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Risk of death following pulmonary complications after surgery with and without SARS-CoV-2 infection: a pooled analysis of individual patient data from pre-pandemic and pandemic international cohort studies

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Introduction: Whilst the severe consequences of COVID-19 around the time of surgery are well described, no comparison has been made to pulmonary complications in the absence of infection. This study aimed to compare postoperative death in patients with and without SARS-CoV-2 infection.

Methods: A patient-level comparative analysis of two international prospective cohort studies; one conducted before (January to October 2019) and one during the SARS-CoV-2 pandemic (from local emergence of COVID-19 to April 2020). Patients undergoing elective resection of an intra-abdominal cancer with curative intent were included in a multilevel logistic regression. The primary outcome was 30-day postoperative mortality.

Results: Of 7402 patients included, 3031 underwent surgery before and 4371 during the pandemic. Overall, 6.5% ($n = 484$) patients suffered a pulmonary complication, 5.1% had a SARS-CoV-2 infection diagnosed, and 1.4% patients ($n = 107$) died. Compared to patients without pulmonary complications, those with SARS-CoV-2 pulmonary complications had a higher adjusted odds of death (OR: 54.14, 95%CI: 23.46 to 124.91, $p < 0.001$) than those with non-SARS-CoV-2 pulmonary complications (OR: 7.20, 95%CI: 3.85 to 13.45, $p < 0.001$).

Conclusion: Postoperative pulmonary complications were associated with increased 30-day mortality. SARS-CoV-2 associated pulmonary complications were associated with a far higher mortality than a non-SAR-CoV-2 pulmonary complication.