Early Postoperative COVID-19 Vaccination May be Associated with an Increased Risk of Periprosthetic Joint Infection Following Primary Total Joint Arthroplasty

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INTRODUCTION: Patients commonly inquire with their surgical teams about the safety of COVID-19 vaccination in the immediate perioperative period in accordance with their respective vaccination schedules. Responsive recommendations are largely speculative, driven by a lack of high-quality evidence. This study aimed to quantify the risk of acute postoperative prosthetic joint infection (PJI) among patients undergoing elective total hip arthroplasty (THA) or total knee arthroplasty (TKA) who received a perioperative COVID-19 vaccination. METHODS:

The TrinetX database was queried to identify patients undergoing elective knee or hip arthroplasty with a preoperative or postoperative COVID-19 vaccination. Patients were stratified based on the time interval between the COVID-19 vaccination and elective THA or TKA. Multivariable logistic regression was performed to adjust the risk of PJI for comorbidities and demographics at discrete time intervals before and after elective surgery.

RESULTS: In total, 73,553 elective TJA procedures (27,304 THA; 46,249 TKA) were identified, of which 16,581 (22.5%) individuals had confirmed COVID-19 vaccination. No increased PJI risk was observed for patients receiving COVID-19 vaccination in any preoperative interval (>12 months, 6-12 months, 3-6 months, and <3 months). However, patients who received the COVID-19 vaccine in the 3-month postoperative period had an almost 3-fold increased risk of PJI (adjusted odds ratio [aOR] 2.79, 95%-confidence interval [CI] 1.79-4.36, p<0.001) relative to patients who were not vaccinated during this time period.

DISCUSSION AND CONCLUSION: Most patients undergoing elective TJA are older adults, considered a vulnerable population for whom the CDC recommends routine, scheduled COVID-19 vaccination. Administration of the COVID-19 vaccine within the three-month post-TJA period is associated with an increased risk of PJI and should be avoided. Our findings suggest patients can be advised to adjust vaccination schedules in favor of preoperative or late postoperative administration per the identified safety profile of vaccination outside of the three-month postoperative timeframe.

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