

The Effects of Gout Following Total Knee Arthroplasty: A Retrospective Analysis

Matthew Winslow Cole, James Heath Wilder¹, Bailey John Ross², Lacey Kristine Collins, William Franklin Sherman

¹Tulane University School of Medicine, ²Department of Orthopaedic Surgery

INTRODUCTION: The prevalence and incidence of gout is steadily increasing along with an increase in the number of total knee arthroplasties (TKA) performed annually. This study set out to determine whether patients with gout prior to TKA were more likely to experience gout following TKA. Additionally, this study evaluated whether patients with gout following TKA were more likely to have local complications following the procedure compared to patients without gout. We hypothesize patients with gout before TKA will be more likely to experience gout following TKA, and patients with gout following TKA would have more local complications following the procedure.

METHODS: A retrospective cohort design was used to determine whether patients with a diagnosis of gout prior to TKA were more likely to have a gout diagnosis within 2 years of TKA compared to patients with no gout diagnosis before a TKA procedure. Patients with a history of gout who underwent TKA were then matched in a 1:1 fashion to patients with no history of gout who underwent TKA procedure with regards to age, gender, region, and common comorbidities that included diabetes mellitus, hypertension, chronic obstructive pulmonary disease, and coronary artery disease. Additional analyses were performed to determine if patients who had a diagnosis of gout following TKA were more likely to experience local complications following TKA compared to patients who did not have gout following TKA. Local complications evaluated included prosthetic loosening, prosthetic joint infection (PJI), and periprosthetic fracture as well as incision and drainage (I&D) procedure and revision. Multivariable logistic regression was performed to determine if patients with gout prior to TKA were more likely to be diagnosed with gout following TKA, and whether patients with a diagnosis of gout following TKA were more likely to experience local complications or reoperations compared to patients with no diagnosis of gout following TKA.

RESULTS:

A total of 17,474 patients with a diagnosis of gout underwent a TKA procedure from 2015 through 2020, and a total of 401,723 patients with no history of gout underwent a TKA procedure during the same time period. There were 34,926 patients total (17,463 patients with gout prior to TKA and 17,463 patients without gout prior to TKA) after matching the cohorts. There were 9,395 (53.80%) patients with a previous diagnosis of gout who had a recurrence of gout compared to 623 (3.57%) patients with no history of gout who were diagnosed with gout within 2 years of the TKA procedure (OR: 30.86, 95% CI: 28.35 - 33.66). Additional analyses revealed there were 3,305 actively enrolled patients with a diagnosis of gout following TKA compared to 4,224 actively enrolled patients with no diagnosis of gout following TKA. At the 1-year postoperative mark, patients with gout were significantly more likely to experience PJI (OR: 1.71) and revision procedures (OR: 1.97). At the 2-year postoperative mark, patients with gout were significantly more likely to experience prosthetic loosening (OR: 1.72), PJI (OR:1.79), and I&D procedures (OR: 1.55). Patients with gout were also less likely to experience a periprosthetic fracture during the 2-year period (OR: 0.25).

DISCUSSION AND CONCLUSION: This study suggests gout may increase the rate of local complications observed and reoperations following TKA during the 1- and 2-year postoperative period. Heightened preoperative attention of a patient's medical history that includes gout should bring clinicians to ensure proper prevention of further gouty attacks is in place postoperatively to achieve better outcomes and reduce local complications.

Table 1. Likelihood of having gout recurrence after TKA if previously diagnosed with gout compared to patients with no history of gout who are diagnosed with gout following TKA

Gout Before and After TKA (n=17,463)	No Gout Before TKA, Gout After TKA (n=17,463)	OR (95% CI)
9395 (53.80%)	623 (3.57%)	30.86 (28.35-33.66)

Table 3. Local complications at 2 years comparing patients who have gout following TKA to patients who do not have gout following TKA

	2 Years		
	Gout (n = 3,385)	No Gout (n = 4,224)	OR (95% CI)
<i>Prosthetic Loosening</i>	38 (1.15%)	35 (0.83%)	1.72 (1.02-2.87)
<i>PJI</i>	118 (3.57%)	102 (2.44%)	1.79 (1.35-2.40)
<i>Periprosthetic Fr</i>	18 (0.54)	17 (0.40%)	0.25 (0.13-0.46)
<i>I&D</i>	102 (3.05%)	97 (0.30%)	1.55 (1.12-2.13)
<i>Revision</i>	81 (2.42%)	72 (1.70%)	1.12 (0.81-1.54)

Table 2. Local complications at 1 year comparing patients who have gout following TKA to patients who do not have gout following TKA

	1 Year		
	Gout (n = 3,385)	No Gout (n = 4,224)	OR (95% CI)
<i>Prosthetic Loosening</i>	29 (0.88%)	29 (0.69%)	1.54 (0.84-2.74)
<i>PJI</i>	102 (3.05%)	92 (2.18%)	1.71 (1.24-2.33)
<i>Periprosthetic Fr</i>	14 (0.42%)	13 (0.31)	1.81 (0.76-4.17)
<i>I&D</i>	91 (2.75%)	91 (2.20%)	1.39 (0.99-1.95)
<i>Revision</i>	70 (2.12%)	56 (1.33%)	1.97 (1.33-2.92)