

Major cancer surgery during the coronavirus pandemic: experience from a tertiary referral center and COVID-19 hub in Northern Italy

Editor

After the first case of COVID-19 in Italy, all elective non-urgent surgical activities were interrupted in order to

provide resources for the emerging epidemic and in fear of exposing patients to in-hospital SARS-CoV-2 infections. Our Institution, one of the largest public hospitals in Lombardy (Italy), was designated as a COVID hub by the regional government, and has so far treated more than one thousand COVID-19 patients.

As smaller hospitals redirected cancer patients to designated Oncological hubs¹, we kept performing major cancer surgery “in-house”, for ours being a tertiary oncological referral center with a high specialization in minimally invasive procedures.

A dedicated pathway of care was designed based on three principles:

Table 1 Results			
	2020 (n = 42)	2019 (n = 44)	p value
Age (years)	69 ± 11	69 ± 12	0.983
ASA score			
1	2 (5%)	5 (11%)	0.511
2	30 (71%)	29 (66%)	
3	10 (24%)	10 (23%)	
Charlson Score	5 ± 2	5 ± 2	0.981
Diagnosis			0.959
Primary adenocarcinoma	33 (79%)	35 (79%)	
Recurrent malignancy	4 (9%)	5 (11%)	
Neuroendocrine tumor	3 (7%)	4 (9%)	
Lymphoproliferative disease	2 (5%)	0	
Neoadjuvant treatment	18 (43%)	10 (23%)	0.070
Waiting time (days)	22 (IQT 17 - 33)	23 (IQT 16 - 37)	0.489
> 30 days	14 (33%)	10 (26%)	0.476
Type of surgery			0.431
Gastroesophageal	10 (24%)	6 (14%)	
Colorectal	18 (43%)	27 (61%)	
	(5%)	3 (7%)	
Pancreatic	10 (24%)	7 (16%)	
Splenic	2 (5%)	1 (2%)	
Approach			0.382
Open	20 (48%)	16 (36%)	
Laparoscopic	22 (52%)	28 (64%)	
Conversion to open	2/22 (9%)	0/28 (0%)	0.198
Length of hospital stay (days)	7 (IQT 5 - 12)	7 (IQT 5 - 11)	0.674
Need for ICU admission	3 (7%)	5 (11%)	0.714
Length of ICU stay (days)	5	3 (range 1 - 6)	
Overall postoperative complications	16 (38%)	16 (36%)	1
CCI	29 ± 22	23 ± 11	0.347
Major morbidity	7 (17%)	8 (18%)	1
Reoperation rate	2 (5%)	4 (9%)	0.677
30-day readmission rate	2 (5%)	2 (5%)	1
30-day mortality	1 (2%)	0 (0%)	0.494
Interval between surgery and definitive pathology report (days)	14 (IQT 11 - 23)	16 (IQT 12 - 22)	0.885
R0 resection	41 (98%)	42 (95%)	1
Interval between discharge and first surgical follow up (days)	6 (IQT 5 - 10)	6 (IQT 3 - 16)	0.168
Interval between discharge and first oncological follow up (days)	27 (IQT 15 - 30)	43 (IQT 25 - 52)	<.001
Indication to adjuvant CT	17 (41%)	16 (36%)	0.662
Interval between procedure and start of adjuvant CT (days)	51 (IQT 37 - 63)	63 (IQT 50 - 78)	0.103

Quantitative data are expressed as mean ± standard deviation or median (interquartile range), as needed. Categorical data are expressed as number (percentage). ASA = American Society of Anaesthesiologists. CCI = Comprehensive Complication Index. CT = systemic chemotherapy. ICU = Intensive Care Unit. IQT = interquartile range.

multidisciplinary cooperation between clinical staff and health managers; systematic SARS-CoV-2 preoperative screening with RT-PCR on nasal swab; rigorous adherence to in-hospital COVID-19 regulations regarding clean pathways, use of personal protective equipment, and limitations of all unnecessary hospital accesses.

To evaluate the efficacy of our model, we compared outcomes of major cancer surgeries performed from February 24th 2020 to May 8th 2020 with the same time period in 2019.

The primary endpoint was waiting time, defined as the interval between the date of the first diagnostic investigation and surgery for newly diagnosed cancers, and as the interval between the date of the tumor board during which surgical indication was given and surgery for patients who received a neoadjuvant treatment (Table 1).

While overall surgical activity underwent a 84 per cent reduction in volume (from 502 procedures in 2019 to 73 in 2020), major cancer cases remained stable (44 vs 42).

Baseline characteristics of the patients were similar. Waiting time did not differ between the two cohorts (23 versus 22 days in 2019 and 2020, respectively). This was in contrast with a previous report from the COVID-SURGE-ITA group survey², which showed an increase in time between tumor board and surgery.

Distribution of procedures according to anatomical district showed a trend toward less colorectal operations in 2020 compared to 2019, with an increase in gastroesophageal and pancreatic operations.

Several concerns have been raised on the use of laparoscopy during the COVID-19 pandemic³. The risk of SARS-CoV-2 transmission during laparoscopy has not been scientifically demonstrated^{4,5}, while an increase in open procedures will have a detrimental

effect on short-term outcomes. In our division, we continued performing laparoscopic operations, as all of our patients tested negative for SARS-CoV-2 before surgery.



Thirty-day surgical outcomes were similar between the two time periods. This was unsurprising as patients were operated on by the same surgical staff and cared for following the same standardized enhanced recovery protocol.

The potential need for postoperative ICU admission was a concern during the COVID-19 emergency. Scheduling major surgery in such situations requires collaboration between surgeons, anesthesiologists and healthcare managers. Our patients can rely on a dedicated high-care surgical ward with the presence of a multispeciality team; this also decreased the need for postoperative ICU admission.

A strict adherence to protocols was critical to patient safety. No patients developed a postoperative SARS-CoV-2 infection in our division.

Oncological surgical standards were equally maintained. The oncological pathway was not affected, as shown by the reduced interval from discharge to the first oncological follow up and to start adjuvant treatment.

Our study shows that major cancer surgery during the COVID-19 pandemic was not discontinued and was carried out with similar short-term outcomes as in standard conditions in our cohort of patients from a tertiary care center in Northern Italy. Multidisciplinary cooperation between the clinical staff and health managers played a critical role in ensuring a safe pathway of care.

M Maspero , M Mazzola,
CL Bertoglio, J Crippa , L Morini,
C Magistro, P De Martini,
M Gualtierotti, PM Lombardi and
G Ferrari

Division of Oncological and Minimally Invasive General Surgery, ASST Grande Ospedale Niguarda, Piazza Ospedale Maggiore 3, 20162, Milan, Italy

DOI: 10.1002/bjs.11892

- 1 Sorrentino L, Guaglio M, Cosimelli M. Elective colorectal cancer surgery at the oncologic hub of Lombardy inside a pandemic COVID-19 area. *J Surg Oncol* 2020; **122**: 117–119.
- 2 Torzilli G, Viganò L, Galvanin J, Castoro C, Quagliuolo V, Spinelli A *et al.* A Snapshot of Elective Oncological Surgery in Italy During COVID-19 Emergency: Pearls, Pitfalls, and Perspectives. *Ann Surg* 2020; <https://doi.org/10.1097/sla.0000000000004081> [Epub ahead of print].
- 3 Di Saverio S, Khan M, Pata F, Ietto G, De Simone B, Zani E *et al.* Laparoscopy at all costs? Not now during COVID-19 and not for acute care surgery and emergency colorectal surgery. *J Trauma Acute Care Surg*; 2020; **88**: 715–718.
- 4 Schwarz L, Tuech JJ. Is the use of laparoscopy in a COVID-19 epidemic free of risk? *Br J Surg* 2020; **107**: e188.
- 5 de Leeuw RA, Burger NB, Ceccaroni M, Zhang J, Tuynman J, Mabrouk M *et al.* COVID-19 and laparoscopic surgery, a scoping review of current literature and local expertise. *JMIR Public Heal Surveill* 2020; <https://doi.org/10.2196/18928> [Epub ahead of print].