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ORIGINAL ARTICLE

Cancer Surgery Experience in a Tertiary Pandemic Hospital During the COVID-19 Pandemic

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Abstract

Introduction: One of the major challenges that the healthcare system was facing during the pandemic was how to manage patients requiring specific treatment, such as cancer surgery while managing the treatment of patients with COVID-19. Especially in pandemic hospitals, arrangements were made for the follow-up and treatment of other non COVID-19 patients in order to prevent transmission within the hospital. The aim of the study was to evaluate patients undergoing cancer surgery during the pandemic in the General Surgery Department of our hospital, which serves as a pandemic hospital.

Methods: Cancer surgeries performed under emergency and elective conditions in the General Surgery Department of a tertiary pandemic hospital between March 11th, 2020, and July 31st, 2020, were retrospectively evaluated.

Results: A total of 46 patients were included in the study. Two patients who underwent cancer surgery died of non-COVID-19 causes. No findings suggestive of COVID-19 were found in any patients in the preoperative or postoperative periods. During this period, no contamination was detected in the operating room team or in the healthcare personnel who followed the patients in the ward.

Discussion and Conclusion: In a hospital that has been declared as a pandemic hospital and the majority of its capacity has been reserved for the follow-up and treatment of patients with COVID-19, isolated areas can be created and special surgeries such as cancer surgery can be successfully performed in addition to emergency surgeries.

Keywords: Cancer surgery; COVID-19; pandemic.

The World Health Organization (WHO) declared the novel coronavirus disease (COVID-19) as a pandemic on March 11th, 2020, and at the time of this article's preparation, a total of 28,584,158 identified patients and 916,955 deaths were detected in 216 countries worldwide[1]. After the detection of the virus in the first patient in Turkey on March 11th, 2020, COVID-19 quickly spread across the country and patients were identified in all provinces in a short time.

Due to the high contagiousness of the SARS-CoV-2 virus, which causes COVID-19, and the rapid spread of the pandemic, the most important problem evaluated by administrators has been whether the healthcare system, namely, healthcare personnel, bed capacity, intensive care unit (ICU) beds, and ventilators could be adequately provided [2]. Accordingly, suggestions have been published for the use of resources for patients with COVID-19 and to postpone elective surgeries other than emergency surgeries to prevent the transmission of viruses to healthcare personnel and other patients [3].

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In this crisis, managing the treatment of patients with cancer is very difficult considering the risk of death due to cancer, death or serious complications due to COVID-19, or the high mortality rate due to COVID-19 in immunocompromised individuals [4,5]. It is important to establish a balance between healthy patients and those with cancer who can be treated with surgery and the risk and consequences of having COVID-19 during the treatment of these patients. Treatment modalities have been suggested by associations and societies according to the type and stage of cancer, but there is no uniform approach or international guideline for cancer treatment. There is limited experience in the literature regarding cancer surgery and complications associated with COVID-19 during the pandemic, and most of those are case-based reports [6,7]. Treatment decisions should be evaluated on a case-by-case basis and in line with the conditions of the health center with consideration to the risks and benefits. Considering it is not clear how long the pandemic will last, it is self-evident that patients with cancer will be adversely affected by the postponement of surgery.

With this study, we aimed to demonstrate our experience of cancer surgery in a tertiary center serving as a pandemic hospital and the safe performance of cancer surgery under appropriate conditions.

Materials and Methods

This study was designed as a retrospective, cross-sectional, descriptive study, which started after obtaining necessary permissions from COVID-19 Scientific Research Committee of the Republic of Turkey Ministry of Health. Patients with cancer who underwent under emergency or elective conditions between March 11th, 2020, the date on which the first patient with COVID-19 was diagnosed in our country, and July 31st, 2020, in the Department of General Surgery, Giresun University Prof. Dr. A. İlhan Özdemir Training and Research Hospital, were included in the study. The medical documents of patients were scanned retrospectively, and the demographic data of the patients, the presence of comorbidities, indications and surgical methods, preoperative imaging methods, need for postoperative intensive care, length of hospital stay and mortality rates, and data about COVID-19 were evaluated.

Our hospital was the only tertiary health center in Giresun, thus it was defined as a pandemic hospital after the first patient with COVID-19 was seen in our country, and necessary arrangements were made in many areas such as outpatient clinics, inpatient services, ICUs, and operating rooms in line with the guidelines published by the Ministry of Health. Units where patients with and without COVID-19 would receive care and their entrance and exit areas were separated. The ward where surgical patients would be hospitalized before and after surgery and the ICU was planned in a different place to the floors of the hospital where patients with COVID-19 were followed up.

In the first days of the pandemic, elective surgeries were canceled, except for emergency procedures. Given that our hospital was the only tertiary center in our city, the distance of out-of-province referrals, and that transportation facilities were limited, patients with cancer continued to undrego surgery after providing appropriate conditions. All patients undergoing elective surgery were hospitalized at least 24 hours before the surgery, evaluated for COVID-19 symptoms, and underwent a polymerase chain reaction (PCR) test. Computed tomography (CT) was performed in the patients for the preoperative oncologic evaluation of gastrointestinal system and breast cancers. PCR tests for COVID-19 were not requested in patients who underwent surgery under emergency conditions but they were evaluated in terms of symptoms and signs associated with COVID-19.

The patients were taken to the operating room with a mask on and the preparation was made with the least number of personnel possible. The anesthesiologist and anesthesia technician used surgical gowns, N95 masks, and protective glasses due to the possibility of the patient being COVID-19 positive. The patients were intubated rapidly using a clamped tube with the help of a video laryngoscope without mask ventilation. After surgery, the patients were extubated awake. After extubation, the patients wore surgical masks while being provided oxygen support with a nasal cannula without ventilation. After the completion of the wake-up process in the operating room, patients were transferred directly to the surgical ward. Patients in need of postoperative intensive care were followed up in isolated rooms reserved in the ICU. The surgical team also completed the surgeries using personal protective equipment (PPE) including N95 masks and protective glasses.

All patients were followed up in separate rooms in the surgical ward and masks were worn throughout their hospitalization. Only one companion was allowed to stay with them. They were advised to stay in isolation for 14 days after discharge, and at the end of this process, they were called by phone to obtain information about their situation.

Data were statically analyzed using the IBM SPSS version 22.0. Descriptive statistics are presented as number, percentage, and mean.

Results

In our study, there were a total of 46 patients (26 females and 20 males), with an average age of 66.2 (range, 33-88) years. Preoperative chest X-ray was performed in all patients, and preoperative chest CT was performed in 35 (76.1%) patients for oncologic staging. These CTs were also evaluated in terms of COVID-19 findings, but no findings were found in any patients. PCR tests for COVID-19 were performed in 37 (80.4%) patients who underwent surgery under elective conditions, all of which were found to be negative.

The average length of hospital stay was 9.5 (range, 2-27) days, and there were no symptoms that would cause suspicion of COVID-19 were found in any patients during preoperative or postoperative follow-up. Although 25 (54.3%) patients had comorbid diseases, the number of patients followed up in the ICU in the postoperative period was 14 (30.4%). Two (4.3%) patients died, one of sepsis due to anastomotic leakage and one of cardiac problems. Table 1 summarizes the characteristics of the patients and data about COVID-19.

Table 1. Characteristics of patients who underwent surgery during the COVID-19 outbreak (March 11-July 31, 2020)

	Mean (range) or n (%)
Age (years)	66.2 (33-88)
Sex	
Female	26 (56.5)
Male	20 (43.5)
ASA score	
ASA I	11 (23.9)
ASA II	21 (45.7)
ASA III	9 (19.6)
ASA IV	5 (10.9)
Length of hospital stay (days)	9.5 (2-27)
Comorbidity	25 (54.3)
Preoperative chest X-ray	46 (100.0)
Preoperative chest CT	35 (76.1)
Preoperative COVID-19 test	37 (80.4)
Preoperative suspected COVID-19	1 (2.2)
Postoperative suspected COVID-19	0 (0.0)
Postoperative intensive care unit	14 (30.4)
Postoperative mortality	2 (4.3)
Surgery	
Emergency	9 (19.6)
Elective	37 (80.4)
Surgical approach	
Laparoscopic	8 (17.4)
Open	38 (82.6)

Eight patients underwent surgery for stomach cancer, fourteen for colon cancer, seven for rectal cancer, nine for breast cancer, five for thyroid cancer, one for gallbladder cancer, and two for pancreatic cancer. Nine (19.6%) patients underwent surgery under emergency conditions, all due to obstruction due to colorectal cancer. Eight of 37 patients who underwent surgery under elective conditions were operated using a minimally invasive laparoscopic method and these patients had colorectal cancer. The surgical indications of the patients and the surgeries performed are shown in Table 2.

None of the patients had any signs or symptoms related to COVID-19 during their postoperative follow-up in the hospital or after discharge. There was no COVID-19 transmission in the operating room team and the healthcare personnel who followed up and treated patients in the ward.

Discussion

The COVID-19 pandemic spread rapidly in our country as it did around the world and affected the entire health system, treatment modalities, and surgeries. Following the detection of the first patient with COVID-19 in March 2020, many centers were declared as pandemic hospitals by the Ministry of Health and continued to serve in this way by reorganizing. Elective surgeries other than emergency surgeries were canceled or postponed, and all hospital beds were reserved for the treatment of patients with COVID-19. However, in the following days of the pandemic, because our hospital was the only tertiary hospital in our city, it was obliged to provide treatment to patients in need of special treatment beyond patients with COVID-19, and accordingly, arrangements were made and separate areas were created.

Some recommendations were published by societies at the beginning of the pandemic regarding the postponement and cancellation of elective surgery [8,9]. Accordingly, non-surgical strategies were presented as the first choice in treatment, but their short- and long-term effects were unknown. However, the status of elective surgeries for life-threatening and time-sensitive conditions (e.g. cancers, limb salvage) should be evaluated separately. Considering the potential harm due to delaying necessary cancer-related surgery, individual-based determinations should be made and treatment should be provided accordingly. In most patients, these surgeries cannot be considered elective. Surgical treatment of brain, breast, colon, stomach, pancreas, bladder, kidney, and lung cancers has been defined as 'essential cancer surgery' by some groups [10]. Th-

Table 2. Indications and procedure types of patients who underwent surgery during the COVID-19 outbreak (March 11-July 31, 2020)

Indication	Procedure	n
Gastric cancer	Total gastrectomy – D2 lymphadenectomy	4
	Subtotal gastrectomy – D2 lymphadenectomy	4
Colon cancer	Hemicolectomy	11
	Sigmoid resection	2
	Subtotal colectomy	1
Rectal cancer	Low anterior resection	6
	Abdominoperineal resection	1
Breast cancer	Segmental mastectomy- Sentinel lymph node biopsy (SLNB)	4
	Mastectomy - Sentinel lymph node biopsy (SLNB)	1
	Modified radical mastectomy	4
Thyroid papillary carcinoma	Total thyroidectomy	5
Gallbladder cancer	Radical cholecystectomy	1
Pancreatic cancer	Whipple procedure	2
Total		46

ese are usually cancers that cannot wait for two to three months, and patients have a chance to benefit significantly from surgery.

During the COVID-19 pandemic, physicians have faced several challenges regarding the management of patients with cancer. The risks of tumor progression due to delayed cancer surgery, the potential additional burden on hospital resources, and other situations such as COVID-19 transmission must be weighed against each other. In a study evaluating the effects of the COVID-19 pandemic on cancer surgery, it was stated that the delay in cancer diagnosis and surgery had a negative effect on survival [11]. In an analysis evaluating delays in the treatment of gastrointestinal system cancers, it was stated that early resection of these cancers provided the best chance for curative treatment, therefore, surgery and timely surgery should be performed during the COVID-19 pandemic, and oncologic results should be prioritized [12]. Similarly, in a study evaluating the relationship between delayed surgery and overall survival in patients with solid tumors, it was revealed that a 40-day delay in surgery was associated with poor results in patients with colon cancer [13].

A number of algorithms were created by anesthesiologists and surgeons regarding the precautions that should be taken during surgery for patients with suspected or confirmed COVID-19 at the beginning of the pandemic [14-16]. In the operating room, we separated operating rooms where patients with suspected or confirmed COVID-19 and patients without COVID-19 underwent surgery. We planned our surgeries in a way to ensure that the operating room was disinfected in the best way possible after the surgery by using PPE with the least number of personnel possible.

In a study by Di Saverio et al., [17] in which they shared their experiences of colorectal surgery during the pandemic in Italy, the authors recommended that all patients undergoing surgery, including emergency surgeries, should be tested for COVID-19. We did not request COVID-19 PCR tests for patients undergoing surgery under emergency conditions because the test results took a long time, we only evaluated the presence of symptoms and signs of COVID-19 and used CT to evaluate patients. However, we performed the surgeries by taking the necessary precautions with the assumption that they were COVID-19-positive. We requested the COVID-19 PCR test from all patients with cancer who underwent surgery under elective conditions, and the results of these tests were negative in all patients.

The use of laparoscopy in patients with confirmed or suspected COVID-19 during the pandemic period is controversial, and we still do not have clear data on this issue today. Yu et al. [18] recommend the use of laparoscopy for colorectal cancers when appropriate use of PPE and aerosol management was ensured. Likewise, there are reports drawing attention to precautions such as the use of smoke-absorbing systems during surgery where laparoscopy is recommended to shorten the length of hospital stay and for similar benefits [19,20]. Laparoscopic colorectal cancer resection was performed in eight (17.4%) of the patients included in this study. No problems were experienced in the patients during the postoperative follow-up period.

With this study, we evaluated the feasibility of surgery required in general surgery practice when necessary ar-

rangements were made and measures were taken during the COVID-19 pandemic. The single-center design, the limited number of patients, and the retrospective nature of the study are limitations of the present study. These data should be supported further research evaluating the consequences of the pandemic in centers where cancer surgery continues in the pandemic.

Conclusion

In light of the findings in our study, we believe that the surgical treatment of patients with cancer during the COVID-19 pandemic should not be canceled or delayed. Taking into account the principles of cancer treatment, surgeries should be planned by taking the necessary precautions in patients where surgical treatment is appropriate.

Ethics Committee Approval: Ethics committee approval was not obtained according to retrospective nature of the study.

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Conflict of Interest: None declared.

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References

1. World Health Organization. Coronavirus disease 2019 (COVID-19) Available at: https://www.who.int/emergencies/diseases/novel-coronavirus-2019. Accessed Oct 27, 2022.
2. Gulmez DD, Yilmaz ET, Karamustafa M, Akkaya IO, Tekin P. Extracorporeal membrane oxygenation experience in COVID-19 pandemic: Report of two cases. North Clin Istanb 2020;9:275–8.
3. ACS. COVID-19: Recommendations for management of elective surgical procedures. Available at: https://www.facs.org/covid-19/clinical-guidance/elective-surgery. Accessed Oct 27, 2022.
4. Yu J, Ouyang W, Chua MLK, Xie C. SARS-CoV-2 transmission in patients with cancer at a tertiary care hospital in Wuhan, China. JAMA Oncol 2020;6:1108–10.[CrossRef]
5. Lewis MA. Between scylla and charybdis - oncologic decision making in the time of Covid-19. N Engl J Med 2020;382:2285–7. [CrossRef]
6. Maspero M, Mazzola M, Bertoglio CL, Crippa J, Morini L, Magistro C, et al. Major cancer surgery during the coronavirus pandemic: Experience from a tertiary referral center and COVID-19 hub in Northern Italy. Br J Surg 2020;107:e440–1. [CrossRef]
7. Eng OS, Pawlik TM, Ejaz A. Cancer surgery during COVID-19: How we move forward. Ann Surg 2020;272:e94–5. [CrossRef]
8. COVIDSurg Collaborative. Global guidance for surgical care during the COVID-19 pandemic. Br J Surg 2020;107:1097–103.
9. COVIDSurg Collaborative. Elective surgery cancellations due to the COVID-19 pandemic: Global predictive modelling to inform surgical recovery plans. Br J Surg 2020;107:1440–9. [CrossRef]
10. COVID19 Subcommittee of the O.R. Executive committee at memorial sloan kettering. Cancer surgery and COVID19. Ann Surg Oncol 2020;27:1713–6. [CrossRef]
11. Sud A, Jones ME, Broggio J, Loveday C, Torr B, Garrett A, et al. Collateral damage: The impact on outcomes from cancer surgery of the COVID-19 pandemic. Ann Oncol 2020;31:1065–74. [CrossRef]
12. Fligor SC, Wang S, Allar BG, Tsikis ST, Ore AS, Whitlock AE, et al. Gastrointestinal malignancies and the COVID-19 pandemic: Evidence-Based triage to surgery. J Gastrointest Surg 2020;24:2357–73. [CrossRef]
13. Grass F, Behm KT, Duchalais E, Crippa J, Spears GM, Harmsen WS, et al. Impact of delay to surgery on survival in stage I-III colon cancer. Eur J Surg Oncol 2020;46:455–61. [CrossRef]
14. Ti LK, Ang LS, Foong TW, Ng BSW. What we do when a COVID-19 patient needs an operation: Operating room preparation and guidance. Can J Anaesth 2020;67:756–8. [CrossRef]
15. Orser BA. Recommendations for endotracheal intubation of COVID-19 patients. Anesth Analg 2020;130:1109–10. [CrossRef]
16. Karaca AS, Ozmen MM, UÇar AD, Yasti AÇ, Demİrer S. General surgery operating room practice in patients with COVID-19. Turk J Surg 2020;36:i–v. [CrossRef]
17. Di Saverio S, Pata F, Gallo G, Carrano F, Scorza A, Sileri P, et al. Coronavirus pandemic and colorectal surgery: Practical advice based on the Italian experience. Colorectal Dis 2020;22:625–34. [CrossRef]
18. Yu GY, Lou Z, Zhang W. Several suggestions of operation for colorectal cancer under the outbreak of corona virus disease 2019 in China. Zhonghua Wei Chang Wai Ke Za Zhi [Article in Chinese] 2020;23:208–11.
19. Vigneswaran Y, Prachand VN, Posner MC, Matthews JB, Hussain M. What is the appropriate use of laparoscopy over open procedures in the current COVID-19 climate? J Gastrointest Surg 2020;24:1686–91. [CrossRef]
20. Morris SN, Fader AN, Milad MP, Dionisi HJ. Understanding the "Scope" of the problem: Why laparoscopy is considered Safe during the COVID-19 pandemic. J Minim Invasive Gynecol 2020;27:789–91. [CrossRef]