

Vaccination Status is Not Associated with Decreased Complications following Total Joint Arthroplasty in COVID-19 Patients

Pramod Kamalopathy¹, Corinne Vennitti, Pradip Ramamurti², James Andrew Browne

¹University of Virginia, ²UVA Orthopaedics

INTRODUCTION: Previous studies have shown that COVID-19 infection increases rates of perioperative infection, readmission, and other complications following a surgical procedure; however, the impact of vaccination status in patients undergoing elective total joint arthroplasty (TJA) is unknown. We hypothesized that vaccinated patients with a COVID-19 diagnosis in the perioperative period would have lower rates of adverse complications compared to unvaccinated patients undergoing TJA.

METHODS: Using a national database registry, patients undergoing elective primary total knee or total hip arthroplasty during the first year of the COVID-19 pandemic (April 2020-April 2021) with at least 90 days of follow up were identified. Patients were included in the COVID-19 cohort if they had a diagnosis on the day of surgery or within 30 days prior to surgery. Patients with a history of malignancy, joint infection, fractures undergoing revision arthroplasty were excluded from the study. COVID-19 cohort was matched with respective control group with respect to patient demographics, comorbidities, substance use, and surgery type (knee vs. hip). Furthermore, subgroup analysis of the COVID-19 group was performed comparing vaccinated patients with COVID-19 diagnoses to unvaccinated with COVID-19 diagnosis, and unvaccinated patients without COVID-19 diagnosis. All comparisons were performed using multivariate logistic regression with significance set at P<0.05. Odds ratio and 95% confidence interval were reported for all comparisons.

RESULTS: There were no differences in any complications assessed between vaccinated patients and unvaccinated patients with COVID-19 diagnosis following TJA. Patients with COVID-19 were associated with increased risk of multiple complications and readmission following TJA compared to patients without COVID-19 diagnosis.

DISCUSSION AND CONCLUSION: Patients with a COVID-19 diagnosis in the 30 days prior to TJA appear to be at increased risk of complications and resource utilization compared to patients without a COVID-19 diagnosis. Vaccination status does not appear to be associated with reduced risk.

Table

Medical Complications (90 days)	Vaccinated patient with COVID vs Patient without COVID			Vaccinated Patient with COVID vs Unvaccinated patient with COVID		
	OR	95% CI	P value	OR	95% CI	P value
Pulmonary Embolism	1.44	[0.03-82.3]	0.837	-	-	1
Pneumonia	1.78	[0.94-3.41]	0.077	0.78	[0.31-2.22]	0.609
Cerebrovascular Accident	0.81	[0.24-2.39]	0.709	0.45	[0.08-3.40]	0.37
Sepsis	2.65	[1.12-6.48]	0.028	3.18	[0.60-59.5]	0.274
Myocardial Infarction	1.33	[0.51-3.47]	0.556	0.61	[0.98-2.93]	0.482
Deep Vein Thrombosis	1.46	[0.78-2.73]	0.237	3.99	[0.82-71.9]	0.178
Acute Kidney Injury	1.47	[0.84-2.57]	0.171	0.64	[0.27-1.74]	0.352
Urinary Tract Infection	1.69	[1.09-2.62]	0.018	1.72	[0.73-5.05]	0.262
Wound Complication	1.32	[0.58-2.91]	0.489	1.22	[0.30-8.47]	0.801
Blood Transfusion	1.23	[0.38-3.84]	0.718	0.51	[0.11-3.75]	0.439
Dysphagia	2.41	[0.77-8.32]	0.139	0.66	[0.16-4.50]	0.609
Hospital Utilization	OR	95% CI	P value	OR	95% CI	P value
Emergency Department (30)	0.98	[0.73-1.31]	0.882	0.98	[0.57-1.78]	0.95
Emergency Department (90)	1.11	[0.87-1.42]	0.406	0.96	[0.62-1.57]	0.891
Readmission	1.62	[1.02-2.56]	0.037	1.23	[0.57-3.08]	0.615
Readmission (90)	1.53	[1.05-2.24]	0.028	1.18	[0.61-2.53]	0.638
Surgical Complications	OR	95% CI	P value	OR	95% CI	P value
TJA Infection (1 Year)	0.9	[0.54-1.99]	0.726	0.75	[0.31-2.11]	0.561
TJA Revision (2 Year)	0.5	[0.11-1.70]	0.301	0.24	[0.04-2.07]	0.152