

Postoperative Outcomes of Total Ankle Arthroplasty vs Ankle Arthrodesis in Patients with Well-Controlled Diabetes

Kush Suresh Mody, Avani A Chopra, Spencer Thomas Rasmussen, Michael C Aynardi, Sheldon S Lin

INTRODUCTION: Total ankle arthroplasty (TAA) has emerged as an alternative to ankle arthrodesis (AA) for end-stage ankle arthritis, particularly in patients with comorbidities such as diabetes mellitus (DM). While uncontrolled diabetes is known to increase surgical risk, outcomes in patients with controlled diabetes (HbA1c ≤ 7%) remain less well characterized. This study utilizes a large multi-institutional database to retrospectively compare postoperative outcomes between these two surgical interventions, focusing specifically on patients with controlled diabetes.

METHODS: Using the TriNetX Research Network, we identified patients with controlled diabetes who underwent AA or TAA between 2000 and 2023. Patients were included if they had a DM diagnosis and HbA1c ≤ 7% within 1 year prior to surgery. After applying inclusion criteria and excluding patients with less than two years of follow-up, AA and TAA cohorts were propensity-matched 1:1 based on demographics and comorbidities. Postoperative outcomes were compared at 30 and 90 days (readmissions, emergency department [ED] visits, minor and severe adverse events), and at 1 and 2 years (implant-related complications, including revision, wound complications, irrigation and debridement [I&D], and below-knee amputation [BKA]).

RESULTS: After matching, 235 patients were included in each cohort. Compared to TAA, AA patients had significantly higher rates of 30-day (37.0% vs 24.3%, p=0.003) and 90-day (44.3% vs 31.5%, p=0.004) readmissions, as well as increased 30-day (16.2% vs 6.0%, p<0.001) and 90-day (21.7% vs 8.9%, p<0.001) minor adverse events (Table 1). Additionally, AA patients had significantly higher revision rates at 1 year (22.6% vs 9.8%, p<0.001) and 2 years (29.6% vs 11.2%, p<0.001), as well as an increased 2 year wound complication rate (14.9% vs 6.4%, p=0.003) (Table 2).

DISCUSSION AND CONCLUSION: In patients with well-controlled diabetes, AA was associated with significantly higher rates of readmissions, minor complications, and revision surgery compared to TAA, without increased risk of major adverse events. These findings suggest that TAA may be a favorable surgical option in this population.

Table 1: 30 and 90-day medical healthcare utilization complications

	AA (n=235)	TAA (n=235)	Risk difference	p-value
ED visits				
30 Days	<10 (4.3)	<10 (4.3)	0	1
90 Days	24 (10.2)	18 (7.7)	2.6	0.332
Readmissions				
30 Days	87 (37.0)	57 (24.3)	12.8	0.003
90 Days	104 (44.3)	74 (31.5)	12.8	0.004
Minor Adverse Events				
30 Days	38 (16.2)	14 (6.0)	10.2	<0.001
90 Days	51 (21.7)	21 (8.9)	8.9	<0.001
Severe Adverse Events				
30 Days	<10 (4.3)	<10 (4.3)	0	1
90 Days	21 (8.9)	13 (5.5)	3.4	0.154

Table 2: 1 and 2-year orthopedic complications

	AA (n=235)	TAA (n=235)	Risk Difference	p-value
I&D				
1 Year	11 (4.7)	<10 (4.3)	0.43	0.823
2 Years	16 (6.8)	<10 (4.3)	2.6	0.226
Wound Complications				
1 Year	25 (10.6)	14 (6.0)	4.7	0.066
2 Years	35 (14.9)	15 (6.4)	8.5	0.003
Amputation				
1 Year	<10 (4.3)	<10 (4.3)	0	1
2 Years	11 (4.7)	<10 (4.3)	0.43	0.823
Revision				
1 Year	53 (22.6)	23 (9.8)	12.8	<0.001
2 Years	74 (31.5)	28 (11.9)	19.6	<0.001