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Role of bone graft and bone graft substitutes in isolated subtalar joint arthrodesis

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ABSTRACT

Introduction: Subtalar joint (STJ) arthrodesis is a well-established operative procedure in the treatment of subtalar arthritis and hindfoot deformities. Nonunion remains an important complication, with an incidence and role of risk factors varying in the literature. Recent reports have highlighted a decrease in overall union rates between 96% and 100% to 84%, further strengthening the need for an understanding of risk factors that may be implicated in nonunion rates. Some possible factors have been identified, including smoking, revision surgery, the presence and extent of devascularized bone, and previous ankle joint fusion. Current practice suggests that using bone grafts or bone graft substitutes decreases the risk of its occurrence.

Objective: To compare union rates of isolated subtalar arthrodesis with and without the use of bone grafts or bone graft substitutes.

Methods: We retrospectively reviewed 135 subtalar fusions with a mean follow-up of 18±14 months. The standard approach was used for all operations. Graft materials included β-tricalcium phosphate, demineralized bone matrix, iliac crest autograft and allograft and allograft cancellous chips. Successful subtalar fusion was determined clinically and radiographically.

Results: There was an 88% (37/42) union rate without graft and an 83% (78/93) union rate with bone graft use. The odds ratio of union for graft versus no graft was 0.703 (95% CI, 0.237-2.08). The average time to union in the graft group was 3±0.73 months and 3±0.86 in the nongraft group, with no statistically significant difference detected ($p=0.56$).

Conclusion: Graft use did not improve union rates for subtalar arthrodesis.

Keywords: Bone graft; Nonunion; Subtalar arthritis.

