Association between recent COVID infection and prior vaccination with thromboembolic risk and mortality in hip and knee surgery patients

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| Challenge | **Little is known about the risks of prior COVID infection and vaccination on thromboembolic risk and mortality among hip and knee arthroplasty patients and patients undergoing surgery for hip fracture.** |
| Existing Evidence | Few data exist on the risks of both thromboembolic events and mortality among both elective arthroplasty patients and those undergoing urgent surgery for hip fracture in the context of recent COVID-19 exposure; the few available studies have conflicting results. |
| Target Population | Patients undergoing hip or knee arthroplasty; patients undergoing surgery for hip fracture |
| Intervention or Exposure | Documented prior COVID infection, COVID immunization |
| **Outcomes/Key Findings** | **Overall, prior COVID infection was not associated with higher risk of thromboembolism but more recent infection was associated with higher mortality in arthroplasty patients; among patients undergoing surgery, COVID vaccination was highly protective of total mortality.**  COVID-19 vaccination may reduce mortality risk in hip fracture patients with recent infection. Shorter infection-to-surgery intervals further increase mortality risk, and recent infection is associated with higher VTE risk.  Recent COVID-19 infection did not significantly impact VTE risk after THA or TKA. However, infection within 6 to 12 weeks preoperatively was associated with increased 90-day mortality. |
| **Resulting Action/Change** | **No change in current DVT prophylaxis indicated for these populations.**  **Continued emphasis on the importance of COVID vaccination is warranted.**  **Elective hip and knee replacement surgery in unvaccinated patients who had COVID within the last 12 weeks should delay surgery to reduce mortality risk.** |
| Additional Recommendations | None |
| Implementation Tools | Data on Covid-19 Vaccination rates (note that these have been historically high in KPNC) |
| Implementation Measurement | Percent change in covid-19 vaccination rates (note: our data do not support intentional delays of surgery based on covid test-result status or change in VTE prophylaxis regimens, so no implementation would be advised for these potential interventions). |
| Reference | 2 manuscripts submitted for peer review |