fracture dislocation of the talar body with extrusion of the talar body just inferior to the lateral malleolus (Figure 1). The talus did not completely exit the body and was visible through the skin wound. She was taken to a Level 1 trauma center where she was stabilized and taken to the operating room for irrigation and debridement and attention to the open fracture. Upon inspection, the operating surgeon elected to remove the extruded body as well as the talar head and neck. She was then placed in a monolateral external fixator and transferred to our institution for follow-up

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FIGURE 1 (*A*) Anteroposterior injury film of the left ankle. Note the presence of the talar body inferior to the lateral malleolus. (*B*) Lateral radiograph showing the absent talar body and the subluxation of the talonavicular joint. (C) Lateral radiograph of ankle after initial operative intervention. (*D*) Standing lateral radiograph of patient 7 years after injury.

care (Figure 1, C). Upon admission to our service the lower extremity was inspected and noted to have closure of the large laceration inferior to the lateral malleolus. The wound showed no signs of infection and fixator was intact.

At 8 weeks post injury, the skin envelope was completely healed without evidence of infection. She was then taken to the operating room for definitive reconstruction of the absent talus. A lateral approach inferior to the lateral malleolus