

External Fixator Assisted Ankle Arthrodesis Following Failed Total Ankle Arthroplasty

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What was the question? Failed total ankle arthroplasty (TAA) often requires arthrodesis, with significant bone loss. After treating seven of these patients we asked, what is the natural history of bone loss following failed TAA and what is the outcome of these ankle fusions when performed using the Ilizarov method?

How did you answer the question? We performed a retrospective review of our ankle fusions for failed TAA to collect primary mode of implant failure, presenting limb length discrepancy (LLD), total bone defect, and post-arthrodesis LLD, therapy type (lift vs. distraction osteogenesis) and amount (shoe lift or cm of lengthening).

What are the results? We reviewed seven cases: four mechanical failures and three infections. Four of seven cases had prior revision TAAs. Four of seven patients were treated with talotibial arthrodesis; three of seven patients required complete talar resection and tibiocalcaneal arthrodesis. The mean presenting LLD was 2.2 cm (1.2–3.5). The mean time in frame for fusion was 197 days (146–229) with a mean post-fusion total bone defect of 5.1 cm (1.0–8.5). Four of seven patients elected tibial lengthening following fusion (mean lengthening 4.6 cm (2.5–8.0); EFI 42.6 days/cm (16.5–55.6)). Three of seven patients were treated with a shoe lift (mean lift height 2.9 cm (2.5–3.2)). We had no failure of fixation, refracture or infection. All patients had a stable plantigrade foot and walked with minimal limp. ASAMI function scores were 6 good and 1 fair. ASAMI bone scores were 4 excellent and 3 good.

What are your conclusions? Ankle arthrodesis following failed TAA results in large LLDs secondary to bone loss during implant failure and subsequent explantation. External fixation produces an excellent fusion rate in complex, frequently infected, failed total ankles. Limb length equalization (by either distraction osteogenesis or shoe lift) provides a means of obtaining good to excellent functional outcomes following explantation and fusion.