A Snapshot of Elective Oncological Surgery in Italy During COVID-19 Emergency

Pearls, Pitfalls, and Perspectives

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Objective: To analyze the impact of COVID-19 emergency on elective oncological surgical activity in Italy.

Summary of Background Data: COVID-19 emergency shocked national health systems, subtracting resources from treatment of other diseases. Its impact on surgical oncology is still to elucidate.

Methods: A 56-question survey regarding the oncological surgical activity in Italy during the COVID-19 emergency was sent to referral centers for hepato-bilio-pancreatic, colorectal, esophago-gastric, and sarcoma/soft-tissue tumors. The survey portrays the situation 5 weeks after the first case of secondary transmission in Italy.

Results: In total, 54 surgical Units in 36 Hospitals completed the survey (95%). After COVID-19 emergency, 70% of Units had reduction of hospital beds (median −50%) and 76% of surgical activity (median −50%). The number of surgical procedures decreased: 3.8 (interquartile range 2.7–5.4) per week before the emergency versus 2.6 (22–4.4) after ($P = 0.036$). In Lombardy, the most involved district, the number decreased from 3.9 to 2 procedures per week. The time interval between multidisciplinary discussion and surgery more than doubled: 7 (6–10) versus 3 (3–4) weeks ($P < 0.001$). Two-third (n = 34) of departments had repeated multidisciplinary discussion of patients. The commonest criteria to prioritize surgery were tumor biology (80%), time interval from neoadjuvant therapy (61%), risk of becoming unresectable (57%), and tumor-related symptoms (52%). Oncological hub-and-spoke program was planned in 29 departments, but was active only in 10 (19%).

Conclusions: This survey showed how surgical oncology suffered remarkable reduction of the activity resulting in doubled waiting-list. The oncological hub-and-spoke program did not work adequately. The reassessment of healthcare systems to better protect the oncological path seems a priority.

Keywords: COVID-19, emergency, Italy, surgery

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COVID-19 has been declared a pandemic by the World Health Organization on March 11, 2020.[1] Global confirmed cases approached 1.123000 patients with 59.000 deaths across over 160 countries as on April 3rd, 2020.[2]

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After the initial description in Wuhan and China,[3,4] Italy was hit first in Europe and the impact has been rapidly enlarging with Lombardy and Veneto being the 2 most affected regions.

The COVID-19 pandemic brought unique challenges to the global healthcare community, with rapid escalation of the number of affected individuals and associated mortality over few weeks.

The virus spread very rapidly such that 2 weeks from the first cases diagnosed, 1000 patients tested positive. One week later the number of positive cases exceeded 4600, reaching over 30,000 patients and 2500 deaths on March 18th, 2020; as for April 3rd, the total affected cases in Italy were more than 100.000 with 28000 pts hospitalized and more than 4000 pts in the intensive care units (ICU). The total number of deaths approximated 15.000 patients.[2]

The region of Lombardy was the most profoundly affected, and the regional government forced to reset the entire healthcare system to face the challenges. The Italian government ordered a nationwide lockdown effective from March 9th, 2020.

Parallel to these governmental directives, the Ministry of Health implemented extensive reorganization of national healthcare services to facilitate the treatment of the increasing numbers of affected patients who need intensive support therapy.

Nonurgent, noncancer procedures were stopped to reallocate the nurses and anesthesiologists to face the COVID-19 emergency. This measure freed ventilators for patients with COVID-19 and converted surgical theatres into additional intensive care unit beds as needed.

Most surgical departments were closed and converted to medical ward specifically dedicated to COVID-19 patients. More and more surgeons were also requested to help medical personnel in the COVID-19 elective and emergent wards, an absolutely unpredictable event.

In this setting, only emergency, and elective oncological procedures were allowed with obvious limitations in terms of numbers of operable cases. We ought to investigate how was the impact of these new rules in highly specialized centers in various branches of surgical oncology and how they modulate their activity in function of the pandemia.

METHODS

A survey comprising 56 questions was designed to elucidate the impact of COVID-19 emergency on elective surgery for oncological disease in Italy. It portrays the surgical activity 5 weeks after the diagnosis of the first positive patient in Italy (first secondary transmission in Italy: February, the 18th; survey: March, the 27th). The questionnaire (Supplementary File 1, http://links.lww.com/SLA/C254) was organized in 7 groups of questions. The first group (12 questions) aimed to depict the status of every center before the COVID-19 emergency in terms of number of hospital beds, volume of procedures per year, surgical team composition, and organization of activity (number of days with surgical activity per week, waiting list, and multidisciplinary approach to oncological patients). Then surgeons were enquired (6 questions) about the impact of COVID-19 emergency on the entire hospital organization (number of COVID+ patients hospitalized in total and in the ICU) and reorganization (creation of COVID+ and COVID−free departments). The third group of questions (n = 13) investigated the impact of COVID-19 emergency on the surgical oncological activity, in terms of reduction of hospital beds, ICU beds, and operative theaters, and in terms of shortage of blood components. We investigated as well the number of oncological surgical procedures performed during the entire period (5 weeks) and during the last week before the survey (March, the 23rd–March, the 27th) and the number of infected patients and surgeons. The fourth group of questions (n = 6) concerned the activation of oncological hub-and-spoke program to guarantee surgical activity into every single region during the emergency, its organization, and activity. For better acknowledgment, the National Healthcare System identified as Hubs, those hospitals recognized as referrals in surgical oncology, and not heavily involved in caring COVID+ patients. The Hubs should have served for caring those patients who could not be operated in those Hospitals mostly impacted by the COVID-19 (spoke). Then, surgeons were enquired about the impact of emergency on treatment schedule (10 questions), that is, the number of patients on waiting list for surgery, the expected prolongation of time interval between multidisciplinary discussion and surgery, the criteria to select patients to operate first, the need for repeat discussion in multidisciplinary meeting (MDM), the prioritization of any treatment alternative to surgery, and a limited access to any hospital facilities. The sixth part of the survey (5 questions) concerned the perioperative management of patients, enquiring about hospital protocols for surgery during the emergency, investigations performed to exclude COVID-19 infection in patients candidate to surgery, and any variation in the postoperative treatment. The last part (2 questions) investigated the adaptation of surgical facilities to the emergency, that is, the presence of operating rooms dedicated to COVID-19 positive patients, and the adoption of specific equipment for minimally-invasive procedures.

An E-mail was sent to the referral departments for oncological surgery in Italy inviting them to participate in the survey. Four groups of departments were identified according to their surgical activity: hepato-bilio-pancreatic (HPB) surgery, upper gastro-intestinal (Upper GI) surgery, colorectal surgery, and sarcoma/soft tissue tumors (SST) surgery. An active link to the secure website was included in the explanatory e-mail, and the participants completed the survey online. Two reminders were sent to all participants 3 and 5 days after the first e-mail. The data were analyzed only after survey closure (2 days after the second reminder).

All data were prospectively collected. Categorical variables are reported as number and percentage, and continuous variables are reported as median and interquartile range (IQR). The mail was sent to the chief of every referral department. Some of the enquired surgeons work in separate departments of the same hospital. Per-hospital and per-department analyses were performed. We analyzed both whole data and data stratified according to their specialty (HPB, Upper GI, Colorectal, SST). Categorical variables were compared using the Chi-square test or Fisher exact test, as appropriate. Continuous variables were explored by the unpaired *t*-test and the Mann-Whitney *U* test, as appropriate. A *P*-value of <0.05 was considered statistically significant for all tests.

RESULTS

Overall, 57 e-mails were sent; 54 (95%) surgical Units from 36 hospitals answered. They included 29 HPB units, 11 colorectal units, 8 upper GI units, and 6 SST units. Sixteen (30%) units were in Lombardy, the Italian region with the highest number of COVID-19 infected patients. The survey portrays the situation on March, the 27th. On that date, the number of COVID-19 positive patients in Italy was 86,498, the number of those in ICU was 3732, and the number of COVID-19-related death was 9134 (10.6%); in Lombardy, the numbers were 37,298 (43.1% of patients positive in Italy), 1292 (34.6% of patients in ICU in Italy), and 5402 (14.5% of positive patients in Lombardy; 59.1% of virus-related death in Italy), respectively.

Impact on the Hospitals

Before COVID-19 emergency, the median number of hospital beds in the 36 hospitals was 680 (IQR 445–1000). Nine (25%)

hospitals organized informative meetings about COVID-19 risk, but only 2 (6%) adopted some preemptive actions.

The first case of secondary transmission of COVID-19 in Italy was diagnosed on February, the 18th. Most of the hospitals had early involvement, 21 out of 36 (58%) having at least 1 COVID+ patient 2 weeks after the first Italian patient. To the date of the survey, only 4 (11%) hospitals had no positive patients. Thirty-three (92%) hospitals created departments dedicated to COVID+ patients. The remaining 3 hospitals are in the south of Italy and had no COVID+ patients. All but 3 (92%) hospitals created COVID-free ICUs with a median number of 8 (6–12) beds. Twenty-two (61%) hospitals elaborated protocols to manage oncological patients candidate to surgery during COVID-19 emergency and 19 (53%) had at least 1 surgical theater for COVID-19 positive environment.

To March the 27th, the median number of hospitalized patients with COVID-19 infection was 120 (16–235), the 14% (5%–26%) of the whole number of hospital beds. In 4 hospitals (all in Lombardy) more than one-third of hospitalized patients was COVID-19 positive. The median number of COVID-19 positive patients hospitalized in ICUs was 22 (2–50).

Impact on Surgical Oncology Activity

As detailed in Table 1, before COVID-19 emergency, the median number of resections performed per year in the 54 referral surgical units was 190 (IQR 130–300). All centers had per patient preoperative MDM. The median time interval between the MDM and surgery was 3 weeks (3–4). Surgical procedures were performed 4 days a week (IQR 3–5) in HPB and colorectal units and 3 days a week (2–3.5) in upper GI and SST units ($P = 0.002$).

After COVID-19 emergency, surgical units underwent major changes (Table 1): 38 (70%) had reduction of their hospital beds; 41 (76%) had reduction of their surgical activity (days of operating room); 45 (83%) had less availability of ICU beds; and 52 (96%) had reduction of outpatient clinics. Nineteen (35%) units experienced a shortage of blood components. Activity reduction involved all but SST units ($P < 005$ vs the other units). Of note, 4 surgical units in Lombardy maintained their regular activity, but none of them had an emergency room department (ER).

The number of surgical procedures decreased, passing from a median number of 3.8 (IQR 2.7–5.4) per week before COVID-19 emergency to 2.6 (22–4.4) later on ($P = 0.036$). Interestingly, in Lombardy we observed a decrease of the surgical activity since the beginning of the emergency: it passed from 3.9 (2.7–5.2) procedures per week before the emergency to 2.5 (2–3) in the first month of emergency ($P = 0.109$). Then, it had a further reduction in the fifth week (2 procedures per week, IQR 1–3, $P = 0.022$ vs the activity before the emergency). In the other Italian regions, the reduction was not evident at the beginning (3.6 procedures per week before vs 3.8 during the first months), but it was in the last week, even if less pronounced than in Lombardy (median number 3 procedures per week, IQR 2–4.5, $P = 0.098$ vs the activity before the emergency). Data are shown in Figure 1.

In the first 5 weeks of the COVID-19 emergency, 7 surgical units operated on 8 COVID+ patients (<1% of the operated patients, 5 in Lombardy). Thirty-one surgeons/residents in 18 units (1–5/unit) contracted COVID-19 infection (12/31 in Lombardy) (Table 1).

Impact on Waiting List and Treatment Strategy

As shown in Table 2, the median number of patients on waiting list was 20 (IQR 10–34). Most units (87%) expected to have a median prolongation of the time interval between MDM and surgery of 4 weeks, so more than doubling the standard 3 weeks (Fig. 2). Two-third of departments scheduled a repeat MDM of patients and 1/4 prioritized treatments alternative to surgery.

TABLE 1. COVID-19 Emergency: Impact on Surgical Oncology Activity

	Overall N = 54	HPB N = 29	Colorectal N = 11	Upper GI N = 8	SST N = 6	
	N (%) or Median (IQR)					*P*
Before COVID-19 emergency						
Number of resections per year	190 (130–300)	205 (148–265)	220 (180–400)	85 (50–145)	245 (130–400)	<0.05
Number of days with operating room per week	4 (3–5)	4 (3–5)	4 (3–5)	3 (2–4)	3 (2–3)	0.002 HPB/CR versus Upper GI/SST
Number of surgeons	5 (4–6)	5 (5–6)	6 (5–11)	4 (3–4)	5.5 (4–6)	0.016 Upper GI versus HPB 0.012 Upper GI versus Colorectal
Number of residents	4 (2–7)	4 (3–6)	6 (3–8)	3.5 (2–7)	2.5 (2–3)	>0.05
MDT	54 (100%)	29 (100%)	11 (100%)	8 (100%)	6 (100%)	1.000
Time interval MDM – Surgery	3 (3–4)	3 (3–4)	3 (3–4)	3.5 (2.5–4)	4 (4–5)	0.028 SST versus Colorectal
After COVID-19 emergency						
Reduction of hospital beds? Yes	38 (70%)	19 (65%)	10 (91%)	8 (100%)	1 (17%)	0.003
If yes, which percentage?	50% (40–70)	50% (40–66)	60% (50–70)	60% (37–80)	75%	>0.05
Reduction of surgical activity? Yes	41 (76%)	24 (87%)	9 (82%)	6 (75%)	2 (33%)	0.075
If yes, which percentage?	50% (50–70)	50% (40–70)	60% (50–70)	55% (50–70)	50% (50–50)	>0.05
Reduction of availability of ICU beds? Yes	45 (83%)	24 (83%)	11 (100%)	8 (100%)	2 (33%)	0.002
Reduction of outpatient clinics? Yes	52 (96%)	29 (100%)	11 (100%)	7 (87%)	5 (83%)	0.107
Shortage of blood components? Yes	19 (35%)	10 (34%)	4 (36%)	3 (37%)	2 (33%)	0.998
Operation in COVID+ patients	7 (13%)	5 (17%)	0 (0%)	1 (12%)	1 (17%)	0.535
Any surgeon/resident contracted infection? Yes	18 (33%)	10 (34%)	5 (45%)	2 (25%)	1 (17%)	0.627
If yes, % of infected surgical staff	12.5% (8–25)	10% (8–12.5)	17% (12.5–25)	21% (17–25)	14%	0.017 Upper GI versus HPB

GI indicates gastro-intestinal; HPB, hepato-bilio-pancreatic; ICU, intensive care unit; IQR, interquartile range; MDM, multidisciplinary meeting; SST, sarcoma and soft tissue.

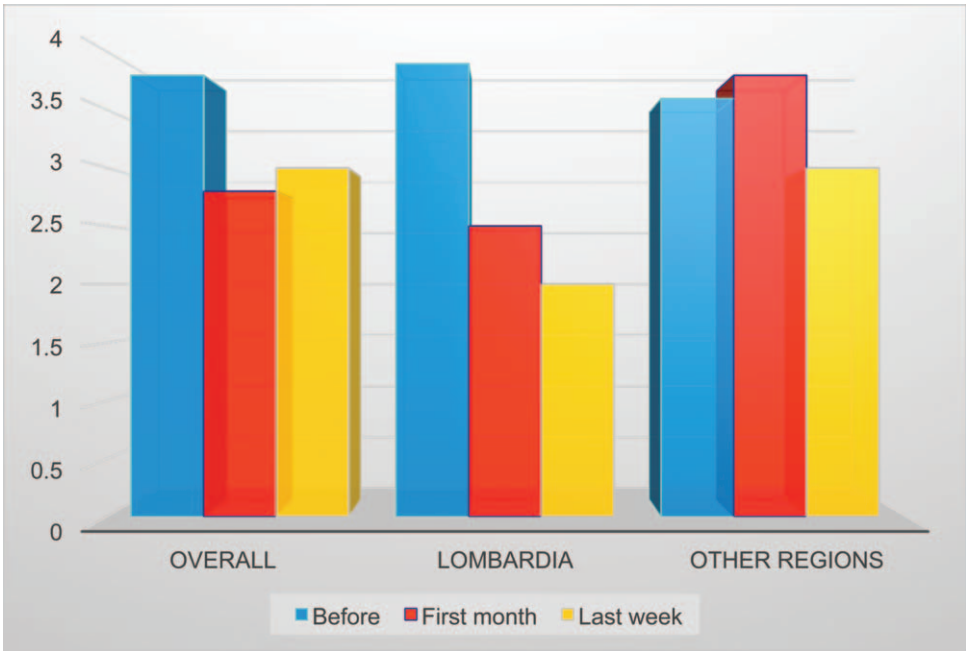

FIGURE 1. Impact of COVID-19 emergency on surgical oncology: variation in the median number of resections performed per week (before the emergency vs during the first month of emergency vs the fifth week of emergency).

TABLE 2. COVID-19 Emergency: Impact on Waiting List, Modification of Treatment Strategy, and Access to Hospital Facilities

	Overall N = 54	HPB N = 29	Colorectal N = 11	Upper GI N = 8	SST N = 6	
	N (%) or Median (IQR)					*P*
Impact on the waiting list						
Patients on the waiting list on March, the 27th	20 (10–34)	20 (11–34)	27 (14–35)	11 (6.5–17.5)	29 (10–50)	>0.05
Prolongation of the time interval MDM–Surgery? Yes	47 (87%)	26 (90%)	10 (91%)	8 (100%)	3 (50%)	0.032
Expected prolongation (weeks)	4 (2–5)	4 (3–4)	5 (3–6)	2 (2–3)	3 (2–6)	0.027 *Upper GI versus Colorectal*
Expected overall interval MDM-surgery (wk)	7 (6–10)	7 (6–10)	7 (6–10)	6 (4.5–7.5)	7 (7–11)	>0.05
Repeat multidisciplinary discussion of patients? Yes	34 (63%)	17 (59%)	9 (82%)	4 (50%)	4 (67%)	0.616
Prioritization of treatments alternative to surgery? Yes	13 (24%)	8 (27%)	4 (36%)	1 (12%)	0 (0%)	0.309
Criteria for selection of candidates to surgery:						
Performance status	14 (26%)	9 (31%)	3 (27%)	1 (12%)	1 (17%)	0.700
Tumor-related symptoms	28 (52%)	16 (55%)	7 (64%)	3 (37%)	2 (33%)	0.527
Disease biology/aggressiveness	43 (80%)	25 (86%)	8 (73%)	6 (75%)	4 (67%)	0.610
Risk of becoming unresectable	31 (57%)	22 (76%)	3 (27%)	2 (25%)	4 (67%)	0.008
Availability of therapeutic alternatives	19 (35%)	13 (45%)	3 (27%)	2 (25%)	1 (17%)	0.432
Interval from neoadjuvant treatment	33 (61%)	17 (59%)	5 (45%)	7 (87%)	4 (67%)	0.304
Need for postoperative ICU	31 (57%)	20 (69%)	6 (54%)	3 (37%)	2 (33%)	0.227
Complexity of surgical procedure	11 (20%)	6 (21%)	2 (18%)	1 (12%)	2 (33%)	0.811
Oncological Hub program						
Planned	29 (54%)	15 (52%)	5 (45%)	4 (50%)	6 (100%)	0.119
Activated	22 (41%)	11 (38%)	4 (36%)	1 (12%)	6 (100%)	0.009
Active (at least 1 resection performed)	10 (18%)	3 (10%)	3 (27%)	0 (0%)	4 (67%)	0.005
Access to hospital facilities						
Computed tomography	17 (31%)	10 (34%)	5 (45%)	1 (12%)	1 (17%)	0.382
Magnetic resonance imaging	13 (24%)	7 (24%)	5 (45%)	0 (0%)	1 (17%)	0.141
Nuclear medicine (PET-CT)	7 (13%)	4 (14%)	2 (18%)	1 (12%)	0 (0%)	0.758
Endoscopic procedures	14 (26%)	10 (34%)	3 (27%)	1 (12%)	0 (0%)	0.265
Percutaneous procedures	11 (20%)	9 (31%)	2 (18%)	0 (0%)	0 (0%)	0.130
Endovascular procedures	8 (15%)	6 (21%)	2 (18%)	0 (0%)	0 (0%)	0.344
Radiotherapy	6 (11%)	3 (10%)	3 (27%)	0 (0%)	0 (0%)	0.197

GI indicates gastro-intestinal; HPB, hepato-bilio-pancreatic; ICU, intensive care unit; IQR, interquartile range; MDM, multidisciplinary meeting; PET-CT, positron emission tomography-computed tomography; SST, sarcoma and soft tissue.

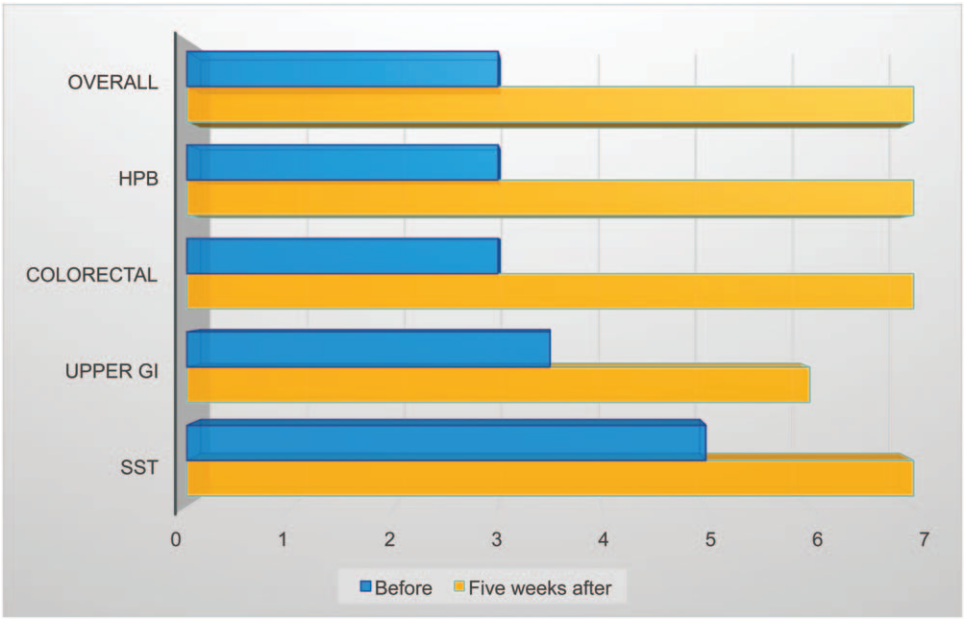

FIGURE 2. Impact of COVID-19 emergency on surgical oncology: variation of median interval between the multidisciplinary discussion and surgery (before the emergency vs after 5 wk of emergency).

We enquired surgeons about their criteria to select patients to operate first (Table 2). The commonest ones were: disease biology/aggressiveness (80%); interval from neoadjuvant therapy (61%); risk of becoming unresectable (57%); need for postoperative ICU (57%); tumor-related symptoms (52%); and availability of therapeutic alternatives (35%). We observed some discrepancies among units: HPB surgeon highlighted the risk of becoming unresectable (76%) and the need for postoperative ICU (69%), whereas upper GI surgeons highlighted the interval from preoperative treatment (88%) and colorectal surgeons the primary tumor-related symptoms (64%). Only 20% of responders considered the complexity of resection.

Half of surgical departments, including all the departments in Lombardy, were contacted for the activation of an oncological hub-and-spoke program (Table 2). A COVID-free hospital was planned in 8 cases, and a single surgical team operating patients from multiple hospitals in 16. To the date of the survey, 22 hub programs were activated, but only 10 (18%) departments (4 in Lombardy) operated on at least 1 patient (all hospitals without ER). The median number of resected patients was 8 (range 2–41).

Impact on Facilities

Surgeons complained about a more limited access to the following hospital facilities (Table 2): computed tomography (CT) in 31% of cases, magnetic resonance imaging in 24%, positron emission tomography-CT in 13%, endoscopy in 26%, percutaneous procedures in 20%, endovascular procedures in 15%, and radiotherapy in 11%. In details, HPB teams complained about percutaneous and endovascular procedures (31% and 21%, respectively), especially in Lombardy (57% and 29%). Colorectal teams complained about magnetic resonance imaging (45%) and radiotherapy (27%).

Impact on Patients Management

During the COVID-19 emergency, most units modified their perioperative management of oncological patients, 2/3 (n = 34) of them having protocols to standardize it. In the preoperative setting, 42 (78%) surgical departments scheduled routine tests to exclude COVID-19 infection: nasopharyngeal swab in 21, chest CT in 6, and nasopharyngeal swab + chest CT in 10. Four (7%) centers scheduled investigations only in symptomatic patients. During surgery, some additional facilities have been introduced for minimally-invasive procedures: 13 (24%) units adopted smoke evacuation systems and 2 (4%) used filtering facepiece (FFP2) masks. In the postoperative period, 25 (46%) units scheduled early thoracic imaging in cases of fever (mostly chest CT, then pulmonary ultrasound, and chest X-ray). Five (9%) centers combined chest imaging with nasopharyngeal swab.

DISCUSSION

This survey is somehow atypical because it tries to overview an occurrence which has no previous comparable historical examples, is still ongoing, and then the final remarks have to be written yet. Furthermore, there are distinctions related to the regional clustering of the outbreak, and peculiarity about the National Healthcare System, economy, society, and politics, which for sure may impact its transferability to another context. However, it is the first report in this sense then possible provider of relevant insights for the entire surgical community useful for facing similar frameworks, although in different moments and conditions.

Overlooking the data, 2 aspects capture the reader attention: the underestimation of the problem before the COVID-19 outbreak occurred, with 1/4 of centers which discussed on that and just 6% which tried to get somehow prepared to that; the impressive rearrangement of the system in a few weeks. Most of the centers (92%) provided in a few weeks, and for some part of the country (Lombardy) in days, COVID+ wards. The median rate of hospital beds hosting patients with COVID-19 infection was 14% (5%–26%), and in Lombardy it grew to more than 30%. The ICU beds passed from a median number of 8–22 with peaks passing from 12 to 50 beds. To date on March 27th, almost all the 36 hospitals enquired host COVID+ patients.

A sort of emotional efficiency occurred trying to overcome the massive outbreak. Efficient because the reaction was strong, and could constrain the consequences of a scenario quite close if not even worse to that of a war context. Emotional since, as our data show, the system substantially was obliged to almost forget the need for

surgery for most of those patients displaced by the pandemia. Seventy-six percent of Units decreased their own activity of 50%, and 83% suffered constrains of ICU beds (Table 1). In Lombardy, at 5th week from the pandemia median surgical procedures per week fell from 3.9 to 2. For the other regions, initially less involved by the pandemia, there was paradoxically a transitional increment, possibly related to the rearrangements consequent to the sudden inability of part of the country to address the need for surgery (Fig. 1). Just those Hospitals without ER were able to keep the activity almost unaltered. At the end, the waiting lists doubled in most cases, and reached up to 5 weeks in some (Table 2 and Fig. 2).

Anyhow, all the centers rescheduled their activity accordingly, and rewrote criteria to prioritize patients. Biological aggressiveness or symptomatic disease, the interval from the latest treatment, and the risk of un-resectability if delayed, were considered the most relevant issues to be prioritized (Table 2). If most of the latter represent criteria to prioritize patients also in the regular activity, the lack of facilities represented a distinctive aspect.

The scarcity of ICU beds was one of them, but also the lack of expert anesthesiologists displaced to support COVID+ ICU was another. Indeed, prioritizing patients with marginal resectability, aggressive disease, and no alternative, indirectly addressed relevance to the surgical complexity, but also demanded expert personnel, including anesthesiologists, to support the surgeons.

Other facilities, play a central role once managing the patients discussed in the survey (Table 2). For all of them there was a reduction of the availability: imaging modalities had access reduced to 13%–45%, endoscopy 24%, interventional procedures 15%–28%, and radiotherapy 11%. One of the reason for that has been the displacement of healthcare professionals for facing with the massive activation of COVID wards.

In such a context, 2/3 of the centers properly readdressed the patient management in a further MDM in search of alternative paths for delaying surgery or providing other therapeutic solutions.

Concerning the efficacy of the oncological hub-and-spoke programs, only 50% of the enquired surgeons confirmed this system in their own context, and just for 40% of them it effectively started (Table 2). At the end, just 18% of centers interviewed operated some patients in that setting. The oncological hub-and-spoke program has been efficient once the hospital addressed for receiving the patients from the others had no ER, as the National Cancer Institutes. Inversely, it suffered once the hospital was also a hub for COVID+ patients, or even other diseases like stroke, and cardiovascular emergencies, such as Academic Referral Hospitals.

The risk of the healthcare professionals represents something to be reconsidered from now. The World Health Organization recommends minimizing the need for personal protective equipment (PPE), and in doing that demands to rationalize its distribution.[5] However, providing PPE to the healthcare professionals is a priority because in-hospital transmission could deeply undermine their ability to address the request of a system already under significant strain, as shown in this survey too. Indeed, 31 surgeons in 33% of the units joining the survey became COVID+, representing up to 38% of the working power of the teams. Providing extensive testing for healthcare professionals, and warranting the adequate availability of PPE, remain still issues to be addressed in many hospitals in our country. Particular attention should be also paid to the safety assessment in the operating room. The survey has shown that just 24% of the Units adopted smoke evacuation systems for minimal access surgery, and just 2% the FFP2 masks. Given the actuality, this issue is and will properly be object of debate.[6,7] However, many societies have emphasized the need for improving the safety in the operating room.[8,9]

This overview should moreover help us in providing thoughts helpful for the future. In the survey, outpatient clinics were reduced in 96%, with, as potential consequence, the interruption of the contacts with patients and referrals. This will result in a slow reassessment of the activity and recruitment of patients for many Units. From now modalities of telemedicine should probably be implemented to overcome the problem of traveling for many patients during and after this outbreak.

The Hospital layouts should change enabling the respect of the social distance either for the staff, and the patients. Path for patients with infectious disease should be clearly separated from that of the others. In particular oncologic patients need attention: Cancer Center physically should be separated from ER and infectious disease department, when part of Academic Referral Hospitals. For now, the survey shows how 78% of the Units activated a modified preoperative flow-chart inclusive of chest imaging and swabs, and almost 50% sustained the need of prompt investigation with chest imaging in the postoperative period in the event of symptoms. A standard testing before discharge should in author's opinion be considered.

In conclusion, this survey has found a wide availability by the centers involved despite most of them under significant strain, in that demonstrating the interest on the issue. Data has shown how surgical oncology in Italy has suffered the pandemia in terms of reduced capability to address the demand of treatments. The adaptation of the system and the hub-and-spoke program have not been sufficient in constraining adequately the drawbacks. As partial justification, it is worth to be mentioned that COVID-19 outbreak in Italy, and in particular in the Northern part of the country, has been the first manifestation of the pandemic in the Western world. Objectively, it was so overwhelming in some circumstances resulting compulsorily in a sort of disease triage. Probably in the near future the community will have the chance to measure for the patients who suffered delays or changed approach, the prognostic impact of the herein disclosed restrictions: answers which were not within the aims and possibilities of this survey, disclosing a situation not yet at its end-titles. Anyhow, this snapshot addresses important insights underlining the need of a healthcare system reassessment in COVID+, COVID-free, which should not forget to protect with dedicated spaces and paths, those oncologic patients in the need of surgical treatment.

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