Total ankle replacement and simultaneous subtalar arthrodesis: CT scan evaluation of fusion rate
Luigi Manzi, MD, Cristian Indino, MD, Camilla Maccario, MD, Claudia Di Silvestri, MD, Riccardo D’Ambrosi, MD, Federico Giuseppe Usuelli, MD

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Introduction/Purpose: Patients with arthritis or severe dysfunction involving both the ankle and the subtalar joints can benefit from tibiotalocalcaneal (TTC) arthrodesis or total ankle replacement and subtalar fusion. With the evolution of prosthetic design and surgical techniques, total ankle replacement (TAR) has become a reasonable alternative to arthrodesis. The aim of this study was to investigate the fusion rate of the subtalar joint and talonavicular joint in patients simultaneously treated with total ankle replacement (TAR) and subtalar joint fusion.

Methods: This study includes 11 patients who underwent primary TAR and simultaneous subtalar and talonavicular fusion from May 2011 to January 2015. Six males and five females were enrolled with a mean age of 61 years (41-75). Patients were clinically assessed preoperatively and at 6 and 12 months postoperatively. Total follow-up time was 24.2±11.6 months. Radiographic examination included a postoperative CT scan obtained 12 months after surgery. Three surgeons independently reviewed the CT scans and interobserver reliability was calculated. Functional scores were also assessed.

Results: At 12 months postoperatively, the subtalar fusion rate in patients treated with TAR and simultaneous subtalar fusion was 92% and the talonavicular fusion rate was 88%. There was a statistically significant increase in American Orthopedic Foot & Ankle Society ankle/hindfoot score from 25.9 to 74.1 at 12 months post-operatively. Ankle range of motion significantly increased from 10.2° to 30.8 degrees. Additionally, there was a statistically significant decrease in visual analog scale (VAS) pain score from 8.8 to 1.9.

Conclusion: TAR and simultaneous subtalar and talonavicular joint fusion are reliable procedures for the treatment of ankle and subtalar joint arthritis. Furthermore, CT scans showed an excellent reliability among orthopaedic surgeons in determining the degree of successful fusion of subtalar and talonavicular arthrodesis.

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