COVID-19 Critical Intelligence Unit: Surgery post COVID-19

In brief
Surgery post COVID-19

Question
- What is the evidence for the timing of surgery, and outcomes following surgery, for people who have COVID-19?

Summary
- COVID-19 infection increases the risk of surgical complications; however, the impact of COVID-19 on postoperative mortality remains variable.1-6
- Studies suggest that elective surgical procedures for individuals who test positive for COVID-19 should be delayed until the person recovers from the COVID-19 infection, and ideally, until seven weeks after the infection unless delaying the surgery increases risks of postoperative complications and mortality.7-9
- Some experts and guidelines advise that elective surgical procedures can be conducted four weeks after recovery from COVID-19 if patients showed mild symptoms during the time of infection or if they were asymptomatic.9-11
- Studies have shown that children infected with COVID-19 had more favourable postoperative outcomes compared to adults.12, 13 Most asymptomatic children (~86%) are unlikely to be infectious by day 28 after COVID-19 diagnosis, and as a result, one study suggested delaying surgery in this group for at least 28 days to reduce risk of COVID-19 transmission.14 However, a retrospective cohort study found that elective surgery in children 14 days following mild COVID-19 symptoms did not increase risks of intraoperative, postoperative, or postadmission complications compared to a waiting period of 28 days or more.15
- One study found that elective surgery performed among fully vaccinated patients within four weeks of breakthrough COVID-19 infection is associated with a lower risk of complication compared to unvaccinated or partially vaccinated patients.16 The risk of surgical complications was lower among unvaccinated or partially vaccinated patients who had surgeries performed without general anaesthesia compared to those who had general anaesthesia.16
- There is limited evidence on the risk of surgical complications and mortality among adults infected with the Omicron variant.8, 9
- The Royal College of Surgeons of England emphasises that in the absence of Omicron-specific surgical recommendations, the recommendation of avoiding planned surgery within seven weeks after testing positive for COVID-19 should be maintained.17

Surgical risk and complications in adults infected with COVID-19
- Risks of complications, such as pulmonary and thrombotic problems, are higher in surgical patients infected with COVID-19 during or near the time of their surgery compared to those with no COVID-19 infection.1-5, 18. Evidence further shows that the timing of surgery after COVID-19 infection as well as the nature of COVID-19 symptoms are key determinants of possible surgical complications.4, 19-22
Studies emphasise that surgeries performed after seven weeks of COVID-19 infection are safer than those conducted before seven weeks following a COVID-19 diagnosis.\textsuperscript{4, 19-21, 23, 24} There is limited empirical evidence on the impact of COVID-19 vaccination on surgical outcomes following COVID-19 infection. In one study, surgery performed following COVID-19 breakthrough infection was not associated with an increased risk of surgical harm among fully vaccinated patients, even when the surgery was performed within four weeks after infection.\textsuperscript{16} Among patients who were not fully vaccinated, surgery performed within four weeks of infection was associated with an increased risk of perioperative complications compared to surgery performed at least 30 days before a subsequent infection.\textsuperscript{16} There are variable findings on the impact of COVID-19 infection on the risk of mortality following surgery. Some studies show that surgery in patients diagnosed with COVID-19 weeks before their surgery and those that were still COVID-19-positive had increased risk of postoperative mortality compared to patients without COVID-19.\textsuperscript{6, 25} Other studies indicate a similar risk of postoperative mortality in individuals with no COVID-19 infection at the time of surgery and those diagnosed with COVID-19 infections but delayed for at least seven weeks before surgery.\textsuperscript{5, 26} However, patients with ongoing COVID-19 symptoms after at least a seven-week delay are believed to have a higher risk of mortality than patients whose symptoms have resolved or those who are asymptomatic.\textsuperscript{5}

A systematic review of the empirical studies and guideline recommendations on the timing of elective arthroplasty surgery after COVID-19 infection suggested the following timeframes for rescheduling surgery based on the COVID-19 severity:

- Asymptomatic: four to eight weeks
- Mild/moderate symptoms: six to eight weeks (with resolution of symptoms)
- Severe/critical symptoms: 12 weeks after discharge from hospital (with resolution of symptoms).\textsuperscript{27}

Paediatrics

In a retrospective review study of paediatric patients scheduled for elective surgery, 81% of patients who tested positive for COVID-19 reached a cycle threshold value of 35, which is indicative of a very low likelihood of infectiousness, by day 14. By day 28, 86% of patients reached a cycle threshold value of 35. This study recommends that elective surgery should be delayed for a minimum of 28 days from the initial positive test.\textsuperscript{14}

A study conducted in the United States found that proceeding with elective surgery in children fourteen days following mild COVID-19 infection did not increase complication rates as compared to waiting at least twenty-eight days.\textsuperscript{15}

The COVIDSurg study analysed the perioperative outcomes of 88 children aged 16 or under with confirmed COVID-19 diagnosis and found that compared to adults, children had favourable outcomes in terms of 30-day postoperative mortality (1.1\% versus 23.8\%) and pulmonary complications (13.6\% versus 51.2\%).\textsuperscript{12} Another retrospective cohort study from the United States found that children with preoperative confirmed COVID-19 had favourable postoperative outcomes compared to adults. The postoperative complication, readmission and reoperation rates were 7\%, 6\% and 6\% respectively.\textsuperscript{13}

\textbf{In brief documents are not an exhaustive list of publications but aim to provide an overview of what is already known about a specific topic. This brief has not been peer-reviewed and should not be a substitute for individual clinical judgement, nor is it an endorsed position of NSW Health.}
Guidance and recommendations

- A collection of international studies recommend that patients should avoid elective surgery within seven weeks of COVID-19 infection unless the benefits of doing so exceed the risk of waiting. Patients with persistent symptoms and those with moderate-to-severe COVID-19 may require a longer delay than seven weeks. However, surgery after four weeks in asymptomatic patients is currently allowed in some jurisdictions, including NSW.

Australia

- NSW Ministry of Health and the National COVID-19 Clinical Evidence Taskforce recommend that planned non-urgent surgery for Category 2 and 3 patients should be deferred for seven weeks after the first positive test diagnosing COVID-19 infection, in either asymptomatic or symptomatic (during acute phase of the infection) COVID-19 patients. However, for asymptomatic patients, or those who had mild COVID-19 symptoms, surgery can be performed four weeks after recovery from COVID-19.

- The Australian and New Zealand College of Anaesthetists has released an expert consensus statement advising that non-urgent elective major surgery should be delayed for a minimum of seven weeks and non-urgent elective minor surgery for at least four weeks after the initial diagnosis of COVID-19 provided the patient has no symptoms. The college further advises that patients with ongoing symptoms may benefit from further delay if conditions permit.

United States

- The American Society of Anaesthesiologists recommends that if a patient tests positive for SARS-CoV-2, elective surgical procedures should be delayed until the patient is no longer infectious and has demonstrated recovery from COVID-19. The recommended timing for elective surgery following recovery from COVID-19 includes the following:
  o Four weeks for an asymptomatic COVID-19 infection or recovery from only mild, non-respiratory symptoms
  o Six weeks for a symptomatic patient, e.g. cough, dyspnoea, who did not require hospitalisation
  o Eight to ten weeks for a symptomatic patient who is diabetic, immunocompromised, or hospitalised
  o Twelve weeks for a patient who was admitted to an intensive care unit due to COVID-19 infection.

United Kingdom

- The Royal College of Surgeons of England suggests that until strong evidence emerges, the previous recommendation of avoiding planned surgery within seven weeks of testing positive for COVID-19 should remain. If surgery is considered urgent within seven weeks of testing positive for COVID-19, a careful risk-benefit assessment and a shared decision process should be established. Unless critical, no surgery should take place within 10 days of a positive COVID-19 test.

- The Royal College of Paediatrics and Child Health in the United Kingdom notes that elective surgery in children is being routinely delayed for seven weeks following infection with COVID-19. The College made the following recommendations as of June 2022:
  o Pre-operative COVID-19 testing is not required prior to elective surgery in children

In brief documents are not an exhaustive list of publications but aim to provide an overview of what is already known about a specific topic. This brief has not been peer-reviewed and should not be a substitute for individual clinical judgement, nor is it an endorsed position of NSW Health.
COVID-19 Critical Intelligence Unit: Surgery post COVID-19

- All children undergoing elective surgery should have symptom-based pre-operative screening performed in the 72 hours prior to surgery
- Elective surgery does not need to be deferred in children following asymptomatic or mild COVID-19 infection.32

Canada

- The British Columbia Centre for Disease Control recommends that “elective surgery should be delayed for a child who has had COVID-19 infection (regardless of severity) and/or multisystem inflammatory syndrome in children for at least four weeks from full resolution of symptoms or positive polymerase chain reaction (PCR) test”.33

Method

To inform this brief, the PubMed and Google searches were conducted using terms related to surgery and post COVID-19 infection (and paediatrics) on 24 January 2022 and 05 October 2022.

References


In brief documents are not an exhaustive list of publications but aim to provide an overview of what is already known about a specific topic. This brief has not been peer-reviewed and should not be a substitute for individual clinical judgement, nor is it an endorsed position of NSW Health.


