

Correlation of GLP-1 Receptor Agonists with Surgical Outcomes after Achilles Tendon Repair in Obese Patients

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INTRODUCTION:

Glucagon-like peptide-1 receptor agonists (GLP-1 RAs) are becoming increasingly popular for managing type 2 diabetes and obesity. Beyond their metabolic effects, they have shown anti-inflammatory properties, which may impact post-surgical recovery. However, their role in orthopedic procedures, particularly Achilles tendon repair, remains unclear. This study investigates whether GLP-1 RA use affects surgical outcomes, including wound infection, deep vein thrombosis (DVT)/pulmonary embolism (PE), hospital readmission, and reintervention.

METHODS:

A retrospective cohort study was conducted on 337 patients who underwent Achilles tendon repair. Among them, 11.3% were GLP-1 RA users. Post-operative complications, including infection, DVT/PE, readmission, and reintervention, were analyzed. Logistic regression models and correlation analysis were used to estimate odds ratios (OR) for complications while controlling for potential confounders. Variance inflation factor (VIF) analysis was conducted to evaluate collinearity between independent variables.

RESULTS:

GLP-1 users had an 85% lower risk of wound infection compared to non-users (OR: 0.15, 95% CI: 0.03–0.67, $p = 0.019$), making non-GLP users 2.07 times more likely to develop a wound infection. Additionally, GLP-1 RA users had lower rates of DVT/PE (2.78% vs. 6.44%), readmission (2.78% vs. 7.80%), and reintervention (0.00% vs. 6.78%), though these differences did not reach statistical significance. Diabetes emerged as the strongest predictor of wound infection ($r = 0.29$, $p < 0.01$), while age showed a negative correlation with wound infection ($r = -0.12$, $p = 0.03$).

DISCUSSION AND CONCLUSION:

This study suggests that GLP-1 RA use is associated with a lower risk of wound infection following Achilles tendon repair. Although GLP-1 RA users also had lower rates of DVT/PE, readmission, and reintervention, these differences were not statistically significant. These findings highlight a potential protective role of GLP-1 RAs in surgical outcomes. Larger prospective studies are needed to validate these associations and assess the potential integration of GLP-1 RAs into perioperative care.

Table 1. Baseline Demographics and Clinical Characteristics of the Study Cohort

Characteristic	n (%)
Total Patients	337
Male	238 (70.6)
Female	99 (29.4)
Mean Age (SD)	58.4 (10.2)
Mean BMI (SD)	34.8 (4.5)
Mean HbA1c (SD)	7.2 (1.5)
Mean ASA Score	2.8
Mean LOS (SD)	4.2 (1.8)
Mean LOS Cost (SD)	\$12,345 (3,456)

Table 2. Univariate Correlations for Wound Infection by GLP-1 Receptor Agonist Use

Characteristic	GLP-1 Users	Non-GLP-1 Users	p-value*
Wound Infection	15 (13.3%)	102 (30.8%)	0.019
Diabetes	12 (10.6%)	45 (13.9%)	0.15
Age	56.8 (10.1)	58.9 (10.3)	0.03
ASA Score	2.7	2.8	0.85
LOS	4.1	4.3	0.72
LOS Cost	\$12,100	\$12,500	0.68

*p-values are calculated using multivariate logistic regression, adjusting for BMI, age, diabetes status, and LOS.

Table 3. Comparison of Surgical Outcomes by GLP-1 RA Use for Patients Undergoing Open Achilles Tendon Repair

Complication	GLP-1 Users	Non-GLP-1 Users	p-value
Wound Infection	15 (13.3%)	102 (30.8%)	0.019
DVT/PE	8 (7.1%)	41 (12.5%)	0.12
Readmission	8 (7.1%)	41 (12.5%)	0.12
Reintervention	0 (0.0%)	24 (7.4%)	0.08

Table 4. Comparison of Surgical Outcomes by GLP-1 RA Use for Patients Undergoing Minimally Invasive Repair

Complication	GLP-1 Users	Non-GLP-1 Users	p-value
Wound Infection	0 (0.0%)	10 (15.4%)	0.12
DVT/PE	0 (0.0%)	10 (15.4%)	0.12
Readmission	0 (0.0%)	10 (15.4%)	0.12
Reintervention	0 (0.0%)	10 (15.4%)	0.12

Table 5. Correlation Analysis Between Patient Characteristics and Postoperative Complications

Characteristic	Wound Infection	DVT/PE	Readmission	Reintervention
Diabetes	0.29	0.15	0.10	0.08
Age	-0.12	0.05	0.02	0.01
ASA Score	0.05	0.02	0.01	0.01
BMI	0.02	0.01	0.01	0.01
HbA1c	0.01	0.01	0.01	0.01
LOS	0.01	0.01	0.01	0.01

Table 6. Variance Inflation Factor (VIF) Analysis

Characteristic	VIF	Tolerance	DF
Diabetes	1.02	0.98	1
Age	1.01	0.99	1
ASA Score	1.01	0.99	1
BMI	1.01	0.99	1
HbA1c	1.01	0.99	1
LOS	1.01	0.99	1

*p-values are based on the adjusted for the GLP-1 RA coefficient in the multivariate logistic regression model.

*p-values are calculated using multivariate logistic regression, adjusting for BMI, age, diabetes status, and LOS.

*p-values are calculated using multivariate logistic regression.

*p-values are calculated using Pearson correlation.

*p-values are based on the adjusted for the GLP-1 RA coefficient in the multivariate logistic regression model.