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Scientific letters

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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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

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Aortoesophageal fistula after laparoscopic total gastrectomy



Fístula aortoesofágica posgastrectomía total laparoscópica

Aortoenteric fistula is a rare entity, which consists of abnormal communication between the aorta and the gastrointestinal tract. The most common site of communication is the duodenum, but it can communicate with other organs, such as the oesophagus^{1,2}.

In addition to aortic prosthetic surgery, there are a number of risk factors for the development of fistula, including digestive neoplasms³, complications of gastric surgery³⁻⁵ and the placement of prostheses or foreign bodies in the gastrointestinal tract⁵⁻⁸.

We present a clinical case of a patient with an aorto-oesophageal fistula after surgical treatment for gastric neoplasia.

A 75-year-old man consulted for significant weight loss and was diagnosed with subcardial adenocarcinoma of the gastric adenocarcinoma by endoscopy. After completing the study with echoendoscopy without evidence of infiltration of the muscularis propria layer and extension CT scan without discordant findings, and with the diagnostic suspicion of early gastric cancer (uT1bN0), total gastrectomy, omentectomy and laparoscopic D2 lymphadenectomy were performed. For the reconstruction of the transit, a mechanical end-to-side oesophagojejunal anastomosis was performed with a circular endograpator, ascending the transmesocolic alimentary loop; incidentally, during the diagnostic process, an appendicular mucocele was detected, so an appendicectomy was performed at the same time. The pathological anatomy showed appendiceal adenocarcinoma gastricum pT4N0 and appendiceal mucinous adenocarcinoma pT2 with an affected margin.

On the eighth postoperative day, a small dehiscence of the oesophago-jejunal anastomosis was observed with little clinical and analytical repercussions. With the aim of speeding up recovery and early treatment in view of the already known pathological anatomy (right hemicolectomy and adjuvant chemotherapy with or without radiotherapy), it was decided to place an oesophageal prosthesis covered by endoscopy. After this, the patient progressed favourably and was discharged 12 days later.

However, 24 h later, he was readmitted for haematemesis with normal CT angiography (Fig. 1), and endoscopy was performed to control the haemorrhage by means of clips without adequately visualising the endoprosthesis. After a new endoscopy at 8 h, the endoprosthesis was removed and haemostasis was checked, apparently adequate. Five days later, the patient presented with a new haemorrhage with instability, and endoscopic control was not achieved, so urgent open surgery was decided on suspicion of aorto-oesophageal fistula. The review of the CT angiography, prior to removal of the endoprosthesis, supports the diagnosis by showing the proximity of the proximal portion of the endoprosthesis to the aorta, as shown in the 3D reconstruction (Fig. 2). During surgery, the fistula was confirmed and repaired with direct aortic suture. For visualisation, the oesophago-jejunal anastomosis had to be undone and oesophagectomy, cervical oesophagostomy and feeding jejunostomy were performed.

The patient evolved favourably, with good tolerance to enteral nutrition, and a control angio-CT scan was performed one week later with no alterations in the aortic wall, for which he was discharged. However, after discharge, he died suddenly at home due to unknown causes, as no autopsy was performed.

Aortoenteric fistula is an uncommon entity, which very rarely occurs at the oesophagus level^{1,2}. For this reason, although there are many published studies on aortoenteric fistula in general, references in the literature are much less frequent in the specific case of aorto-oesophageal fistula, with only a few clinical cases published in recent years. These studies describe several risk factors specifically associated with this location, such as radiotherapy in advanced tumours⁹, radical gastric surgery¹⁰ or the type of anastomosis performed. Two of them propose contact with the aorta of the stapling line of the oesophagojejunal anastomosis, performed with a linear stapler, as the causative agent^{3,4}. The most widely described aetiological factor for the appearance of fistulas in this location is the placement of oesophageal prostheses⁵⁻⁸.