

The Effect of Tobacco Use on Total Ankle Arthroplasty

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Purpose

Literature has shown the use of tobacco products adversely effects patient outcomes in foot and ankle surgery. There has been limited literature reporting the use of tobacco in total joint replacement, specifically total ankle replacement (TAR). This retrospective study presents a single surgeon's experience with active, former, and non-tobacco users in TAR.

Methodology

The total cohort was divided into three groups based on tobacco use. Group 1 included patients who were active tobacco users. Patients in group 1, as per the primary surgeon's (JMC) protocol, were tested for tobacco use and found to be negative for a period of 3 months prior to surgery, however, these patients admitted to smoking within the post-operative period. Group 2 included patients who were former tobacco users. Group 3 included patients who were never tobacco users. Available charts were reviewed for patients who underwent total ankle arthroplasty during a 5-year period. Patient demographics, smoking status, implant used, concomitant procedures, and postoperative complications were recorded. All joint replacement procedures were performed by the senior author, JMC.

Group	N	Complication Rate	P value
Active Tobacco	11	5/11 (45.5%)	0.046
Previous Tobacco	38	9/38 (23.7%)	0.402
Never Tobacco	65	14/65 (21.5%)	
Total	114	28/114 (24.6%)	

Table 1. Statistical analysis

Results

221 patients underwent total ankle replacement by the primary surgeon (JMC) between March 2012 and July 2017. 114 patients were available for follow-up. The average follow-up was 28 months for group 1 (range 10-55), 34.1 months for group 2 (range 12-60), and 32.8 months for group 3 (range 11-60). The average age at time of surgery was 55.9 years for group 1 (range 45-75), 68.7 years for group 2 (range 47-84), and 69.1 years for group 3 (range 23-86). Group 1 consisted of 5 females and 6 males, group 2 19 females and 19 males, group 3 34 females and 31 males. The total complication rate for group 1 was 45.5% (5), group 2 23.7% (9), group 3 21.5% (14). All patients underwent at least one concomitant procedure at the time of surgery.



Figures 1-3. Wound complications in smokers

Total	N
Age (mean, range)	64.6 (23-86)
Follow up in months (mean, range)	31.6 (10-60)
Sex	Male: 56 (49.1%) Female: 58 (50.9%)
Tobacco Use	Current: 11 (9.6%) Former: 38 (33.3%) Never: 65 (57.1%)
Concomitant Procedures	114 (100%)

Table 2. Patient demographics

Literature Review

The effect of tobacco use on orthopedic surgery has been well reported in literature. Smoking has been shown to cause a statistically significant increase in the rate of wound complications following orthopedic surgery.¹ Additionally, implant survivorship has been shown to be lower in smokers undergoing total hip and knee arthroplasty.^{2,3} The risk of deep infection has also shown to be higher in smokers.⁴

Analysis & Discussion

This report shows that active smokers undergoing TAR have a significantly higher complication rate when being compared to former smokers and non-smokers. Our results are similar to the findings published by Lampley et al, showing a higher risk of wound complications and worse outcome scores in smokers.⁵ This study highlights the importance of smoking cessation prior to joint replacement surgery.

Complications	N
Superficial infection	6
Wound requiring OR debridement	12
Deep infection	5
Poly failure	2
Peri-prosthetic fracture	1
Component subsidence	2
Total	28

Table 3. Complications

References

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