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Commentary: Lung surgery in the time of COVID-19

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After December 2019 and subsequent worldwide spreading of a novel coronavirus (SARS-CoV-2) identified as the cause of coronavirus disease 2019 (COVID-19), health systems around the world were obligated to change their practices and adapt to the necessities of patients with COVID-19. Data collected since the beginning of this pandemic have shown a broad spectrum of vulnerable patients, including those undergoing surgical procedures and those in perioperative settings.¹⁻³ In their case report, Huang and colleagues⁴ present 3 patients undergoing video-assisted thoracoscopic surgery for the resection of lung nodules concerning for malignancy between January 14 and 17, 2020, a time during which COVID-19 cases steadily started to increase in China and around the globe.^{5,6}

Substantial amounts of information related to COVID-19 have been disseminated since the outbreak; however, studies and guidelines specific to the risks and considerations of thoracic surgery to patients in this environment (as opposed to health care personnel and hospital systems) are lacking.⁷ Here, the authors report highly concerning results regarding SARS-CoV-2 infection in 3 patients undergoing thoracoscopic lobectomy at their institution located in Wuhan, China. All 3 patients were asymptomatic before the operation but developed typical signs and symptoms of COVID-19 infection such as fever, cough, and dyspnea between postoperative days 1 and 6. Computed tomography scans showed bilateral, peripheral ground-glass opacities and lung consolidation consistent with COVID-19 imaging

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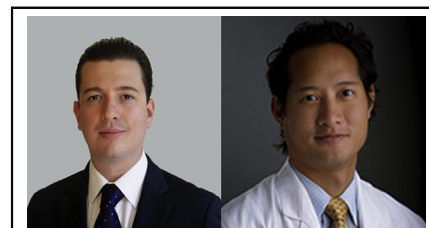
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CENTRAL MESSAGE

Best practices for surgical patients during the COVID-19 pandemic are not well described. This study reports a 67% mortality rate among 3 patients who contracted COVID-19 after thoracoscopic lobectomy.

findings reported in the literature.⁸ Reverse transcription polymerase chain reaction test analysis was performed and was positive between postoperative days 5 and 9. One of the 3 patients recovered and was discharged home on postoperative day 46 (pathology showed atypical adenomatous hyperplasia). The other 2 patients died on postoperative day 8 and 17, respectively (pathology confirmed T1b N0 M0 adenocarcinoma). It is unknown whether these patients acquired the infection before or after hospital admission because they were not tested for SARS-CoV-2 until developing signs and symptoms of pneumonia. There is a possibility, as described by the authors, that these patients contracted the infection before surgery and were in the incubation period at the time of operation. This illustrates the challenges in making a diagnosis given the absence of typical COVID-19 symptoms, nonexistent policies for preoperative testing, and limited test kits at that time. Universal preoperative COVID-19 testing for patients undergoing surgery, a policy that is in place at many institutions, might not only to mitigate the risk of exposure to health care personnel, but also identify patients who could potentially develop pneumonia postoperatively. In this lobectomy setting, developing a SARS-CoV-2 infection resulted in death in 2 out of 3 previously fairly healthy patients, an alarming statistic even given a small sample size of 3.

Besides increasing awareness about the importance of preoperative testing, this study by Huang and colleagues⁴

also raises issues regarding the management of patients with known or suspected malignancy during the COVID-19 pandemic. Certain patients may benefit from delay of lung surgery, especially in hospital systems and geographical regions severely affected by COVID-19. Patients with pure ground-glass opacities or with known typical carcinoid tumors in peripheral locations can likely be safely delayed for at least a few months. Borderline candidates for lobectomy may be better served with sublobar resection or stereotactic radiosurgery instead. Early postoperative discharge to a home quarantine setting (even when chest tubes remain in place) may be a more favorable option than an extended inpatient hospital stay. COVID-19 should be on the differential diagnosis list for surgical patients who develop pneumonia, even if they have previously tested negative for the virus, and especially if they demonstrate a decreasing lymphocyte count. On the other hand, surgeons can take some solace in the fact that among 126 patients in this study who underwent lobectomy between January 1 and March 31, 2020, in Wuhan, only 3 patients were discovered to contract SARS-CoV-2. It is also possible that there were a number of asymptomatic COVID-19 infections in this group, which would result in a lower calculated mortality rate. Larger studies of the influence of COVID-19 on the risk of surgery will likely follow. In the meantime, the

decision to embark on lung surgery in the time of COVID-19 will rely on physician judgment using the limited available data, assessment of the local situation with regard to COVID-19, and patient preference.

References

1. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020;395:497-506.
2. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al. Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med*. 2020;382:1708-20.
3. Lei S, Jiang F, Su W, Chen C, Mei W, Zhan L-Y, et al. Clinical characteristics and outcomes of patients undergoing surgeries during the incubation period of COVID-19 infection. Available at: <https://doi.org/10.1016/j.eclinm.2020.100331>. Accessed April 30, 2020.
4. Huang J, Wang A, Kang G, Li D, Hu W. Clinical course of patients infected with severe acute respiratory syndrome coronavirus 2 soon after thoracoscopic lung surgery. *J Thorac Cardiovasc Surg*. 2020;160:e91-3.
5. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med*. 2020;382:727-33.
6. Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): the epidemic and the challenges. *Int J Antimicrob Agents*. 2020;55:105924.
7. Aminian A, Safari S, Razeghian-Jahromi A, Ghorbani M, Delaney CP. COVID-19 outbreak and surgical practice: unexpected fatality in perioperative period. *Ann Surg*. 2020;272:e27-9.
8. Chung M, Bernheim A, Mei X, Zhang N, Huang M, Zeng X, et al. CT imaging features of 2019 novel coronavirus (2019-nCoV). *Radiology*. 2020;295:202-7.