

# Investigation of general surgery consultations in COVID-19 patients treated in a tertiary hospital

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## ABSTRACT

**Objectives:** The aim of the study is to reveal the most common general surgery problems during the pandemic period in our center, where all departments only deal with COVID-19 patients.

**Methods:** In our study, general surgery consultations made between 1st November 2020 and 1st February 2021, when our center only served pandemic patients, were retrospectively examined. Demographic data of the patients, distribution of the departments where consultation was requested, reasons for consultation, pathology detection rate, treatment modalities, mortality rates and surgical procedures were included.

**Results:** A total of 70 patients, 33 female, and 37 male, were included in this study. The most common problems of the patients were gastrointestinal system (GIS) problems (46/70, 65.7%). The second most common problem was hepatopancreaticobiliary problems (12/70, 17.1%). This was followed by soft tissue disorders, hernia problems, and trauma cases, respectively. These were mostly treated medically, but surgical treatment was sometimes required (77.1% vs 22.9%).

**Conclusions:** As reported in the literature, the most common surgical pathologies in patients diagnosed with COVID-19 are usually related to the GIS. These pathologies can mostly be treated medically (73.9%). However, surgical treatment was more rarely required (26.1%). The highest rate of surgical treatment was for hernia patients (100%). In general, medical treatment was successful.

**Keywords:** General surgery, COVID-19, consultation, pandemic

With the COVID-19 pandemic, various medical associations published new guidelines on the management of diseases other than COVID-19 [1]. Based upon this, elective procedures were delayed in many health facilities, but emergency surgery and cancer cases have continued their routine process. In some centers, however, cancer and emergency surgical procedures were subject to various alterations. Uncomplicated appendicitis cases were treated medically in

some centers. In some centers, neoadjuvant therapy was preferred more frequently and primarily, especially in colorectal cancer cases [2-4].

In Turkey, a total of 2,470,901 COVID-19 cases have been detected from 11th March 2020, when the first COVID-19 case was detected, up to 4th March 2021. 12.2% of the cases were detected in Western Anatolian Region, in which our city is located. A study from Turkey reported that the number of emergency

Received: June 7, 2022; Accepted: January 7, 2023; Published Online: March 9, 2023



e-ISSN: 2149-3189

**How to cite this article:** Ulutaş ME, Arslan K. Investigation of general surgery consultations in COVID-19 patients treated in a tertiary hospital. Eur Res J 2023;9(3):555-560. DOI: 10.18621/eurj.1126832

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surgery patients, inpatient treatment, and surgical interventions decreased by half in 2020 compared to the last 2 years [5].

The main purpose of this study is to explain which surgical diseases and problems may be encountered in patients with a diagnosis of COVID-19. However, detailed diagnoses and treatments were not elaborated on. Therefore, in our center, where all departments care only for COVID-19 patients, the distribution of general surgery consultations by departments, the rate of those with detected pathology from these consultations, treatments given, and the most common pathologies was investigated.

## METHODS

This retrospective study was carried out between 1<sup>st</sup> November 2020 and 1<sup>st</sup> February 2021, during which the General Surgery Department at the University of Health Sciences, Konya Meram Training and Research Hospital cared only for pandemic patients. The ethics committee of the University of Health Sciences approved the study (Number: 21-170, Date: 12/02/21). The data were retrospectively obtained via the hospital's electronic file system and clinical notes. Investigated parameters included patients' demographic data, the distribution of the departments requesting a consultation, reasons for consultations, the rate of those with detected pathology, the rate of patients taken over by our department, ways of treatment given, mortality rates, and performed surgical procedures. Rates were calculated according to the per number of patients consulted.

Because the patients were COVID-19 positive, patients' physical examinations, work-ups, anesthesiology procedures, surgery, and postoperative follow-ups, and all other procedures were performed using protective equipment by taking all necessary protective measures.

### Statistical Analysis

Descriptive statistics, including means, standard deviations, medians, minimums, maximums, frequencies, and rates, were calculated. For analyses, Statistical Package for the Social Sciences (SPSS), version 22.0 (SPSS Inc., Chicago, IL, ABD) program was used.

**Table 1. Patient characteristics and reasons for consultation**

Characteristics	n	%
<b>Gender</b>		
Male	37	52.9
Female	33	47.1
<b>Reasons</b>		
<b>Gastrointestinal system</b>		
Acute appendicitis	11	15.7
Constipation	9	12.9
Nonspecific abdominal pain	6	8.6
Malnutrition	5	7.1
Lower gastrointestinal bleeding	4	5.7
Ileus	3	4.3
Peptic ulcer and complications	1	1.4
Foreign body ingestion	2	2.9
Sigmoid volvulus	1	1.4
Perianal abscess	1	1.4
Diarrhea	1	1.4
Hemorrhoids	1	1.4
Inflammatory bowel	1	1.4
<b>Hepatopancreaticobiliary system</b>		
Cholecystitis	6	8.6
Mechanical jaundice	3	4.3
Pancreatitis	2	2.8
Portal vein thrombosis	1	1.4
<b>Soft tissue disorders</b>		
<b>Surgical site infection</b>		
<b>Decubitus ulcer</b>		
<b>2. degree burn</b>		
<b>Hernia</b>		
Incarcerated inguinal hernia	3	4.3
Incarcerated umbilical hernia	1	1.4
<b>Trauma</b>		
Firearm injury	1	1.4
Sharps injury	1	1.4

## RESULTS

A total of 70 patients, 33 females and 37 males, were included in this study. In Table 1, patients' general features, the type of follow-up, and the reason for consultation are given in detail.

In Table 2, the distribution of the departments requesting consultation is given. Among the departments, the one that requested consultation most frequently was the Emergency Department (46/70, 65.7%). The second most common problem was hepatopancreaticobiliary problems (12/70, 17.1%). This was followed by soft tissue disorders, hernia problems, and trauma cases, respectively. Fourteen patients were consulted while being followed up in secondary and tertiary intensive care units (14/70, 20%).

Of the consulted patients, 16 were given surgical treatment (16/70, 22.9%), and 37 were given medical treatment (37/70, 52.9%). No surgical pathology was detected in the remaining 17 patients (17/70, 24.3%). Mortality was developed in only 1 of these patients (1/70, 1.4%).

In Table 3, a classification of the diseases and treatment approaches is given. The most common problems of the patients were gastrointestinal system problems (46/70, 65.7%). These include, in descending order, acute appendicitis (11/70, 15.7%), constipation (9/70, 12.9%), nonspecific abdominal pain (6/70, 8.6%), feeding problems (PEG and NG placement) (5/70, 7.1%), lower GI bleeding (4/70, 5.7%), ileus (3/70, 4.3%), peptic ulcer and its complications (1/70, 1.4%), foreign body ingestion (2/70, 2.9%), sigmoid volvulus (1/70, 1.4%), perianal abscess (1/70, 1.4%), gastroenteritis (1/70, 1.4%), thrombosed hemorrhoid

(1/70, 1.4%), and inflammatory bowel disease (1/70, 1.4%).

At the second rank were hepatopancreatic biliary system problems (12/70, 17.1%). These included cases of acute cholecystitis (6/70, 8.6%), mechanical jaundice (3/70, 4.3%), acute pancreatitis (2/70, 2.9%), and portal vein thrombosis (1/70, 1.4%).

At the third rank was soft tissue disorders (6/70, 8.6%). These included postoperative wound site infections (4/70, 5.7%), decubitus ulcers (1/70, 1.4%), and burn wounds (1/70, 1.4%).

Hernia problems were the fourth most common reason for admission (4/70, 5.7%). Of these, three patients were operated on for incarcerated inguinal hernia (3/70, 4.3%), and one patient was operated on urgently for incarcerated umbilical hernia (1/70, 1.4%).

Among the last causes of admission were trauma cases (2/70, 2.9%). One was a gunshot, and the other was a sharp injury. In the case of gunshot injury involving the lower extremities and anal region, the patient was followed up, as no surgical pathology was detected (1/70, 1.4%). The other case was followed up due to liver injury and did not require surgery (1/70, 1.4%).

## DISCUSSION

In this study, general surgery-related problems of patients diagnosed with COVID-19 were hospitalized in the largest pandemic hospital in the city during the COVID-19 pandemic. Even though the disease disappears during these days of vaccination, the late-term

**Table 2. The distribution of treatment types according to the services requested for consultation**

Departments	Treatment types			Total n (%)
	Medical	Surgical	Conservative	
Emergency service	11 (15.7)	16 (22.9)	13 (18.6)	40 (57.1)
Others	12 (17.1)	0 (0)	4 (5.7)	16 (22.9)
Intensive care unit	14 (20)	0 (0)	0 (0)	14 (20)
<b>Total</b>	<b>37 (56.5)</b>	<b>16 (18.8)</b>	<b>17 (24.6)</b>	<b>70 (100)</b>

**Table 3. The distribution of treatment types according to systems**

	Surgical treatment n (%)	Medical and conservative treatment n (%)	Total
Gastrointestinal system	12 (26.1)	34 (73.9)	46
Hepatopancreaticobiliary system	0 (0)	12 (100)	12
Soft tissue disorders	0 (0)	6 (100)	6
Hernia	4 (100)	0 (0)	4
Trauma	0 (0)	2 (100)	2
<b>Total</b>	16 (22.9)	54 (77.1)	70

effects of COVID-19 will continue. In addition to respiratory problems, pathologies related to other systems will arise. This also includes the department of general surgery.

It will be beneficial to know surgical diseases that develop in patients being followed up with the diagnosis of COVID-19 and to take measures in arranging treatment of these diseases. Therefore, our study is important to be the first one in reporting general surgery pathologies that develop in patients diagnosed with COVID-19.

In previous studies conducted with COVID-19 patients, gastrointestinal system problems have been reported to be common. It has been revealed that the tropism of the SARS coronavirus (SARS-CoV) to the gastrointestinal system (bowel) has been verified by the detection of the virus in biopsy specimens and stools of even discharged patients, and this, thusly, may provide partial explanations for gastrointestinal symptoms [6, 7]. The frequency of gastrointestinal symptoms, including nausea and/or diarrhea, was reported as under 5% by some authors and as high as 50% by others [8]. Apart from these problems, ileus, constipation, mesenteric ischemia, and feeding problems are also observed. Although these GIS complications are thought to be associated with pharmacological adverse events and metabolic and electrolyte disorders, vascular thromboses or viral enteroneuropathies, which are induced by severe COVID-19 respiratory problems, may also lead to this [9]. In a previous study, it was reported that the presence of gastrointestinal symptoms might be associated with a longer duration of hospital stay, a lower rate of

ICU admission, and lower mortality among COVID-19-positive patients. This, in turn, has led to the comment that COVID-19 may have a slower progression in those with GIS symptoms [10].

In our study, the patients consulted our department most commonly for GIS pathologies (65.7%). Among these, the most common surgical pathology was acute appendicitis, and the most common pathology treated medically was constipation (15.7%-12.9%). This was followed by, in descending order, nonspecific abdominal pain, feeding problems, and diarrhea. We are in thought of impaired mobilization of patients due to low oxygen saturation and increased constipation. Furthermore, the necessity of uninterrupted use of noninvasive and invasive ventilators raises feeding problems for patients. This, in turn, leads to a consultation with the department of general surgery for the resolution of enteral feeding problems. In some studies, enterally-fed patients had higher respiratory complication rates, and longer duration of noninvasive ventilation (NIV) compared to that unfed enterally [11]. Preference for parenteral nutrition is more appropriate for these patients, as enteral feeding methods may cause nasogastric air leaks and endanger the effectiveness of NIV or CPAP [12]. Therefore, the preference for enteral routes for patients without these mentioned risks is recommended [13]. Also, in our clinic, interventions for enteral feeding of these patients were performed, and enteral feeding was provided by placing nasogastric or orogastric tubes.

Another important GIS pathology is GIS bleeding. COVID-19 cases presenting with GIS bleeding have been reported in the literature [14]. However, since an-

tiaggregant therapy is usually routinely used in these patients, these bleeding conditions may arise. We think that antiaggregant therapy may have affected bleeding in our patients. Predisposition to embolism in these patients has been reported in several studies. If there is no abundant bleeding that may impair the stability of the patient, these patients may continue their antiaggregant therapy with appropriate blood transfusions and monitoring. In the patients we followed up on, this bleeding stopped with medical treatment, and blood transfusions and antiaggregant therapies were not discontinued.

The second most common pathologies are hepatopancreatobiliary system pathologies (17.1%). These include acute cholecystitis, obstructive jaundice, acute pancreatitis, and portal vein thrombosis. In some studies in the literature, an increase in the incidence of acute acalculous cholecystitis in patients with a long hospital stay due to COVID-19 was reported [15]. However, our patients more commonly had calculous cholecystitis. Antibiotherapy of these patients was arranged, and the patients were cured with medical treatment and then discharged with the recommendation of elective cholecystectomy. Some authors determined an association between acute pancreatitis and COVID-19 that causes patients to have a higher risk of multiorgan insufficiency, morbidity, and mortality [16]. In our clinic, the cases that developed pancreatitis were successfully treated with medical treatment. In the literature, the development of portal vein thrombosis was reported in patients with SARS-CoV-2 infection. This, in turn, was reported to be associated with a hypercoagulability state in these patients and COVID-19-related increased risk of venous thrombosis [17, 18]. Portal vein thrombosis observed in one of our patients was evaluated in this manner, the medical treatment was arranged in the clinic, the patient was hospitalized, and the patient was then discharged with a cure.

It is possible to carry on the treatment of the patients consulted to the department of general surgery in the department that hospitalized the patient. In our study, this seems to be succeeded with a rate of 67.1%.

### Limitations

Limitations of this study include a limited number of patients, being a single-center study, lack of randomization, and retrospective design of the study.

## CONCLUSION

In conclusion, considering all departments and diseases, the patients consulted by the department of general surgery were treated medically to a great extent (77.1%). All of the operated patients were those consulted from the emergency department. The mortality rate was low (1.45%). Follow-up and treatment of all diseases can be successfully conducted when the measures were taken with the appropriate types of equipment. This study addresses the diseases and conditions that may be encountered in patients diagnosed with COVID-19. In this manuscript, diagnoses and treatments of these diseases were not elaborated. Addressing these diseases' diagnoses and treatments elaborately is another study's subject. Addressing Patients' diagnoses and treatments were not elaborated on, as addressing diagnoses and treatments of consulted patients in detail is another study's subject. Explaining the situations which surgeons in hospitals caring for patients diagnosed with COVID-19 may encounter is the objective of this study.

### Authors' Contribution

Study Conception: MEU; Study Design: MEU; Supervision: KA; Funding: MEU; Materials: MEU; Data Collection and/or Processing: MEU; Statistical Analysis and/or Data Interpretation: MEU; Literature Review: MEU; Manuscript Preparation: KA and Critical Review: KA.

### Conflict of interest

The authors disclosed no conflict of interest during the preparation or publication of this manuscript.

### Financing

The authors disclosed that they did not receive any grant during conduction or writing of this study.

## REFERENCES

1. American College of Surgeon COVID-19: Elective case triage guidelines for surgical care. <https://www.facs.org/covid-19/clinical-guidance/elective-case>.
2. COVIDSurg Collaborative. Global guidance for surgical care during the COVID-19 pandemic. *Br J Surg* 2020;107:1097-103.
3. Søreide K, Hallet J, Matthews JB, Schnitzbauer AA, Line PD, Lai PBS, et al. Immediate and long-term impact of the COVID-

- 19 pandemic on delivery of surgical services. *Br J Surg* 2020;107:1250-61.
4. Di Saverio S, Pata F, Khan M, Ietto G, Zani E, Carcano G. Convert to open: the new paradigm for surgery during COVID-19? *Br J Surg* 2020;107:e194.
5. Alimoglu O, Erol CI, Kayali A, Acar M, Colapkulu N, Leblebici M, et al. Emergency surgery during COVID-19 pandemic; What has changed in practice? *Br J Surg* 2020;107:e581-2.
6. Gu J, Han B, Wang J. COVID-19: gastrointestinal manifestations and potential fecal-oral transmission. *Gastroenterology* 2020;158:1518-9.
7. Zhou Z, Zhao N, Shu Y, Han S, Chen B, Shu X. Effect of gastrointestinal symptoms in patients with COVID-19. *Gastroenterology* 2020;158:2294-7.
8. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020;395:497-506.
9. Kaafarani HM, El Moheb M, Hwabejire JO, Naar L, Christensen MA, Breen K, et al. Gastrointestinal complications in critically ill patients with COVID-19. *Ann Surg* 2020;272:e61-2.
10. Nobel YR, Phipps M, Zucker J, Lebwohl B, Wang TC, Sobieszczyk ME, et al. Gastrointestinal symptoms and coronavirus disease 2019: a case-control study from the United States. *Gastroenterology* 2020;159:373-5.
11. Caccialanza R, Laviano A, Lobascio F, Montagna E, Bruno R, Ludovisi S, et al. Early nutritional supplementation in non-critically ill patients hospitalized for the 2019 novel coronavirus disease (COVID-19): rationale and feasibility of a shared pragmatic protocol. *Nutrition* 2020;74:110835.
12. Singer P, Rattanachaiwong S. To eat or to breathe? The answer is both! Nutritional management during noninvasive ventilation. *Crit Care* 2018;22:27.
13. Barazzoni R, Bischoff SC, Breda J, Wickramasinghe K, Krznaric Z, Nitzan D, et al. ESPEN expert statements and practical guidance for nutritional management of individuals with SARS-CoV-2 infection. *Clin Nutr* 2020;39:1631-8.
14. Gulen M, Satar S. Uncommon presentation of COVID-19: gastrointestinal bleeding. *Clin Res Hepatol Gastroenterol* 2020;44:e72-6.
15. Wahid N, Bhardwaj T, Borinsky C, Tavakkoli M, Wan D, Wong T, et al. Acute acalculous cholecystitis during severe COVID-19 hospitalizations. *Am J Gastroenterol* 2020;115:S794.
16. Dirweesh A, Li Y, Trikudanathan G, Mallery JS, Freeman ML, Amateau SK, et al. Clinical outcomes of acute pancreatitis in patients with coronavirus disease 2019. *Gastroenterology* 2020;159:1972-4.
17. Franco-Moreno A, Piniella-Ruiz E, Montoya-Adarraga J, Balzano-Franco C, Alvarez-Miguel F, Peinado-Martinez C, et al. Portal vein thrombosis in a patient with COVID-19. *Thromb Res* 2020;194:150-2.
18. Borazjani R, Seraj SR, Fallahi MJ, Rahmanian Z. Acute portal vein thrombosis secondary to COVID-19: a case report. *BMC Gastroenterol* 2020;20:386.



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