

Arthroscopic Ankle Arthrodesis Is Associated with Fewer Complications and a Lower Risk of Pseudoarthrosis Compared to Open Ankle Arthrodesis

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INTRODUCTION:

Ankle arthrodesis (AA) is a common treatment for end-stage ankle arthritis, chronic instability, and degenerative deformity. While minimally invasive arthroscopic techniques may reduce soft tissue disruption, postoperative pain, and related morbidity, open techniques may be beneficial for treatment of patients with aberrant anatomy, insufficient bone stock, or complex deformity. This study aimed to determine whether arthroscopic AA is associated with lower rates of adverse events, pseudoarthrosis, and healthcare utilization compared to open AA techniques at short-term and long-term intervals.

METHODS: We conducted a retrospective analysis using the TriNetX research network. Patients undergoing AA were identified using CPT codes for arthroscopic (CPT 29899, n = 879) and open (CPT 27870, n = 10,604) procedures. Two cohorts were defined and propensity-score matched on age, sex, race, BMI, nicotine dependence, chronic kidney disease, and type II diabetes mellitus (n = 873 each). Outcomes were evaluated 30 days, 90 days, 2 years, and 5 years.

RESULTS:

The arthroscopic AA cohort experienced significantly lower rates of any adverse event, nonunion, and hospital admission at all time points. Arthroscopic AA was associated with fewer emergency department visits within 90 days, 2 years, and 5 years of surgery. The arthroscopic AA cohort demonstrated significantly lower rates of surgical site infection at all follow-up intervals and dehiscence past 90 days. Rates of myocardial infarction, cerebral infarct, transfusion, pulmonary embolism, and hematoma did not differ at any interval.

DISCUSSION AND CONCLUSION: Arthroscopic AA was associated with significantly lower composite adverse event rates at all time points, in addition to lower rates of nonunion, emergency department visits, and inpatient admission. While these data strongly support the use of arthroscopic AA, the results should be interpreted with caution due to the inability to assess the degree of coronal or sagittal plane deformity in the included cases.