Impact of Ulcerative Colitis on Short- and Long-Term Outcomes Following Primary Total Knee Arthroplasty: A Large Database Analysis

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INTRODUCTION: Ulcerative Colitis (UC) is a chronic inflammatory condition that may affect the growing population undergoing total knee arthroplasty (TKA). While TKA is a highly effective procedure, the specific impact of preoperative UC on perioperative and particularly long-term outcomes remains less clearly defined. This study investigates the association between preoperative UC and medical and surgical complications assessed at 90 days, and at 2 and 5 years following primary TKA.

METHODS: This retrospective study utilized the multicenter database, TriNetX, to identify adult patients undergoing primary TKA from 2003-2023 with Ulcerative Colitis versus controls, with minimum 2-year follow-up. 1:1 propensity score matching (PSM) based on demographics and relevant comorbidities yielded 1,191 patients in each cohort. Outcomes included medical complications (e.g., emergency department [ED] visits, sepsis, venous thromboembolism) and surgical complications (e.g., periprosthetic joint infection [PJI], aseptic loosening, all-cause revisions) evaluated at multiple timepoints. Statistical analyses were performed to calculate risk ratios (RR) and generate Kaplan-Meier survivorship curves.

RESULTS:

1,191 patients were included in each cohort after PSM. At 90 days, the UC cohort had significantly increased risks of DVT (RR 2.077, p=0.026) and ED visits (RR 1.289, p=0.048). An increased risk of PJI was observed in the UC cohort at 2 years (RR 1.760, p=0.020) and persisted at 5 years (RR 1.719, p=0.012). The UC cohort also demonstrated a higher risk of all-cause revision at 5 years (RR 1.833, Log-Rank p=0.011). No significant differences were observed in other evaluated medical or surgical outcomes, including aseptic loosening, at any timepoint.

DISCUSSION AND CONCLUSION: Pre-operative Ulcerative Colitis in TKA patients is associated with an increased risk of 90-day DVT and ED visits, PJI at 2 and 5 years, and all-cause revision at 5 years. These findings underscore UC's considerable long-term burden after TKA, suggesting a need for vigilant monitoring and potentially tailored perioperative strategies.

Table 1: 90-Day Postoperative Outcomes in Ulcerative Colitis-TKA vs Control-TKA

Outcome	% of Outcomes in Ulcerative Colitis	% of Outcomes in Control	Risk Ratio (RR)	95% Confidence Interval (CI)	P-value
Emergency Department Visit	10.5%	8.1%	1.289	(1.001, 1.659)	**0.048**
Deep Vein Thrombosis (DVT)	2.3%	1.1%	2.077	(1.077, 4.005)	**0.026**
PJI / Deep SSI	2.3%	1.4%	1.588	(0.870, 2.898)	0.128
Hospital Readmission	1.6%	0.9%	1.727	(0.826, 3.614)	0.142
General Infection	1.5%	1.3%	1.200	(0.608, 2.370)	0.599
Acute Renal Failure	2.9%	2.4%	1.250	(0.765, 2.041)	0.371
Pulmonary Embolism (PE)	1.2%	1.7%	0.700	(0.355, 1.379)	0.300

Table 2: 2-Year Implant-Related Outcomes in Ulcerative Colitis-TKA vs Control-TKA

Outcome	% of Outcomes in Ulcerative Colitis	% of Outcomes in Control	Risk Ratio (RR)	95% Confidence Interval (CI)	P-value
PJI / Deep SSI	3.7%	2.1%	1.760	(1.084, 2.856)	**0.020**
Revision TKA	2.2%	1.2%	1.857	(0.975, 3.539)	0.056
Aseptic Loosening	0.8%	0.8%	1.000	(0.418, 2.394)	1.000

Table 3: 5-Year Kaplan-Meier Survival Analysis Summary

Outcome	Group	Patients with Outcome	Survival Probability at 5 Years	Log-Rank Test (p-value)
Revision TKA	Ulcerative Colitis	44	96.3%	**0.011**
	Control	24	98.0%	
PJI / Deep SSI	Ulcerative Colitis	55	95.4%	**0.010**
	Control	32	97.3%	
Aseptic Loosening	Ulcerative Colitis	21	98.2%	0.063
	Control	11	99.1%	