Posterior Arthroscopic Tibio-talo-calcaneal Arthrodesis via Locked Retrograde Intramedullary Nail in a High-risk Patient

Tibio-talo-calcaneal (TTC) arthrodesis is an accepted treatment for combined degenerative joint disease (DJD) of the hindfoot/ankle. The surgical technique has evolved significantly and recent advancements involve a posterior arthroscopic approach to joint preparation and insertion of a locked retrograde intramedullary nail (LRIN). 1-4

PURPOSE
Limited available literature states that this approach affords a lower incidence of non-union, superior joint exposure and fewer incision healing complications compared to open approaches. 1,2

CASE STUDY
We present a 65-year old woman who sustained a severely comminuted closed trimalleolar ankle fracture 20-years prior that ultimately required four surgeries and resulted in persistent pain with activity. She has diabetes mellitus with peripheral sensory neuropathy, peripheral vascular disease (PVD) status-post iliac stenting (ABI 0.7) and untreated osteoporosis. Plain film radiographs and bone scintigraphy demonstrated hindfoot/ankle DJD with distal-lateral tibial osteonecrosis (Figure 1). We proposed a TTC arthrodesis via a posterior arthroscopic approach with LRIN fixation and a mixture of synthetic bone graft, intramedullary reamings and autogenous tibial bone marrow aspirate to enhance primary union. Osseous preparation to bleeding subchondral substrate was achieved (Figure 2) and LRIN inserted (Figure 3). Delayed incisional healing for five-months occurred; however, she healed and progressed to a stable, well-aligned arthrodesis with 13-months follow-up (Figure 4).

RESULTS
When treating high-risk patients with PVD and combined hindfoot/ankle DJD, open approaches may result in catastrophic complications. Alternatively, an arthroscopic approach allows for maximum preservation of bone mass and vascularity, and insertion of a LRIN provides sound fixation. Therefore, we believe this is a viable approach in select patients and should be considered by surgeons familiar with these techniques.

LITERATURE REVIEW
References