

In brief

Surgery post COVID-19

11 February 2022

Summary

- Most of the available evidence on surgery following COVID-19 is in adults, and there is no evidence yet available on the Omicron variant of concern.
- Surgery in adults with COVID-19 increases the risk of postoperative mortality and surgical complications compared to patients without COVID-19.^{1, 2 3, 4}
- In Australia and internationally, it is generally advised that elective surgical procedures for people with COVID-19 be delayed until the patient has recovered from COVID-19.^{5, 6}
- Mortality is increased in patients having surgery within six weeks of their SARS-CoV-2 diagnosis. Surgery performed at seven weeks or more after SARS-CoV-2 diagnosis is associated with a similar mortality risk to baseline.⁷
- In Australia and internationally, a minimum of seven weeks of being symptom free prior to undergoing all but minor elective surgical procedures is recommended, unless outweighed by the risk of deferring surgery.^{6, 8 9}
- Some jurisdictions, such as the United States, provide suggested wait time based on severity of COVID-19, such as four weeks for an asymptomatic patient with mild non-respiratory symptoms, up to twelve weeks for a patient who was admitted to an intensive care unit.¹⁰
- Two studies have shown that children had favourable postoperative outcomes compared to adults.^{11, 12} A further study showed that in COVID-19 positive children scheduled for elective surgery, cycle threshold values indicated a very low likelihood of infectiousness in most patients by day 28, suggesting elective surgery should be delayed for a minimum of 28 days.¹³
- The Royal College of Paediatrics and Child Health in the United Kingdom recommends elective surgery should be delayed for at least 14 days where possible. It was also recommended that a different approach should be adopted in children compared to adults, in terms of a shorter delay in elective surgery.¹⁴
- The British Columbia Centre for Disease Control recommends that elective surgery 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 resolution of symptoms or positive PCR test.¹⁵
- While anecdotally hypercoagulability is reported less frequently with Omicron, there are no studies yet to show this.¹⁶ Preliminary studies have shown that Omicron is less severe compared to Delta, and the risk of hospitalisation is lower.^{17, 18}

Adults

Peer reviewed sources

Surgery with COVID-19

- There is [consistent evidence](#) that surgery in patients with COVID-19 [increases the risk of postoperative](#) mortality compared to patients without COVID-19.^{1,2}
- [Surgical complications](#) are also higher in patients with COVID-19 undergoing surgery, with pulmonary and thrombotic complications amongst the most common. The COVIDSurg Collaborative's study found 23.8% (268 of 1128) of surgical patients with COVID-19 die within 30 days, and 51.2% (577 of 1128) of patients will have major [pulmonary complications](#).^{3,4}

Surgery post COVID-19

- In the [COVIDSurg Collaborative study](#) in patients with a pre-operative SARS-CoV-2 diagnosis, mortality was increased in patients having surgery within 0-2 weeks, 3-4 weeks and 5-6 weeks of their SARS-CoV-2 diagnosis (odds ratio 4.1, 3.9 and 3.6, respectively). Surgery performed ≥ 7 weeks after SARS-CoV-2 diagnosis was associated with a similar mortality risk to baseline. After a ≥ 7 -week delay, patients with ongoing symptoms had a higher mortality than patients whose symptoms had resolved or who had been asymptomatic.⁷
- In a sub-group of patients from the [COVID-Surg-Cancer study](#), patients were operated on at different time points after a previous SARS-CoV-2 infection. Previous SARS-CoV-2 infection was associated with increased odds of pulmonary complications compared to no infection 10.7% (12/122) versus 3.6% (16/448)). Pulmonary complications and mortality were lowest at least four weeks after notification of a positive swab test.¹⁹
- A large prospective cohort study found major, elective surgery 0-4 weeks after COVID-19 infection was associated with increased risk of [postoperative complications](#). Surgery after eight weeks after COVID-19 diagnosis was not associated with increased complications.²⁰

National and international published guidance

Surgery with COVID-19

- NSW Government advises that patients with confirmed COVID-19 [should not undergo elective surgery](#) unless postponing the procedure creates a greater risk to life.⁵
- Guidance from Australian and New Zealand organisations state that elective surgical procedures for people with COVID-19 [should be delayed](#) until the patient is no longer infectious and has demonstrated recovery from COVID-19.⁶

Surgery post COVID-19

- NSW Government advises that if a patient has recovered from COVID-19, met the criteria for release from isolation and is awaiting elective surgery, they should be informed of the increased risk of adverse outcomes and discuss their individual situation with their surgeon.⁵
- In Australia, a minimum of eight weeks of being symptom free prior to undergoing all but minor elective surgical procedures is recommended unless outweighed by the risk of [deferring surgery](#), such as disease progression or clinical priority.^{6,8} A review commissioned by the [Royal Australian College of Surgeons](#) found a four week delay to surgery may be adequate for minor surgery, but for major surgery this could be seven weeks or more if possible.²¹

- Internationally, a [minimum of seven weeks](#) of being symptom free prior to undergoing surgery is generally recommended. The risks of deferring surgery need to be balanced against the risk of postoperative morbidity or mortality associated with COVID-19.⁹
- Some jurisdictions, such as in the United States, provide suggested [wait time based on severity of COVID-19](#):
 - Four weeks for an asymptomatic patient or recovery from only mild, non-respiratory symptoms
 - Six weeks for a symptomatic patient who did not require hospitalisation
 - Eight to ten weeks for a symptomatic patient who is diabetic, immunocompromised, or hospitalised
 - Twelve weeks for a patient who was admitted to an intensive care unit due to COVID-19 infection.¹⁰

Paediatrics

Peer reviewed sources

- 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 very low likelihood of infectiousness, by day 14. By day 28, 86% of patients reached a cycle threshold value of 35. This study recommend that elective surgery should be delayed for a minimum of 28 days from the initial positive test.¹³
- 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% vs 23.8%) and pulmonary complications (13.6% vs 51.2%).¹¹
- A 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.¹²

International recommendations

- The [Royal College of Paediatrics and Child Health](#) in the United Kingdom recommends that the rationale for delaying elective surgery should be considered in terms of the following:
 - Infection prevention and control concerns over transmission to other children and clinical staff: the risk of onward transmission is very low beyond 14 days following symptom onset or COVID-19 diagnosis. The steering group “feel that elective surgery should be delayed for at least 14 days where possible.” The group “do not feel that repeat SARS-CoV-2 testing is necessarily required prior to elective surgery.”
 - Risk from SARS-CoV-2 as a comorbidity to the underlying illness or intervention: “it was agreed by the steering group that a different approach should be adopted in children compared to adults, in terms of a shorter delay in elective surgery.”¹⁴
- 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 PCR test.”¹⁵

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. The Critical Intelligence Unit maintains a living evidence table on [COVID-19 and surgery](#), including pre-surgical screening, testing and isolation, surgery with or after a COVID-19 diagnosis, vaccination before surgery, personal protective equipment, workforce cohorting, workflow and aerosol generating procedures.

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