Subtalar Arthrodesis in Patients with Previous Ankle Fusion

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Introduction
Isolated subtalar arthrodesis is generally a successful procedure with reported fusion rates ranging from 84% to 100%. To our knowledge, fusion rates for subtalar arthrodesis in patients with prior ipsilateral ankle fusion have not been published in the orthopaedic literature. The purpose of our retrospective study is to determine fusion rates in subtalar arthrodesis performed in patients with previous ankle fusion. Our hypothesis is that subtalar fusion rates in patients with prior ipsilateral ankle arthrodesis are less than those reported for isolated subtalar arthrodesis.

Methods
Between January 2000, and December 2010, we identified 387 subtalar arthrodesis performed at our institution. A retrospective chart review of these patients identified 16 patients (mean age 56 years, range 40-71) with successful ankle fusion who underwent ipsilateral subtalar arthrodesis. Surgical indication in all 16 cases were degenerative subtalar arthritis after successful ankle fusion. The operations were performed by two of our institution’s foot and ankle specialists. Subtalar arthrodesis was performed using internal fixation (14 feet) and external fixation (2 feet). In all sixteen patients adjuvant treatment for arthrodesis was used (autograft in 5 cases, allograft in 8 cases and platelet rich plasma in 14 cases). Postsurgical management included nonweightbearing and immobilization for an average of 14.2 weeks (range 12-20 weeks). At mean followup of 26.9 months (range 12-90 months), patients were evaluated clinically and radiographically by an investigator not directly involved in the surgical procedures. Criteria for subtalar fusion included lack of pain with weightbearing and hindfoot stress, and presence of bridging trabeculation at the subtalar joint based on lateral foot, mortise ankle view, and Broden’s views. When clinical and radiographic evaluation suggested incomplete union, patients were further assessed with computed tomography.

Results
Based on our clinical and radiographic evaluation of this case series, nine of the sixteen patients presented a non-union (56%); In these nine cases, CT scan confirmed clinical and radiographic suspicion of nonunion. Four were revised with repeat internal fixation (44%), four using external fixation (44%), and one patient had not undergone revision surgery at the time of this investigation (12%).
Conclusion

To our knowledge, our investigation is the largest reported series of subtalar arthrodesis in patients with ipsilateral previous ankle fusion. While isolated subtalar arthrodesis is successful in a majority of patients with reported fusion rates between 84% and 100%, our case series suggests that subtalar arthrodesis fusion rates are far less in patients with prior successful ipsilateral ankle fusion. In our opinion, our nonunion rate of 56% indicates that tibiotalar stiffness adjacent to subtalar arthrodesis considerably diminishes subtalar arthrodesis union rates when compared to fusion rates of isolated subtalar arthrodesis rates reported in the orthopaedic literature. Although our findings may need to be corroborated by other independent investigators and ideally supported by direct comparison to a similar patient cohort undergoing isolated subtalar arthrodesis in patients without previous ankle fusion, we recommend that patients undergoing subtalar arthrodesis after prior ankle fusion be properly counseled.