

# Influence of COVID-Positive Infection on Outcomes in Total Joint Arthroplasty Recipients

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**INTRODUCTION:** Acute infections of COVID-19 are associated with a hypercoagulable state and an increased risk of thromboembolic complications. There is a need to understand if there is a relationship between historical COVID-19 infection and the rate of post-operative VTE to better inform surgeons decide on anticoagulation prophylaxis regimens and when it is safest to perform total joint arthroplasty (TJA) in this patient population. We hypothesize that a history of COVID infection within one year of elective TJA increases the risk of postoperative VTE.

## METHODS:

A multicenter retrospective review of unilateral primary TJA recipients was performed between 8/1/2020 and 11/30/2021. Patients were excluded if they were <18 years of age. Patients were stratified into two cohorts based on whether they had the COVID infection within 1 year prior to elective TJA: COVID+ (n=221), COVID- (433). Chi-Square and student t-tests were used to analyze complications between groups.

**RESULTS:** Patients in the COVID+ cohort were more likely to undergo a reoperation within 1 year of their index surgery (5% vs 2.1%; p=0.04) compared to the COVID- cohort (Table 3). VTE rates (1.4% vs 0.9%; p=0.6) and cardiopulmonary events postoperatively (4.1% vs 3.5%; p=0.7) were similar among the COVID+ and COVID- cohorts, respectively (Table 3). When stratified by just total hip arthroplasty (THA), VTE rate trended towards a higher rate in COVID+ patients (3.2%) versus COVID- patients (0.5%; p=0.07).

## DISCUSSION AND CONCLUSION:

The presence of a positive COVID test prior to elective TJA is associated with a higher 1-year reoperation rate compared to COVID negative patients. However, it does not appear to increase the risk of VTE or cardiopulmonary events postoperatively.

	COVID+ n = 221 (%)	COVID- n = 433 (%)	p-value
Age (yr) (mean±SD [range])	63.2±10.4 [25-91]	61.6±10.8 [20-87]	0.07
Gender			<b>0.02*</b>
Male	111 (50.9)	168 (40.9)	
Female	107 (49.1)	243 (59.1)	
BMI (kg/m <sup>2</sup> ) (mean±SD [range])	31.2±5.7 [20.2-51.8]	32.3±6.1 [16.5-51.6]	<b>0.02*</b>
Smoking			<b>0.37</b>
Current	5 (11.1)	85 (19.6)	
Former	17 (7.8)	141 (32.6)	
Never	21 (11.1)	207 (47.8)	
Follow-up (months) (mean±SD [range])	3.3±3.3 [1-12]	4.3±4.7 [1-19]	0.08
ASA			0.42
I	0 (0)	3 (0.7)	
II	120 (54.8)	219 (50.6)	
III	99 (45.2)	210 (48.5)	
IV	0 (0)	1 (0.2)	
Clotting disorder (yes)	9 (20)	48 (11)	0.07
Prior VTE	6 (66.7)	37 (77)	
Thrombocytosis	1 (11.1)	1 (2)	
Thrombocytopenia	1 (11.1)	4 (8)	
Sickle cell disease	1 (11.1)	6 (12)	
# of COVID vaccine doses (yes)			<b>&lt;0.001*</b>
0	7 (15.6)	92 (21)	
1	17 (15.6)	17 (3.9)	
2	20 (44.4)	138 (31)	
3	11 (24.4)	167 (38)	
4	0	19 (4)	
Severity of COVID infection			-
Asymptomatic	8 (3.6)	-	
Symptomatic	26 (11.8)	-	
Hospitalized	9 (6.3)	-	
Unknown	178 (80)	-	
Charlson comorbidity index	3.2±2.3 [0-14]	3.0±2.2 [0-13]	0.18

	COVID+ n = 221 (%)	COVID- n = 433 (%)	p-value
Transcatheter administration (yes)	41 (19)	310 (69)	0.12
Hospital length of stay (days) (mean±SD [range])	3.8±1.9 [0-17]	2.6±2.2 [0-33]	<b>&lt;0.001*</b>
Discharge disposition			<b>&lt;0.001*</b>
Home w/ self-care	60 (27)	175 (40)	
Home with VNA	131 (59)	179 (41)	
Skilled nursing facility	14 (6)	41 (9)	
Acute rehab	16 (7)	37 (8)	
Discharge DVT prophylaxis regimen			0.18
ASA 32mg BID	22 (10)	201 (46)	
Apixiban 5mg BID	4 (1)	20 (4)	
Lovenox 40mg QD	5 (1)	31 (7)	
Xarelto 16mg	1 (2)	45 (10)	
Cromadin	1 (2)	31 (7)	
ASA 81mg BID	2 (4)	39 (9)	
Lovenox followed by Aspirin 325mg BID	9 (20)	62 (14)	
DAPT	0	2 (0)	
Dabigatran	1 (2)	1 (0)	
Fondaparinux	0	1 (0)	

	COVID+ n = 221 (%)	COVID- n = 433 (%)	p-value
Deep venous thrombosis (yes)	3 (1.4)	4 (0.9)	0.61
Wound complication (yes)	7 (3)	12 (2)	0.78
Superficial infection (yes)	4 (1.8)	7 (1)	0.86
Deep infection (yes)	4 (1.8)	2 (0)	0.08
Cardiopulmonary (yes)	9 (4)	15 (3)	0.70
Periprosthetic fracture (yes)	1 (0)	2 (0)	0.98
ED visit within 90 days (yes)	22 (10)	51 (11)	0.48
Reoperation within 1 year	11 (5)	9 (2)	<b>0.04*</b>
Revision arthroplasty (yes)	1 (0)	3 (0)	0.71
Overall complication (yes)	23 (10)	29 (6)	0.09