

Evaluating Outcomes After Midfoot Bone Block Arthrodesis

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Introduction/Purpose: Midfoot arthrodesis requires a structural graft where bone loss from AVN, osteomyelitis and erosive arthritis is present in the navicular, cuneiform or 1st metatarsal. The goal of this study was to evaluate radiographic outcomes of midfoot bone block arthrodesis.

Methods: A retrospective, IRB approved study was completed evaluating midfoot arthrodesis between 2002 and 2014, where structural bone graft was used as part of an arthrodesis of the tarsometatarsal (TMT) joints or the naviculocuneiform (NC) joints or both. Demographic characteristics were obtained including age, body mass index (BMI), diagnosis, diabetes or tobacco use, indication for use of bone block, location of the bone block, and type of graft used. Radiographic data collected included time to union, the number of patients in which union was obtained, and graft length

Results: Over a 12-year period, there were a total of 33 with an average age of 57.9 years, and included 20 females and 13 males with an average BMI of 29. The average length of follow up was 24 months. The most common diagnoses was erosive midfoot arthritis (11) and prior navicular fracture associated with AVN (9). Structural allograft was used in all patients. (first TMT (10), talocuneiform (9), other combinations (14)). Various types of biologic agents were used in 20 of 33 arthrodeses. Radiographic evidence of union was found in 21/33 patients (63.6%) at an average of 4.7 months after surgery. Twelve patients developed a nonunion. The risk factors for nonunion include age > 50, the presence of erosive osteoarthritis, AVN of the navicular and lack of use of biologic stimulation. There was no correlation between the presence of diabetes, a prior history of infection or prior history of trauma and development of nonunion.

Conclusion: The radiographic fusion rate of patients undergoing large structural midfoot bone graft arthrodesis was 63.6% with radiographic evidence of healing present in this group at 4.77 months after surgery. This is the first known study reporting on radiographic outcomes of structural bone graft arthrodesis of the midfoot. The rate of fusion seen here is slightly better compared with recent studies evaluating healing of large defects using femoral head structural allografts. Nonetheless, the risk of non-union remains far greater than when an in situ arthrodesis of these same joints are performed.

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