Background: Tibiotalocalcaneal, or ankle or subtalar arthrodesis adjacent to a prior fusion is used to treat arthrosis of the tibiotalar and/or subtalar joints, collapse and deformity of the hindfoot, and failed total ankle arthroplasty. Options to achieve fusion include intramedullary nails, plates, screws, and external fixators. In high-risk patients with a tenuous soft tissue envelope undergoing salvage surgery, a posterior approach often provides a fresh tissue plane for surgery and adequate tissue for coverage of hardware. This study reviews our technique of hindfoot arthrodesis utilizing a posterior blade plate and outcomes of this technique with special attention to complications.

Materials and methods: We retrospectively reviewed the charts and radiographs of a consecutive series of patients that underwent hindfoot arthrodesis using a posterior blade plate at our institution from 2001 to 2009. Inclusion criteria included six months of follow-up and either tibiotalar or combined tibiotalar and subtalar (tibiotalocalcaneal (TTC)) arthrodesis using a posterior blade plate. Thirty-two patients were identified and thirty-one were included in the final review with one being excluded because of death from unrelated cause during the early post-operative period.

Results: Of the thirty-one patients studied, procedures performed included isolated subtalar arthrodesis below a previous ankle arthrodesis (9), revision ankle arthrodesis above previous subtalar arthrodesis (6), primary tibiotalocalcaneal (TTC) arthrodesis (5), revision TTC arthrodesis (3), primary ankle arthrodesis (3), revision ankle arthrodesis (2), revision subtalar arthrodesis below previous ankle arthrodesis (1), ankle arthrodesis above a previous subtalar arthrodesis (1), tibiocalcaneal arthrodesis (1), and revision of failed total ankle replacement to TTC arthrodesis (1). Average follow-up was 16 months. Average age of the patients at the time of surgery was 57 years. Important comorbidities in the patient population included diabetes (7), neuropathy (11), and tobacco use (9). Patients underwent an average of two previous hindfoot surgeries. Seventeen patients sustained 24 complications in our study. Seven patients (26%) had a nonunion. Four patients (13%) had deep infection requiring additional surgery and intravenous antibiotics. Two patients with deep infection went on to require a below knee amputation (BKA). Four patients (13%) had superficial wound infection or delayed healing that did not require additional surgery. One additional patient went on to a BKA after a failed TTC fusion after failed total ankle replacement. There were two patients (6%) with delayed unions (union time > 6 months). Average time to fusion for the 23 patients that went onto union was 4.5 months. There were an additional 7 minor complications (1 tibial nerve neuritis, 1 deep vein thrombosis, 2 patients with symptomatic hardware, and 3 stress fractures). At a time 12 months after surgery, three patients (10%) had failed salvage and had undergone BKA and twenty-three (74%) had achieved union without ongoing skin compromise.

Conclusion: Posterior hindfoot arthrodesis using a posterior blade plate is a technique we have employed for complex hindfoot problems in a high-risk population. The technique is a sound option when the soft tissue envelope is compromised and a tissue plane free from previous surgery is desired, but a significant rate of complications is encountered.