CMJ Original Research September 2021, Volume: 43, Number: 3
Cumhuriyet Tıp Dergisi (Cumhuriyet Medical Journal) 281-287
http://dx.doi.org/10.7197/cmj.973599

# Approach to cancer patients of a clinical oncology surgery in Turkey during COVID-19 Pandemic

## Türkiye' de bir cerrahi onkoloji kliniğinin Covid 19 pandemisi sırasında kanser hastalarına yaklaşımı

**Murat Can Mollaoğlu[1], Meriç Emre Bostancı[1], Kürşat Karadayı[2]**

[1]Sivas Numune Hospital, Department of Surgical Oncology, Sivas, Turkey
[2]Sivas Cumhuriyet University Faculty of Medicine Department of Surgical Oncology, Sivas /Turkey
**Corresponding author:** Murat Can Mollaoğlu, MD, Sivas Numune Hospital, Department of Surgical Oncology, Sivas, Turkey
**E-mail:** drmcm_12@hotmail.com
**Received/Accepted:** July 22, 2021 /September 29, 2021
**Conflict of interest:** There is not a conflict of interest.

**SUMMARY**

**Objective:** Covid-19 disease has increased rapidly since the day it appeared (December 2019), and has turned into an unpreventable pandemic all over the world, especially in Europe. As it spreads rapidly and started to show its effects in a short time, there was not enough time to conduct and implement effective studies on the subject. After the first case coronavirus was detected at 10 March 2020 in Turkey, various guidelines were published. Surgeons, especially regarding the safe treatment of patients in cancer surgery, have tried to find the way in which they can be the most beneficial for the patients in their clinics. In this study, we aimed to share the approach and results of our own clinic to the cancer patients during Covid-19 pandemics.
**Method:** Between March 10 - July 15 2020, 52 patients who were operated in Sivas Cumhuriyet University Faculty of Medicine Department of Surgical Oncology for oncological reasons were analyzed retrospectively. The analyzed patient data included tumor location, patient age, gender, surgery technique, histopathological of specimen, stage and whether neoadjuvant therapy treatment was applied.
**Results:** 52 patients were operated with a diagnosis of cancer in our clinic during the pandemic. 25 patients were female and 27 were male, and their mean age was 60.45 years. None of the patients showed signs and symptoms of Covid-19 infection before, during and after the operation.
**Conclusions:** In hospitals not used as a pandemic hospital, Covid-19 negative oncological patients can be operated safely without affecting the pandemic by providing suitable conditions.
**Keywords**: Covid-19, oncological patients, oncological surgery.

Murat Can Mollaoğlu
Meriç Emre Bostancı
Kürşat Karadayı

ORCID IDs of the authors:
M.C.M. 0000-0002-7623-081X
M.E.B. 0000-0002-0429-9834
K.K. 0000-0002-1459-8432

**ÖZET**

**Amaç:** Covid 19 salgını ortaya çıktığı günden (aralık 20019) itibaren hızla artmış, özellikle Avrupa'da olmak üzere tüm dünyada önüne geçilemeyen bir pandemiye dönüşmüştür. Hızla yayılıp etkilerinini kısa sürede göstermeye başlaması dolayısıyla konuyla ilgili etkin çalışmalar yapmak ve uygulamak için yeteri kadar zaman olmamıştır. Türkiye de ilk corana virüs vakası 10 mart 2020 de tespit edildikten sonra çeşitli kılavuzlar yayınlansa da özellikle kanser cerrahisi konusunda hastaların güvenli bir şekilde tedavisiyle ilgili cerrahlar kendi kliniklerinde hastaya en faydalı olabilecekleri yolu bulmaya çalışmışlardır. Bu çalışmada, kendi kliniğimizin covid 19 pandemisinde kanser hastalarına yaklaşımını ve sonuçlarını paylaşmayı amaçladık.
**Yöntem:** Cumhuriyet Üniversitesi Tıp Fakültesi Cerrahi Onkoloji bilim dalında 10 Mart-15 Temmuz 2020 tarihleri arasında onkolojik sebeplerle opere edilen 52 hasta retrospektif olarak incelendi. Tümör yerleşimi, hasta yaşı, cinsiyeti,

kullanılan cerrahi teknik, spesmenlerin histopatolojisi, evresi ve neoadjuvan tedavi alıp almadığı incelendi.
**Bulgular:** Pandemi hastanesi olarak kullanılmayan hastanelerde Covid 19 negatif onkolojik hastalar uygun koşullar sağlanarak pandemiden etkilenmeden güvenle opere edilebilir.
**Sonuç:** Pandemi sırasında kliniğimizde kanser tanısı ile 52 hasta ameliyat edildi. Hastaların 25'i kadın, 27'si erkek olup yaş ortalamaları 60.45 olarak hesaplandı. Hastaların hiçbirinde operasyon öncesi, sonrası ve operasyon sırasında Covid 19 enfeksiyonu belirti ve bulgularına rastlanmadı.
**Anahtar sözcükler**: Covid-19, onkolojik hastalar, onkolojik cerrahi

## INTRODUCTION

Epidemics that spread to more than one country or continent in the world are called pandemics [1]. Coronavirus disease (Covid-19) has been described as a pandemic due to its global formation and rapid increase [2].

In December 2019, cases of pneumonia of unknown etiology were reported in Wuhan, Hubei Province, China. On January 9, 2020, the first COVID-19 related death was reported from China. Towards the end of January, cases began to emerge in Europe. The World Health Organization (WHO) declared covid-19 as a pandemic on March 11, 2020. On March 14, 2020, Europe was declared the epicenter of the pandemic by WHO [3,4].

The high level of contagiousness of the disease and the lack of effective treatment at the time of writing this article led to changes in health practices worldwide. Some important organizations such as the American College of Surgeons (ACS) and the Society for Surgical Oncology (SSO) have published guidelines on approach to oncological patients [5,6]. Although these guides are providing assistance for most surgeons, they have made decisions based on their location's pandemic exposure. The Society for Surgical Oncology (SSO) has argued that surgeons should consider tumor biology and behavior and make a decision by remembering an extraordinary condition such as coronavirus disease [6]. It is suggested by SSO that priority should be given neoadjuvant therapies unless it is not obliged for surgery [6].

During the Covid-19 pandemic period, 4 categories were created by condition clinically and intensive care. Category 0 was defined as unaffected,1 semi-urgent,2 urgent, 3 emergent (table 1). The group in which our clinic is included is Group 1. In this group of patients, it was suggested that almost all operations should be performed in the normal course, and it was recommended that treatments should be considered and decided on the basis of patients and decision should be made together [5-6].

**Table 1:** COVID-19 phases of hospital or healthcare systems

| Phase | | Description |
|---|---|---|
| **0** | **Unaffected** | No COVID-19 patients, hospital works properly |
| **1** | **Semi-Urgent** | Few COVID-19 patients, hospital resources not exhausted, institution still has ICU ventilator capacity and COVID-19 trajectory not in rapid escalation phase. |
| **2** | **Urgent** | Many COVID-19 patients, ICU and ventilator capacity limited, OR supplies limited |
| **3** | **Emergent** | Hospital resources are all routed to COVID-19 patients, no ventilator or ICU capacity, OR supplies exhausted |

**ICU:** İntensive Care Unit

First covid-19 case was a man who is 44 years old admitted to the hospital on 9 March 2020 in Turkey. The first death from Covid-19 occurred on March 17, 2020. Shortly after the detection of the first Covid-19 case in Turkey, it has been restricted patient acceptance in our hospital. Our hospital was not declared as a pandemic hospital. We did not make any changes in our clinic regarding the treatment of our patients. But we adjusted the physical conditions of the clinic and suggested them some behavior adjustments to protect people from Covid-19. Meanwhile, a committee established from scientists in Turkey for Covid-19 disease. Turkish people followed all developments

closely from the website established about this disease [7].

Patients affected by Covid-19 infection were sent to a pandemic hospital. When we shared our data, there was only one pandemic hospital in our city with a population of 600 thousand. 50 patients were hospitalized in the pandemic hospital during this time.

Treatments of cancer patients are difficult but should not be delayed during the Covid-19 pandemic.

In this study, we aimed to share the follow-up and treatment of patients who applied to our clinic due to cancer during the pandemic.

## MATERIAL AND METHODS

Between March 10 - July 15, 2020, 52 patients who were operated in Sivas Cumhuriyet University Faculty of Medicine Department of Surgical Oncology for oncological reasons were analyzed retrospectively. The patient data included tumor location, patient age, gender, surgery technique, histopathological of specimen, stage and whether neoadjuvant therapy treatment. All patients were followed up for Covid-19 for two weeks after discharge. Patient information was accessed from patient files and computer records. Fever of people entering the clinic was measured. Wearing a mask was made compulsory. Daily only one patient was planned to be operated only. Ethics committee approval was taken from the Sivas Cumhuriyet University Faculty of Medicine Ethics Committee with the decision number 220-11 / 14.

### Statistical Evaluation

### Universe And Sample Selection

All files of patients who were operated for cancer in Sivas Cumhuriyet University Faculty of Medicine Department of Surgical Oncology between March 10 March - 15 July 2020 were retrospectively reviewed.

### Statistical analysis

The data were entered into the SPSS (ver: 22) package program. Arithmetic mean, deviation, median, min-max values were given from descriptive statistics. Frequency distribution was given from those obtained by counting. Parametric tests were applied to variables providing normality assumption and nonparametric tests were applied to variables that did not provide normality assumptions. $p < 0.05$ was considered significant.

### Pre-Operative(pre-op) Preparation

Before the operation, the patients were hospitalized. Pre-op preparations were made quickly without extending the length of hospital stay of the patients. All of patients were evaluated clinically for pre-op coronavirus exposure. None of the patients had Covid-19 symptoms (fever, cough, or fatigue). Though they did not have symptoms of Covid-19 disease, thorax CT (computed tomography) was performed to all patients. PET (positron emission tomography)-CT was performed for distant metastasis screening before surgery. None of the images had a suspicious of coronavirus. Therefore, none of the patients were performed Covid-19 test before surgery. During the preoperative follow-up surgical mask was worn by all patients, doctors, nurses and hospital staff and they even wore latex gloves sometimes. The bed layout was created by leaving a distance of 2m between the beds in the patient rooms. Alcohol and disinfectant were available in all rooms including the nurse and staff room. Patients were informed about Covid-19 prevention methods by our nurses and doctors. Daily Patient visits were made with a nurse and a doctor and were made in accordance with the social distance rule. Hands were washed with soap after each touched patient and patient visit were continued again.

### Operating Room Conditions

An appropriate room was allocated for surgical oncology patients in operating room. The operation of the patients was planned by using the least number of doctors and assistant staff on the appropriate days. All patients were operated on by the same team. Patients were transferred to the operating room with a surgical mask. During the operation, all surgical team members wore protective glasses, sterile surgical gowns, N95 masks with, and the team performed the surgery using standard sterile surgical gloves.

### Post-Operative Follow-Up

In the post-operative follow-ups, no medical treatment was given to any patient for Covid-19. Routine post op follow-ups were performed during patient follow-up. Meanwhile, the patients were observed for Covid-19 symptoms. All patients were followed up for Covid-19 for two weeks after discharge. No patients had Covid-19 symptoms in this time. None of the people who were included in the surgical operation and observed the patient in the hospital had Covid-19 symptoms but only Covid-19 was detected in one of the operating room nurses. Thereupon, the entire surgical oncology team got Covid-19 tested. None of test outcome were positive.

## RESULTS

Between 10 March - 15 July 2020, 52 patients were operated with a diagnosis of cancer in our clinic. 13 patients were operated due to gastric cancer, 11 were colorectal cancer, 9 were breast cancer, 7 were pancreatic cancer, 3 were esophagus cancer, 3 peritoneal carcinomatosis, 2 thyroid cancer, 1 was small bowel cancer, 1 was metastatic adrenal cancer, 1 was klatskin cancer, 1 was liver cancer. 25 patients were female and 27 were male, and their mean age was 60.45 years (29-84 years) (Table 2)**.** None of the patients showed signs and symptoms of Covid-19 infection before, during and after the operation.

**Table 2:** Demographic, histopathological, clinical, characteristics of patients

| | Location | Age | Gender | Histopatology Of Specimen | Stage/TNM Classification/type | Surgery Technique | Neoadjuvant Therapy |
|---|---|---|---|---|---|---|---|
| 1 | Breast | 73 | Female | İnvasive Ductal Carcinoma | T2N0M0 | BCS | - |
| 2 | Breast | 68 | Female | İnvasive Ductal Cacsinoma | T2N0M0 | BCS | - |
| 3 | Breast | 51 | Female | İnvasive Ductal Carcinoma | T2NOM0 | BCS | - |
| 4 | Breast | 61 | Female | İnvasive Ductal Carcinoma | T2N1aM0 | BCS | + |
| 5 | Breast | 69 | Female | İnvasive Ductal Carcinoma | T2N1aM0 | MRM | + |
| 6 | Breast | 50 | Female | İnvasive Ductal Carcinoma | T2NOM0 | BCS | - |
| 7 | Breast | 30 | Female | İnvasive Ductal Carcinoma | T2N1M0 | MRM | + |
| 8 | Breast | 35 | Female | İnvasive Ductal Carcinoma | T3N1aMO | MRM | + |
| 9 | Breast | 57 | Female | İnvasive Ductal Carcinoma | T2N0M0 | BCS | - |
| 10 | Thyroid | 29 | Female | Papillary Carcinoma | Classic Type of Well Differentiated | TT | - |
| 11 | Thyroid | 40 | Female | Papillary Carcinoma | Type Follicular | TT | - |
| 12 | Gastric | 45 | Female | Neuroendocrine Neoplazm | T1N0M0 | SG With D2 Dissection | - |
| 13 | Gastric | 84 | Male | Adenocarcinoma | T4aN3bM0 | TG With D2 Dissection | + |
| 14 | Gastric | 66 | Male | Adenocarcinoma | T1bN2M0 | SG With D2 Dissection | + |
| 15 | Gastric | 64 | Male | Adenocarcinoma | T4aN2M0 | TG With D2 Dissection | + |
| 16 | Gastric | 48 | Female | Adenocarcinoma | T4aN2M0 | TG With D2 Dissection | + |
| 17 | Gastric | 67 | Female | Adenocarcinoma | T1bNoM0 | SG With D2 Dissection | - |
| 18 | Gastric | 57 | Female | Adenocarcinoma | T3N3aM0 | TG With D2 Dissection | + |
| 19 | Gastric | 67 | Female | Adenocarcinoma | T1N0M0 | SG With D2 Dissection | + |
| 20 | Gastric | 67 | Male | Adenocarcinoma | T4aN3bM0 | TG With D2 Dissection | + |
| 21 | Gastric | 77 | Female | Adenocarcinoma | T3N2M0 | SG With D2 Dissection | + |
| 22 | Gastric | 68 | Male | Adenocarcinoma | T4aN0M0 | TG With D2 Dissection | + |
| 23 | Gastric | 47 | Female | Adenocarcinoma | T4aN1M0 | TG With D2 Dissection | + |
| 24 | Gastric | 65 | Male | Adenocarcinoma | T3N0MO | TG With D2 Dissection | - |
| 25 | Rectum | 67 | Female | Adenocarcinoma | T3N0M0 | LAR | - |
| 26 | Rectum | 70 | Male | Adenocarcinoma | T3N1M0 | LAR | + |
| 27 | Rectum | 65 | Male | Adenocarcinoma | T3N2M0 | LAR | + |
| 28 | Rectum | 65 | Male | Adenocarcinoma | T2N0M0 | LAR | - |
| 29 | Rectum | 51 | Male | Adenocarcinoma | T4bN1bM1a | LAR | + |
| 30 | Sigmoid colon | 78 | Female | Adenocarcinoma | T4aN0M0 | LHC | - |
| 31 | Left Colon | 61 | Male | Adenocarcinoma | T4N1M0 | LHC | - |
| 32 | Left Colon | 70 | Male | Adenocarcinoma | T3N1M0 | LHC | - |
| 33 | Right Colon | 77 | Male | Adenocarcinoma | T3N0M0 | RHC | - |
| 34 | Right Colon | 78 | Female | Adenocarcinoma | T3N0M0 | RHC | - |
| 35 | Right Colon | 59 | Male | Adenocarcinoma | T3N0MO | RHC | - |
| 36 | Pancreas | 75 | Male | Ductal Adenocarcinoma | T3N2M0 | Whipple Procedure | + |
| 37 | Pancreas | 53 | Male | Ductal Adenocarcinoma | T1N0M0 | Whipple Procedure | - |
| 38 | Pancreas | 66 | Male | Ductal Adenocarcinoma | T3N1M0 | Whipple Procedure | - |
| 39 | Pancreas | 61 | Male | Ductal Adenocarcinoma | T3N1M0 | Whipple Procedure | - |
| 40 | Pancreas | 72 | Male | Ductal Adenocarcinoma | T2N1M0 | Whipple Procedure | - |
| 41 | Pancreas | 56 | Male | Ductal Adenocarcinoma | T3N1M0 | Whipple Procedure | - |
| 42 | Pancreas | 63 | Male | Adenocarcinoma | T3N1M1 | DP,RN,RHC | - |
| 43 | Liver | 47 | Male | Adenocarcinoma | T4N1M1 | Metastasectomy | + |
| 44 | Hepatic Ductus | 52 | Male | Adenocarcinoma | T1N1M0 | LH | - |
| 45 | Oesophagus | 65 | Female | Adenocarcinoma | T3N3aM0 | Oesophagectomy | + |
| 46 | Oesophagus | 66 | Female | Adenocarcinoma | T3N1Bm0 | Oesophagectomy | + |
| 47 | Oesophagus | 63 | Female | Adenocarcinoma | T3N1Mo | Oesophagectomy | + |
| 48 | Appendix (PC) | 65 | Male | Adenocarcinoma | Stage 4 | CRS+HIPEC+EPİC | - |
| 49 | Rectum (PC) | 60 | Male | Adenocarcinoma | Stage 4 | CRS+HIPEC+EPİC | - |
| 50 | Over (PC) | 45 | Female | Adenocarcinoma | Stage 4 | CRS+HIPEC+EPİC | - |
| 51 | Adrenal | 55 | Male | Adenocarcinoma | Stage 4 | Left Adrenalectomy | + |
| 52 | Small Bowel | 58 | Male | Lymphoma | Diffuse Large B Cell | Small Bowel Resection | + |

**TT:** Total Thyroidectomy **SG:** Subtotal Gastrectomy **TG:** Total Gastrectomy **LAR:** Low Anterior Rezection **LHC:** Left Hemicolectomy **RHC:** Right Hemicolectomy **DP:** Distal Pancreatectomy **RN:** Right Nefrectomy **LH:** Left Hepatectomy **CRS:** Citoredüction **HİPEC:** Hypertermic İntraperitoneal Chemoterapy **EPİC:** Early Postoperatif İntraperitoneal Chemotherapy **PC:** Peritoneal Carsinomatozis **BCS:** Breast-Conserving Surgery **MRM:** Modified Radical Mastectomy

## DISCUSSION

Guidelines with new approaches and adjustments for diseases and patients have to be developed around the world due to coronavirus. In the acute period, surgeons had to postpone elective operations. It is suggested that the treatment procedures of cancer patients should be directed by multidisciplinary boards during this period [8]. In our hospital, the multidisciplinary oncology council meets regularly, and the treatment plan of the patients is planned according to this council decision.

Alimoglu et al made a study on the Covid-19 pandemic in Turkey [9]. He operated 39 Covid-19 negative cancer patients in a hospital used as a pandemic hospital. No Covid-19 was observed in any patient and healthcare staff during post-operative follow-up. Our results are compatible with the results of the current study.

Li et al. made suggestions about the treatment of patients with esophageal cancer during the pandemic period [10]. Accordingly, surgical treatment or endoscopic resection in stage I patients can be selected according to the patient's condition. Preoperative neoadjuvant therapy is recommended in stage II and III patients. Stage IV patients are referred to the oncology and radiotherapy department. For patients who complete neoadjuvant treatment before surgery, additional chemotherapy can be added 1 or 2 times, depending on the conditions of the hospital. In our clinic, 3 patients were operated on due to esophageal tumor during this period. One of the patients underwent total esophagectomy cervical esophagogastric anastomosis. The other patients underwent distal esophagectomy, proximal gastrectomy, intra-thoracic esophagogastric anastomosis. In their extensive study, Ma et al. reported that the waiting period of 6 months in early gastric cancer does not change the prognosis and this period is 3 months in stage II and III disease [11]. Therefore, Ma et al. argues that the operation can be delayed in patients with early stomach cancer and that appropriate time can be gained with neoadjuvant treatment in locally advanced diseases [11]. Similarly, Chen et al. argued that eligible patients should be directed to neoadjuvant therapy based on NCCN guidelines [12]. Likewise, the French group recommends postponement operations to give priority to neoadjuvant therapy in esophageal and gastric tumors and suggests discussing the risks with the patient planned to be operated on [13]. İn our clinic, 13 patients were operated due to stomach tumor during this period. 5 of them were subtotal and 8 total gastrectomy. D2 dissection was performed as standard. Splenectomy was performed for one patient and colon meso resection for one patient.

The advice of the French group is to delay the planned operation time for early liver tumors. Minimal resection has been recommended if it is compulsory for advanced liver cancers [14]. One of our patients with Klatskin tumor was clinically resectable. The patient underwent left hepatectomy and right hepaticojejunostomy. Metastasectomy was performed for 3 liver metastases that developed 6 months later in one of our patients who underwent CRS (cytoreduction) + HIPEC (hyperthermic intraperitoneal chemotherapy) due to PC (peritoneal carcinomatosis) previously developed due to colon cancer. The French group recommends operation only for low-risk pancreatic patients if hospital conditions are appropriate [13]. Neoadjuvant chemotherapy was recommended to patients for the high-risk group. Seven patients were operated in our clinic due to pancreas tumor. Six patients were located in the pancreatic head / unsinate process, and standard Whipple procedure was applied. The tumor of one patient was located distally. Nephrectomy, splenectomy, partial colon and small bowel resection were performed in addition to distal pancreatectomy due to local invasion.

Turkish colon and rectum diseases association thought that it would be appropriate to postpone non-urgent patients and to proceed with this process with chemotherapy and radiotherapy processes and proposed an algorithm to guide Turkish surgeons in this regard [15]. While taking the necessary precautions before and after the surgery, the recommendations of the Turkish surgical association were reviewed [16]. Hu et al. reported their views on the management of precancerous, early, locally advanced, obstructive, metastatic and neoadjuvant colorectal cancer patients during the pandemic process [17]. Accordingly, they recommend clinical follow-up and colonoscopy follow-up once a month during pandemic for polyps that are dysplastic and not suitable for endoscopic resection. It is stated that treatment can be postponed in patients with early colorectal cancer after screening and evaluation, but surgical treatment, especially endoscopic resection, can be performed depending on the patient's treatment purpose. It was emphasized that neoadjuvant therapy can be applied in both advanced colon and rectum tumors in locally advanced disease.

Luo et al. argued that chest diseases doctors, infectious diseases doctors and surgeons should be work multidisciplinary during colorectal surgery in

the pandemic process because of Covid-19 [18]. Due to the risk of cross infection in the colonoscopy, they suggested that it should be performed when the colonoscopy is compulsory [19]. Pellino et al. suggested that if colorectal cancer treatment is started 90 days after diagnosis, the 3-10 year survival rate will decrease and ideal colon resection should be done within 3-6 weeks, therefore, these issues should be taken into consideration while offering alternative treatment options to patients [20].

DeFelice et al. recommend short-term radiotherapy for locally advanced rectum tumors and surgery after 5-13 weeks [21]. With this plan, it is thought that the patient's hospital stay will be minimized. They concluded that they had the same results in terms of negative limits compared sphincter preservation to emergency surgery, but with higher pathological complete response rates. During this period, 11 colorectal patient groups were operated in our clinic. Low anterior resection was performed in 5 patients and a protective loop ileostomy was performed. 3 patients underwent left hemicolectomy and 3 patients right hemicolectomy. Two patients had colonic obstruction. All operations were performed in accordance with the oncological resection principles.

Neoadjuvant treatment was recommended to be taken first in patients with stage 1-3 breast cancer. However, it has been reported that the surgical decision can be revised if the tumor size is small [6]. A meeting arranged was held in Turkey where many general surgeons and oncologists took part and attempted to establish a consensus on the approach to breast cancer [22]. It was considered that stage 1 patients should be evaluated according to pre-postmenopausal and hormone receptor states and should receive appropriate chemo or hormonotherapy. In our clinic, 9 breast cancer patients were operated. BCS (breast conserving surgery) was performed in 6 patients. Axillery Sentinal lymph node biopsy was performed to all of them. Axillary dissection was applied to 2 patients with positive sentinel lymph node. MRM (modified radical mastectomy) was performed to 3 patients.

The operation is considered during the pandemic in patients due to thyroid cancer who are severely symptomatic or with airway obstruction [6]. Our thyroid patients were operated due to several severe symptoms.

In the pandemic period, sufficient data about the surgery of metastatic diseases were not found. During the pandemic, for one of our patients who had undergone previous lobectomy due to a lung tumor, right surrenelectomy was performed due to the right adrenal mass and abscess that occurred 3 years after the previous operation.

In PC treatment, SRC + HIPEC + EPIC (early postoperative intraperitoneal chemotherapy) has been applied by many centers for the last few decades. SRC + HIPEC + EPIC was applied to 3 patients in our clinic during the pandemic. TAH BSO + total colectomy + splenectomy + pelvic paraaortic lymph node dissection + omentectomy + peritonectomy were performed due to primary over carcinoma to a patient. Low anterior resection + partial splenectomy + partial colon resection + omentectomy + peritonectomy was performed due to primary rectum tumor to a patient. Right hemicolectomy + omentectomy + peritonectomy + cholecystectomy was performed due to primary appendix tumor to a patient. Hipec and epic were performed to all patients.

Our results and observations have shown that cancer patients can be operated safely by taking the necessary precautions during the Covid-19 pandemic period. Surgery of Covid-19 negative cancer patients should be performed at the right time without delay. During alternative cancer treatments such as chemotherapy and radiotherapy, patients often have to go to the hospital during their treatment. This may increase the possibility of patients encountering the virus more. The immunosuppressive effects of the treatments to be applied may cause a more severe corona virus infection.

The limitations of the current study are that it was conducted in a single center and with a small number of patients.

## CONCLUSION

It is considered as the most appropriate treatment option to operate patients as soon as possible without losing the chance of surgery in hospitals where there are very few Covid-19 patients, resources have not been exhausted, intensive care unit capacity is still sufficient.

## REFERENCES

1. Kilbourne ED. Influenza pandemics of the 20th century. Emerging infectious diseases. 2006;12(1):9–14. 10.3201/eid1201.05125.
2. Guan W, Ni Z, Hu Y, Liang W, Ou C, He J. Clinical characteristics of coronavirus disease 2019 in China. N. Engl. J. Med. 2020;382:1708–1720.
3. Novel Coronavirus (2019-nCoV) situation reports Available from: URL: https://www.

who.int /emergencies/ diseases/novel-coronavirus-2019/situationreports 2020.

4. Coronavirus Disease (COVID-19) events as they happen Available from: URL: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/ events-as-they-happen 2020.
5. March 24 O 2020 COVID-19 guidelines for triage of cancer surgery patients American College of Surgeons, Available from: URL: https:// www.facs.org/covid-19/clinical-guidance/elective-case/cancer-surgery.
6. Bartlett DL, Howe JR, Chang G, Crago A, Hogg M, Karakousis G, Levine E, Maker A, Mamounas E, McGuire K, Merchant N, Shibata D, Sohn V, Solorzano C, Turaga K, White R, Yang A, Yoon S. Management of Cancer Surgery Cases during the COVID-19 pandemic: considerations. Ann Surg Oncol 2020. Available from doi: 10.1245/s10434-020-08461-2.
7. Ministry of Health (2020). COVID-19 Yeni Koronavirüs Hastalığı Available from: URL: https://covid19bilgi.saglik.gov.tr/ tr/.
8. COVID-19: Elective Case Triage Guidelines for Surgical Care. American College of Surgeons; 2020. Available from: URL: https://www.facs.org/covid-19/clinical-guidance/elective-case.
9. Alimoğlu O, Erol CI, Kılıç F, Baysal H. Cancer surgery during the Covid-19 pandemic in Turkey

   Int J Surg. 2020 Jul; 79: 54–55.
10. Li Y, Qin JJ, Wang Z, Yu Y, Wen YY, Chen XK, Liu WX, Li Y. Surgical treatment for esophageal cancer during the outbreak of COVID-19. Chinese Journal Of Oncology (Zhonghua Zhong Liu Za Zhi ) 2020; 42(0): E003.
11. Ma FH, Hu HT, Tian YT. Surgical treatment strategy for digestive system malignancies during the outbreak of novel coronavirus pneumonia. Chinese Journal Of Oncology (Zhonghua Zhong Liu Za Zhi) 2020; 42(0): E001.
12. Chen YH, Peng JS. Treatment strategy for gastrointestinal tumor under the outbreak of novel coronavirus pneumonia in China. Chinese Journal Of Gastrointestinal Surgery (Zhonghua Wei Chang Wai Ke Za Zhi) 2020; 23(2): 1-4.
13. Tuech JJ, Gangloff A, Di Fiore F, Michel P, Brigand C, Slim K, Pocard M, Schwarz L. Strategy for the practice of digestive and oncological surgery during Covid-19 epidemic. J Visc Surg 2020 March 31.
14. Gou SM, Yin T, Xiong JX, Peng T, Li Y, Wu HS. Treatment of pancreatic diseases and prevention of infection during outbreak of 2019 coronavirus disease. Chinese Journal Of Gastrointestinal Surgery (Zhonghua Wai Ke Za Zhi) 2020; 58(0): E006.
15. Kamer E, Çolak T. What to do when a patient infected with COVID-19 needs an operation: a pre-surgery, peri-surgery and post-surgery guide. Turk J Colorectal Dis 2020; 30: 1-8.
16. Karaca AS, Ozmen MM, Uçar AD, Yastı AÇ, Demirer S. General surgery operating room practice in patients with COVID-19. Turk J Surg 2020; 36(1). doi: 10.5578/turkjsurg.202001.
17. Hu XH, Niu WB, Zhang JF, Li BK, Yu B, Zhang ZY, Zhou CX, Zhang XN, Gao Y. Thinking of treatment strategies for colorectal cancer patients in tumor hospitals under the background of coronavirus pneumonia. Chinese Journal Of Gastrointestinal Surgery (Zhonghua Wei Chang Wai Ke Za Zhi) 2020; 23(3): 201-8.
18. Luo Y, Zhong M. Standardized diagnosis and treatment of colorectal cancer during the outbreak of corona virus disease 2019 in Renji hospital. Chinese Journal Of Gastrointestinal Surgery (Zhonghua Wei Chang Wai Ke Za Zhi) 2020; 23(3): 211-6.
19. Di Saverio S, Pata F, Gallo G, Carrano F, Scorza A, Sileri P, Smart N, Spinelli A, Pellino G. Coronavirus pandemic and colorectal surgery: practical advice based on the Italian experience. Colorectal Dis 2020 March 31.
20. Pellino G, Spinelli A. How COVID 19 outbreak is impacting colorectal cancer patients in Italy: a long shadow beyond infection. Dis Colon Rectum 2020 March 17.
21. De Felice F, Petrucciani N. Treatment approach in locally advanced rectal cancer during Coronavirus (COVID-19) pandemic: long course or short course? Colorectal Dis 2020 April 1.
22. Sezer A ,Cicin A , Karadeniz-Çakmak G, Özkan-Gürdal S, Başaran G, Oyan B, Eralp Y, Güllüoğlu BM . Turkish national consensus on breast cancer management during temporary state of emergency due to COVID-19 outbreak Original Article Turk J Surg 2020; 36 (2): 147-163.