

## COVID-19 Pandemisinde Güvenli Cerrahi Uygulamaları

### Doing Safe Surgery During COVID-19 Pandemic

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#### ÖZ

**Amaç:** Üçüncü basamak olan hastanemiz, COVID-19 pandemi döneminde pandemi hastanesi ilan edildi. Diğer klinikler gibi genel cerrahi kliniği olarak da örgütlenmeye ve çalışmaya başladık. Bu çalışmamızda genel cerrahi kliniğindeki uygulamalarımızı ve aldığımız önlemleri sunmayı hedefledik.

**Gereç ve Yöntemler:** 10 Mart 2020 ile 1 Mayıs 2020 tarihleri arasında genel cerrahi kliniğine başvuran hastaların verileri hastanenin tıbbi kayıt sistemi üzerinden geriye dönük olarak elde edildi.

**Bulgular:** Elektif cerrahiler COVID-19 salgını nedeniyle iptal edildi, ancak onkolojik vakalar ameliyat edildi. Acil nedenlerle hastaneye kabul edilen 94 hasta ameliyatsız, tıbbi tedavi ile takip edildi. Pandemi öncesi ve pandemi dönemleri arasında ameliyat sayısı açısından istatistiksel olarak anlamlı bir fark vardı. 51 hasta pandemi nedeniyle hastaneye yatışı kabul etmedi.

**Sonuçlar:** Verilerini açıkça paylaşan tüm bilim insanlarına minnettarız. Kliniğimizde alınan önlemler nedeniyle COVID-19'a yakalanan personel sayısının az olması ve ameliyat sonrası COVID-19'a yakalanan hastamızın olmaması nedeniyle bu tür çalışmaların daha kısa sürede normale dönmesine yardımcı olmasını umuyoruz.

**Anahtar Kelimeler:** Pandemi, COVID-19, genel cerrahi, acil cerrahi.

#### ABSTRACT

**Aim:** Our tertiary hospital was declared pandemic hospital in the period of COVID-19 outbreak. As a general surgery clinic like other clinics, we started to organize and work for the pandemic. We aimed to present our practices in the general surgery clinic and the measures we have taken.

**Material and Methods:** The data of patients who admitted to general surgery clinics between 10 March 2020 and 1 May 2020 were obtained retrospectively through medical record system of the hospital.

**Results:** Planned elective surgical procedures were canceled due to the COVID-19 pandemic, but oncological cases were operated. 94 patients who were hospitalized for emergency reasons were followed up with non operative, medical treatment. There was a statistically significant difference in the number of surgeries between the pre pandemic and during pandemic periods. 51 patients did not accept hospitalization because of the pandemic.

**Conclusion:** We are grateful to all scientists who share their data clearly. Since the number of infected personnel due to the precautions taken in our clinic is low and there is no postoperative infected patient, we hope that these kinds of studies help to normalize in a shorter time.

**Keywords:** Pandemic, COVID-19, general surgery, emergency surgery.

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## INTRODUCTION

COVID-19, which is a member of coronavirus family, and thought to originate from Wuhan city of China, has affected the whole world in a short time. The world health organization (WHO) declared this situation as a pandemic (1). It affected every stage of life, especially in the field of health. While the increase in the number of cases in China and isolation methods are being followed by the whole world, each country has developed strategies according to its conditions and possibilities. The average age of the population and the incidence of additional diseases were the determining factors on mortality (2). While reminding the importance of hand washing, new concepts emerged with the concept of social distance. In the field of health, issues such as which personal protective equipment (PPE) should be used, in what order to put on and take off were brought to the agenda. The Republic of Turkey has issued guidance on the use of PPE by the Ministry of Health and is aimed to provide standardization in all health institutions.

For each province, pandemic hospitals were determined by the provincial health directorates and patients were directed to these centers as much as possible. The management of the process has been provided with the treatment algorithms determined by the Ministry of Health. The pandemic committees also followed the pandemic process. General surgeons stopped their routine practices against this extraordinary situation, as all clinics did in our tertiary hospital, which was declared a pandemic hospital. In this article, we aimed to present the change in our general surgery operation, our results and suggestions that we think should be made for the future.

## MATERIAL AND METHODS

Patients who applied to the general surgery clinic of our hospital between 10 March 2020 and 1 May 2020 were included in the study. The hospital data system was scanned retrospectively. Ethics committee approval was received (date: 11.06.2020 and decision no: 77), after the approval of the study was obtained from the Ministry of Health.

To summarize data obtained in the study, descriptive statistics were given as mean  $\pm$  standard deviation, minimum maximum (min-max) depending on the distribution of the continuous variables, while categorical variables were summarized as numbers and percentages. The normality test of the numerical variables was controlled by the visual (histogram and probability graphs) and analytical methods (Kolmogorov-Smirnov / Shapiro-Wilk Tests). Chi-square test and Fischer's precision test were used to compare categorical variables. The statistical significance level was taken as 0.05 in all tests.

## RESULTS

A decision was made to stop elective surgeries with the instruction of the provincial health directorate. Planned elective surgical procedures were canceled, but oncological cases were operated. In the following process, only oncological and emergency surgical cases were operated. During the pandemic, the number of patients hospitalized in general surgery service is 384. The mean age of the patients was  $45.9 \pm 18.8$  (18-88), 150 were women and 234 were men.

During the routine period of our clinic (data for 2 months period before pandemic for comparison purposes), an average of 450 elective and 156 emergency operations were performed, the number of emergency cases requiring surgery from the date of 10.03.2020 until the first case in our country until 1.05.2020, and the distribution of cases is summarized in Table-1. 94 patients who were hospitalized for emergency reasons were followed up with non operative medical treatment that did not operated.

**Table 1.** Distribution of the Patients Operated During the Covid-19 Period

Cases	n %
Emergency	138
Appendicitis	103(75%)
Breast Abscess	3(7%)
Incarcerated Hernia	8(5%)
Acute Mechanical Intestinal Obstruction (AMIO)	2(1%)
Trauma	1(0,7%)
Peptic Ulcer Perforation	6(4%)
Acute Mesenteric Ischemia	1(0,7%)
Gasrointestinal Tumor Perforation	5(4%)
Perianal Abscess	7(5%)
Gallbladder Perforation	2(1%)
Elective	87
Hernia Surgery	31(36%)
Cholelithiasis	18(21%)
Oncological Surgery	20(23%)
Bariatric Surgery	5(6%)
Parathyroid Adenoma	3 (3%)
Pilonidal Sinus	8(9%)
Others**	2(2%)

\*AMIO: Acute mechanical intestinal obstruction, \*\* Patients undergoing lymph node excision due to suspicion of lymphoma.

There was a statistically significant difference in the number of surgeries between the two periods ( $p = 0.000$ ), and it is thought that decreasing the number of elective surgeries affects these results.

Of the 107 patients hospitalized for acute appendicitis, 4 were followed up with the diagnosis of plastron appendicitis, and 103 patients underwent appendectomy, and 15% of them had a perforation during exploration. The total complicated appendicitis rate was 19%, compared to the complicated appendicitis rates of 15% of our clinic before the Covid period.

The distribution of cases operated for oncological reasons were colorectal cancer 8, stomach cancer 4, breast cancer 6 and 2 thyroid papillary carcinoma. One of the three patients diagnosed with breast cancer, was locally advanced, and two patients were directed to neoadjuvant chemotherapy due to the pandemic request to postpone an operation, and a stomach cancer patient was older, had no obstruction finding and patient requested to receive neoadjuvant therapy.

Another factor affecting the decrease in the number of cases is the patients' reservations about having surgery in the pandemic hospital, the number of cases who applied with emergency pathology in the pandemic process but did not accept hospitalization was 51.

A 46 years old male patient, who came to our country from abroad, was admitted to our hospital with abdominal pain while in contact isolation. Upon observation of colon tumor perforation, it was operated under emergency conditions. The patient did not detect any finding (swab and thorax tomography) for Covid-19. Thorax tomography was performed for a patient who underwent appendectomy due to postoperative respiratory distress, and swab sample was taken, but COVID -19 was not detected and the patient was treated with the diagnosis of pneumonia. Apart from these cases, thorax CT was performed in 11 symptomatic patients by emergency clinic, and none of them had pathological findings. Thorax CT was added to the patients who applied to the emergency department and had suspicious findings, if an abdominal CT planned to be performed.

General surgeons are accustomed to making the fastest, most appropriate decision in the face of a sudden situation. It was organized to support pandemic management during the pandemic period, just like doing damage control surgery when a trauma case is encountered.

**Table 2.** The personal protective equipment we use in the outpatient clinic, service, intensive care and operating room

Outpatient Clinic	Surgical mask
	Gown
	Gloves
	Goggles/Eye protective face mask
Clinic	Surgical mask
	Gown
	Gloves
	Goggles/Eye protective face mask
	In aerosol-forming processes such as abscesses, hematoma draining and dressings
	N95/FFP2 mask
	Gown
Intensive Care	Gloves
	Goggles/Eye protective face mask
	If it can perform an interventional procedure such as intubation, aspiration, swab sampling
	N95/FFP2 mask
	Gown
	Gloves
	Goggles/Eye protective face mask
Operating Room	Personal protective equipment such as coveralls and shoes covers are not mandatory, but can be preferred.
	N95/FFP2 mask
	Surgical scrubs
	Sterile gloves
	Goggles/Eye protective face mask
	Disposable bone
	Coveralls or shoes covers
Alcohol-based hand antiseptic	

General surgery specialists is divided into 3 groups; the pandemic service, pandemic intensive care and routine general surgery. Outpatient clinic admissions were made through the appointment system. The personal protective equipment we use in the outpatient clinic, service, inten-

sive care and operating room are shown in table - 2. Despite all the precautions taken, 3 intensive care nurses and 1 intensive care specialist got infected due to COVID - 19 and recovered with medical treatment. The healing intensive care specialist agreed to become a plasma donor and donated antibodies to patients from the appropriate blood group in intensive care.

## DISCUSSION

Several pandemics have been seen throughout history (3). The reasons for the low loss of lives today compared to the past may be related to the improved communication network, the use of personal protective equipment, intensive care conditions and improvements in treatment.

Another issue in the pandemic process is the delays in the diagnosis and treatment of patients due to delayed admission. One of the most common diseases requiring surgical intervention in emergency surgery practice is acute appendicitis (4) complicated appendicitis rates of 15% in the pre-pandemic period were found to be 19% in the pandemic period, which may have been due to patients' reservations about hospital admission. Likewise, 51 patients admitted to the hospital rejected the treatment as our hospital were a pandemic hospital. It was observed that 39% (n: 20) of these patients had appendicitis, 14% (9) had acute cholecystitis and 10% (5) had intestinal obstruction. It is possible to say with the anamnesis and per-operative findings that patients who were operated for peptic ulcer perforation also applied to the hospital late. Colon resection and stomy was performed in 3 patients who were operated by detecting colon tumor perforation. Loop or hartmann colostomy was performed if it would extend the operation time and prolong the follow-up in the postoperative hospital upon the recommendations of the Turkish colon and rectum surgical associations (5).

In the Republic of Turkey Ministry of Health according to official data, approximately one million 800 thousand people infected and 16 thousand people lost their lives (6). Many opinions have been proposed about the pathophysiology of the disease. An accepted treatment protocol and vaccine for the disease has not yet been found (7). Endoscopic procedures were performed in selected cases with full protective equipment (8). Laparoscopy is not recommended as it carries the risk of contamination due to the smoke produced. As the disease was known to be transmitted by aerosol, we stopped laparoscopic surgeries on the recommendations of Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) (9).

Latest situations and current data are discussed with web-

based trainings conducted by relevant associations. Thus, it was aimed to both serve the patients better and prevent the personnel from COVID-19 infection. In our general surgery clinic, although patient rooms were generally single, we also had double rooms. In this process, patient rooms were used as a single person even if there was no infection or suspicion in the patient.

Our operating rooms have also been redesigned in our hospital, which serves only for emergency and oncological surgeries. Operating rooms consisting of 2 blocks. In one block, patients operated without contact history, no fever and no suspicious signs in thorax tomography if performed, In other block, infected or suspected with COVID-19 patients operated . In the rooms where COVID-19 suspicious patients were operated, operations were carried out with the least number of personnel and full personal protective equipment. While anesthesiologists intubate the patient with full protective equipment, the surgical team is waiting outside the room.

When the patient's breathing begins to be maintained by the mechanical ventilator, the least possible person is included in the operating room and starts the surgery.

While no patient were infected in our routine surgery with the precautions taken in our hospital. Personnel had infected in intensive care unit at the beginning of the pandemic. Then there is no infected personnel after personal protective equipment use and training meetings.

Although the incidence of the disease gradually decreases, it is not lost. Numerous associations and hence scientists continue their studies to determine what the new normals will be during this period. Patients who apply before starting elective surgeries can be evaluated and swab samples taken. It is also thought-provoking that the swab result is negative. Because the false negativity rate of the test is 30% (10). There are different suggestions of the relevant associations regarding the procedures to be performed before elective surgery for screening purposes, there is no consensus about this issue (11). Currently, elective surgical procedures are not performed in our clinic, while the emergency and oncological cases are operated with the recommendations of the Ministry of Health.

## CONCLUSION

Every country that survived by taking advantage of this pandemic, which started in China and affected the world in a short time, shared its data and the scientific world aimed to find the best treatment by reading and discussing them. In this context, we are grateful to all scientists who share their data clearly. Since the number of infected

personnel due to the precautions taken in our clinic is low and there is no postoperative infected patient, we hope that this shared informations sheds light on ongoing or another pandemic process, and helps to normalize in a shorter time.

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**Ethics Committee Approval:** Consent was obtained from Kayseri Şehir Hastanesi Ethics Committee

**Author Contributions:** Conception/Design of Study- Y.D .; Data Acquisition- S.K.E.; Drafting Manuscript- Ö.P.; Critical Revision of Manuscript- T.E .; Final Approval and Accountability- Y.D .; Supervision- S.K.E.

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