Tibiocalcanal Fusion using a Peg-in-Hole Technique with Combined Iliac External Fixation Method
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Statement of Purpose
Tibiocalcanal fusion (TCF) is an end-stage procedure performed for bunion in the diabetic foot due to Charcot Osseous dysplasia in Asheville, for patients who have sustained severe trauma to the talus, infection or for revision of failed total ankle arthroplasty. Often times, poor healing from trauma or diabetes and the resulting infection of bone can delay bone healing and fusion site stability in question. The authors present a new technique for TCF via Peg-in-Hole using the iliac external fixation (IEF) system in 52 patients.

Methodology & Hypothesis
A retrospective review of 60 patients with a mean follow-up of 35 months. Age, sex, fusion time, time to fusion, and complication rate were all evaluated. Co-morbidities were also identified. The hypothesis that was that this is a superior technique to the previously described planar resection for TCF.

Procedure
Peg-in-Hole TCF with IEF was performed on 52 patients. The distal leg is exposed via a lateral incision. The bone graft, in the case of Charcot demineralized bone, is resected, healing bunion. The leg is made in the national calculator and then the incision made in the distal tibia with care to preserve residual soft tissue structures as much as possible (figure 3). One attempt to preserve the bone graft that is resected and decalcified or used as bone graft. The IEF is then applied via standard methods. No internal fixation is used in this construct. The incision is closed directly and the External fixator is comprised of a reliable procedure for TCF with severe trauma.

Discussion
We report on a new technique of creating a Peg-in-Hole type cut not previously described for TCF. A V-shaped osteotomy has been described in the proximal tibia to correct for infrabular varus or valgus, but this technique is not considered reliable. Type II talar deformities have been described in patients with Charcot neuroarthropathy (1). In our technique, the peg-in-hole osteotomy creates a larger surface area of bone for fusion and allows for an increased bone contact for fusion. Coupled with the superior compression that IEF allows for, this technique is a reliable procedure for TCF with severe trauma.

Results
There were 39 males, 13 females. The average age was 47 years. The overall fusion rate was 94%. Sixteen of the patients were TCF due to infection and 36 were TCF due to Charcot deformity. Comorbidities identified prior to surgery were diabetes mellitus, smoking, and prior surgery.

Complications encountered in our patient population were consistent with those described by other authors (1-5). However, none of our patients encountered pin tract infections in contrast to other author’s reported several of their patients with pin tract infections ranging from local wound infection to deep infection.

References