Functional and Clinical Assessment of Two Ankle Arthrodesis Techniques.

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Abstract

Isolated tibiotalar fusion is the preferred choice for isolated end-stage arthritis, joint destruction after infection, talar avascular necrosis, Charcot neuroarthropathy, and joint replacement failure. Combined tibiotalar and subtalar joint fusion with an intramedullary nail can achieve better alignment and save patients from prolonged non-weightbearing. The purpose of the present study was to functionally assess using instrumental gait analysis and clinically assess the effect of these 2 surgical techniques. Twelve patients with a mean follow-up duration of 70 (range 55 to 89) months after successful ankle fusion were analyzed, 6 isolated and 6 combined. The main outcome measure was the functional assessment performed using a stereophotogrammetric system and an established multisegment foot kinematics protocol. Standard clinical, imaging, and score systems were also assessed in the 2 groups, including radiographic-based classification of arthritic degeneration at the neighboring foot joints. No significant differences were found between the 2 groups using the scoring systems. Severe arthritic degeneration was found at the subtalar joint in the isolated fusion group and at the talonavicular and Lisfranc joints in the combined fusion group. From the gait analysis, no differences were found in the time-distance parameters; however, significant differences were observed in several joint rotations and planar angles. Isolated tibiotalar fusion allows for motion, however small, at the subtalar joint but can result in severe degeneration. Good clinical and functional results can also be obtained with combined tibiotalar and subtalar fusion, although this can result in degeneration of the adjacent joints of the foot.

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KEYWORDS: ankle fusion; clinical scores; foot joint degeneration; gait analysis; radiographs; subtalar joint fusion

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