

## Management of Talar Nonunion With Extensive AVN of the Talar Dome by Resection of Talar Dome, Autograft and Hindfoot Nail

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**Introduction/Purpose:** Extensive avascular necrosis (AVN) and non union are common complications after talar neck fractures especially Hawkin's grades 3 and 4 and cases associated with comminution of the talar body. When both complications occur together, there is instability due to non union and talar collapse, arthritis of both ankle and subtalar joints, and hindfoot deformity in some cases in the form of varus or equines. The aim in these cases is to get a plantigrade stable painless foot, which requires ankle and subtalar fusion as well as union between the anterior talus and the hindfoot, with no or minimal limb shortening. The purpose is to assess the technique of removing all avascular bone followed by autograft and hindfoot nail to achieve this aim.

**Methods:** The study included eight patients, five males and three females with non union of talar neck fractures associated with extensive avascular necrosis of talar dome as a consequence of trauma. The operative technique includes posterior approach to the ankle with tendoachilles splitting (except in one patient where anterior approach was used to remove a tibial plate), removal of all avascular bone until the fracture line is reached, removal of articular cartilage of ankle and subtalar joints, filling the defect by iliac crest autogenous graft to maintain length and fixation by hindfoot arthrodesis nail. No fixation was used between the graft and the anterior talus. Also, the anterior talus was not fixed to the anterior tibia as this would shorten the limb. The union was assessed clinically and radiologically. The functional outcome was assessed using the AOFAS score. The minimal follow up duration is one year (range: one to five years).

**Results:** Six out of eight patients (75%) achieved solid union as evident clinically and radiologically within three to four months. This includes union of the ankle and subtalar joints as well as union between the graft and the anterior talus. Two patients did not achieve union after six months and required another bone grafting. One of them had also non union between the graft and the anterior talus and required additional fixation of the anterior talus. Both cases achieved union after the second procedure. Other complications included one superficial infection and one case of mild equines. The mean AOFAS score improved from 38.8 preoperatively ( range: 22 to 55) to 70.8 in the last follow up ( range: 65 to 86).

**Conclusion:** The technique described is a good option in treating cases with talar non union associated with extensive AVN. It has a good union rate and preserves the limb length without the need to proximal bone transport. Posterior approach allows easy access to both ankle and subtalar joints. Our results also suggest that there is no need to fix the anterior talus to the hindfoot as it fuses spontaneously to the graft.

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