

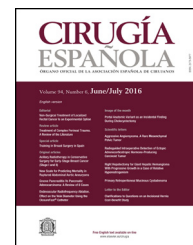


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Scientific letter

Clinical features and postoperative outcomes of patients with history of COVID-19 undergoing thoracic surgery

Características clínicas y resultados postoperatorios de los pacientes con antecedentes de enfermedad por coronavirus (COVID-19) sometidos a intervenciones quirúrgicas torácicas

Several studies have demonstrated an increased risk of mortality and postoperative respiratory complications in patients treated by surgical interventions in the context of a coronavirus type 2 perioperative infection causing severe (SARS-CoV-2) respiratory syndrome.¹⁻³ In the case of anatomical lung resections for cancer, Gonfiotti et al.⁴ described a postoperative morbidity of 60% and a mortality of 40% after analysing the outcomes of 5 patients operated concomitantly with SARS-CoV-2 infection. However, there are no data on the postoperative outcomes of patients treated with thoracic surgery after overcoming the infection.

Our study aims to describe the clinical characteristics and postoperative outcomes of patients with a history of documented SARS-CoV-2 infection treated by thoracic surgical interventions. For this purpose, a retrospective review of the records of all consecutive patients treated by thoracic surgical interventions between April 2020 and July 2021 (16 months) in our centre was performed. A total of 653 patients underwent surgery during the study period, of which 7% (46 patients) had a history of coronavirus disease (COVID-19) documented by PCR and resolved at the time of surgery. The clinical-demographic characteristics and postoperative outcomes of these patients are detailed in [Table 1](#). The minimum time elapsed between diagnosis of infection and surgery in symptomatic cases undergoing scheduled surgery was 65 days. In 39.1% of the operated patients, the finding of the thoracic lesion requiring surgery was incidental due to studies performed in the context of SARS-CoV-2 infection. However, if only patients with symptomatic SARS-CoV-2 infection are considered, the percentage increases to 47.2% (17/36). Seven patients required urgent COVID-19-derived surgery for pneumothorax with prolonged air leak, empyema, tracheal stenosis and wall haematoma.

Furthermore, given that SARS-CoV-2 can cause significant lung damage and that the severity of this damage is directly related to the severity of the infection,⁵ an analysis of the subgroup of patients with a history of COVID-19 treated by elective lung resection for suspected or diagnosed neoplasia was carried out. Twenty-six patients were analysed, of whom 12 required hospital admission (10 to inpatient areas and 2 to intensive care units) for treatment of the infection. The main clinical characteristics and postoperative outcomes of this group of patients are described in [Table 2](#). The minimum time between diagnosis of infection in symptomatic patients and surgery was 66 days. In 12 of the 20 patients treated by pulmonary resection after symptomatic COVID-19, investigations in the context of the infection led to the incidental finding of a pulmonary lesion suggestive of malignancy, which turned out to be a pulmonary carcinoma in 10 cases. Eight patients had severe adhesions at surgery. Final histological analysis showed no COVID-19 related alterations in any case. Seven patients had postoperative complications consisting of: pneumonia (one case), pleural effusion (one case), pneumothorax (2 cases), arrhythmia (one case), renal failure (one case) and haemothorax (2 cases); the latter two required reoperation.

Our study estimated a prevalence of a history of COVID-19 in patients treated by thoracic surgery at 7%. However, given the high percentage of patients with asymptomatic infection with the virus,⁶ it is very likely that this prevalence is considerably higher.

In our series, the minimum time between diagnosis of infection and scheduled surgery in patients with symptomatic COVID-19 was 65 days (\approx 9 weeks). Current recommendations state a minimum delay of surgery of at least 7 weeks from diagnosis of infection.⁷

Table 1 – Clinical and demographic characteristics, diagnostic context of infection and postoperative outcomes of patients with a history of COVID-19 in the overall series.

Variable	History of COVID-19 (n = 46)
Age, mean ± SD, years	61.65 ± 12.19
Male sex, n (%)	29 (63)
Interval between diagnosis of SARS-CoV-2 infection and surgery, median (IQR), days	118 (55.25–234.25)
Diagnostic context of SARS-COV-2 infection, n (%)	
Asymptomatic	10 (21.7)
Preoperative screening	7
Contact tracing	2
Admission for other causes	1
COVID-19	36 (78.3)
Outpatient care	12
Hospital admission	14
ICU admission	10
Incidental finding of subsidiary surgical lesion in the context of SARS-CoV-2 infection, n (%)	18 (39.1)
Pulmonary lesion	13
Mediastinal lesion	5
Emergency surgery, n (%)	7 (15.2)
Pneumothorax	3
Empyema	2
Wall haematoma	1
Estenotracheal stenosis	1
Type of surgery, n (%)	
Pulmonary surgery	30 (65.2)
Mediastinal injury resection	8 (17.4)
Tracheal dilatation	3 (6.5)
Pleural biopsy/decortication	3 (6.5)
Thyroidectomy	1 (2.2)
Chest wall haematoma drainage	1 (2.2)
30-day mortality, n (%)	0 (0)
Overall postoperative morbidity, n (%)	11 (23.9)
Respiratory complications, n (%)	6 (13)
Pneumonia	1
Atelectasis	1
Respiratory failure	2
Pneumothorax	2
Pleural effusion	1
Pleural leakage, prolonged	1
Reintervention, n (%)	3 (6.5)
Haemothorax	2
Aero prolonged leakage	1
Postoperative length of stay, median (IQR), days	3 (2–4)

On the other hand, one of the most relevant results of the present study is that in 47.2% of the patients operated on after symptomatic infection by the virus, the finding of the lesion that was the object of surgery was incidental due to the studies carried out in the context of COVID-19. In this regard, Kilsdonk et al.⁸ describe a frequency of incidental findings of 54% in patients who underwent CT scanning as a triage tool for COVID-19 infection. In 3% of the cases in their series, the incidental finding consisted of pulmonary nodules.

Histological analysis of the lung resection specimens showed no significant COVID-19-related alterations, indicating that complete recovery after infection is possible. These findings are similar to those described by Diaz et al.⁹ who found no histopathological changes suggestive of permanent lung damage after analysing resection specimens from 11 patients treated by elective lung resection after recovery from SARS-CoV-2 infection.

Finally, the postoperative results of the overall series show an acceptable prevalence of postoperative adverse effects, with no mortality and a prevalence of postoperative pulmonary complications of 13% in the overall series and 15.4% in patients treated by pulmonary resection, lower than that described in large national series.¹⁰

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Authorship

Study concept and design: MTGH, MFJL.

Data acquisition: MTGH, MFJL, MGFG, NMNV.

Table 2 – Clinical and demographic characteristics, diagnostic context of infection and postoperative outcomes of patients with a history of COVID-19 undergoing planned lung resection.

Variable	History of COVID-19 (n = 26)
Age, mean \pm SD, years	65.73 \pm 10.59
Male sex, n (%)	18 (69.2)
Interval between diagnosis of SARS-CoV-2 infection and surgery, median (IQR), days	141.5 (64–256.25)
Diagnostic context of SARS-COV-2 infection, n (%)	
Asymptomatic	6 (23.1)
Preoperative screening	5
Contact tracing	1
COVID-19	20 (76.9)
Ambulatory management	8
Hospital admission	10
ICU admission	2
Type of surgery, n (%)	
Pneumonectomy	2 (7.7)
Bilobectomy	1 (3.8)
Lobectomy	13 (50)
Segmentectomy	3 (11.5)
Wedge	7 (26.9)
Diagnosis, n (%)	
Carcinoma of the lung	16 (61.5)
Pulmonary metastases	3 (11.5)
Other	7 (26.9)
30-day mortality, n (%)	0 (0)
Postoperative morbidity, n (%)	7 (26.9)
Respiratory complications, n (%)	4 (15.4)
Pneumonia	1
Pneumothorax	2
Pleural effusion	1
Reoperation, n (%)	2 (7.1)
Haemothorax	2
Postoperative length of stay, median (IQR), days	3 (2–4)

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Conflict of interests

The authors have no conflict of interests to declare in relation to the content of this manuscript.

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