Ankle Arthrodesis Increases Risk of Progression to Subtalar Arthrodesis Compared to Total Ankle Arthroplasty

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INTRODUCTION:

There is a known association between ankle arthritis and ipsilateral subtalar arthritis. It is unknown how the increased range of motion and improved gait mechanics provided by total ankle arthroplasty (TAA) effects the progression of subtalar arthritis compared to ankle arthrodesis (AA). We hypothesized that patients treated with TAA would have a lower incidence of postoperative subtalar arthrodesis (SA) compared to AA.

METHODS: We retrospectively reviewed 2564 AA and 3014 TAA performed between 1/1/2016 and 12/31/2022. Patients with a history of an ipsilateral subtalar arthrodesis preoperatively were excluded. Records were reviewed for demographics, medical history, and postoperative subtalar arthrodesis up to 5 years after AA or TAA. Patients who underwent a TAA tended to be older (p<0.001), but gender (p=0.098) and obesity (p=0.225) were similar between cohorts. TAAs were more likely to be diagnosed with osteoarthritis, posttraumatic arthritis, rheumatoid arthritis, or psoriatic arthritis and less likely to be indicated due to another diagnosis (p<0.001). Mean follow-up was 2 years in both cohorts.

RESULTS: Cumulative incidence of an ipsilateral SA was higher at 5 years with an AA (4.20%, 95% confidence interval (CI)=2.60%-5.80%) than a TAA (1.30%, CI=0.60%-2.00%, p=0.004). A multivariate analysis showed that AA increased the risk of progressing to SA compared to TAA (OR=1.95, CI=1.08-3.52, p=0.027), but not age (OR=0.98, CI=0.96-1.01, p=0.183), female gender (OR=1.16, CI=0.68-1.99, p=0.587), obesity (OR=1.74, CI=0.93-3.26, p=0.083), posttraumatic arthritis (OR=1.04, CI=0.57-1.90, p=0.896), inflammatory arthritis (p=1.000), or another diagnosis (OR=1.60, CI=0.75-3.40, p=0.224) compared to osteoarthritis. For those patients who underwent an ipsilateral SA, patients in the AA cohort tended to wait longer before proceeding with the SA (mean=1.78 years (range=0.002-4.62 years) than the TAA cohort (mean=1.11 (range=0.10-3.62 years), p=0.049).

DISCUSSION AND CONCLUSION: There is a significantly higher incidence of patients undergoing SA after AA compared to TAA. For those patients who required a SA, patients with an AA tended to wait longer before undergoing the SA compared to those with an TAA. We recommend that surgeons consider TAA over AA, especially in patients with minimal subtalar arthritis as a strategy to help delay the progression of subtalar arthritis.

