



Digestive Surgery Services in COVID-19 Pandemic Period: Indonesian Society of Digestive Surgeons Position Statement

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Abstract

Digestive surgery service including surgical management of gastrointestinal disease and digestive cancers are experiencing the impact of COVID-19 pandemic. Therefore, it is necessary to formulate recommendation for digestives surgery service providers, as a supplemental guideline for case-by-case assessment of patients with digestive diseases. We are aware that the knowledge and science of COVID-19 are still evolving, with new information on daily basis. These recommendations reflect actual condition as of and are subject to adjustment in the future.

Keywords: Digestive Surgery Services, COVID-19, Pandemic.

Panduan Pelayanan Bedah Digestif Selama Masa Pandemi COVID-19: Perhimpunan Dokter Spesialis Bedah Digestif Indonesia (IKABDI)

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Abstrak

Layanan bedah digestif yang meliputi pembedahan dan penatalaksanaan keganasan pada saluran cerna turut mengalami dampak pandemi COVID-19. Oleh karena itu, rekomendasi layanan bedah digestif pada masa pandemi COVID-19 disusun sebagai pedoman dan bahan pertimbangan dalam memberikan pelayanan bedah saluran cerna. Layanan bedah digestif dilaksanakan dengan tetap mengedepankan kajian individual dari tiap pasien. Pengetahuan tentang COVID-19 berubah seiring berjalannya waktu, dan temuan-temuan baru dilaporkan setiap hari. Oleh karena itu, rekomendasi ini merefleksikan pengetahuan yang aktual sampai saat ini, dan dapat ditinjau kembali bila didapatkan temuan-temuan baru.

Kata kunci: Layanan Bedah Digestif, COVID-19, Pandemi

Background

Digestive surgery services are part of surgical services and included among other digestive cancer surgeries and management. As the pandemic unfolds, many components of health services are affected, especially due to the increasing number of patients infected by novel coronavirus and the number of affected health service providers, including digestive surgeons.

Therefore, the central committee of the Indonesia Digestive Surgeon Association felt it is necessary to provide recommendations on managing digestive surgical services during COVID-19 pandemic, which should be considered in the provision surgical services by its members.

It is recognized that our knowledge of COVID-19 pandemic is continuously evolving and new findings are reported daily. Thus, these recommendations reflect the current available knowledge and may be reviewed later in the light of the latest findings.

Recommendation 1

All digestive surgical services should be as-

essed and classified according to the urgency of the procedure/treatment. Elective procedures should be postponed/rescheduled as far as possible until the pandemic is controlled.

Rationale:

In time of limited resources, including the lack of OR readiness, accurate and easily accessible test kit for COVID-19, personal protective equipment (PPE), hospitals should prioritize services for the management of COVID-19 patients. Therefore, it is necessary to perform surgical case triage based on the urgency of the cases.

Elective surgical cases are planned and non-emergency surgical procedure should be performed in the optimal condition of the patient to reach the best safety outcomes. A study showed that mortality and the number of ICU used are significantly increased for elective surgery performed on patients with COVID-19 infection in incubation period.¹ The increased mortality and morbidity should be factored into planning and consent.²

Surgeons and hospital should prioritize urgent and emergency cases and reduce and/or reschedule elective case surgeries.

Surgeons in each hospital should discuss and choose criteria for case selection. Available criteria such as ACS’s COVID-19: Elective Case Triage Guidelines for Surgical Care, Timing of Acute Care Surgery Classification, or Clinical Guide to Surgical Prioritization during the Coronavirus Pandemic (NHS England) can be selected as a guide in triage.³⁻⁵ However, due to the varied spectrum of disease presentation even with the same diagnosis and considerations of disease progression and prognosis, surgeons are advised to evaluate the selection on case-by-case basis.⁶⁻¹¹

Recommendation 2

All surgical patients should be screened for COVID-19 infection with the best available method on the health care facility. If it is not possible to rule out COVID-19 infection, consider using the highest standard of protection for PPE and OR procedure (i.e. performing surgery as if there is an infection).

Rationale:

The Updated Intercollegiate General Surgery Guidance on COVID-19 stated that “Oper-

ating theatres where Aerosol Generating Procedures (AGPs) are regularly performed are considered a high risk clinical area and full PPE is advised where COVID-19 is possible or confirmed”.² This should also be performed in emergency situations where less time is available to screen the patients properly, that in the event of “COVID-19 infection cannot be totally ruled out, the highest level of protection should be adopted”.¹²

Testing facilities (e.g. rapid test, RT-PCR, chest CT scan) may be inaccessible, time consuming, or unreliable in certain hospitals. Chest CT scan may be performed with abdominal CT in 24 hours or less before the operation.² In the light of different conditions and situations across health care facilities in Indonesia, surgeons are advised to review available resources and judge the possibility of COVID-19 infection preoperatively. If available screening methods to rule out COVID-19 infection are deemed unreliable, the full PPE and COVID-19 OR protocols should be performed.¹³

Table 1. COVID-19 Early Warning Score¹⁴

Parameter	Assessment	Score
Signs of pneumonia on CT	Yes	5
History of close contact with COVID-19 confirmed patient	Yes	5
Fever	Yes	3
Age	≥ 44 years	1
Sex	Male	1
Tmax Maximum temperature from illness to hospital admission	≥ 37.8 C	1
Meaningful respiratory symptoms (including cough, expectoration and dyspnea)	≥ 1 symptoms	1
NLR (Neutrophile to Lymphocyte Ratio)	≥ 5.8	1
Total Score	≥ 10 (Highly Suspected Patient)	

Recommendation 3

With regards to an open procedure versus laparoscopic procedure, in the absence of convincing data, the safest approach may be the one that is most familiar to the surgeon and reduces the operative time. If the recommended standard cannot be fulfilled, it is best not to perform laparoscopic procedure.

Rationale:

Laparoscopic procedure can minimize hospital stay and better containment of surgical procedure-related gas and plumes. Currently, there is no data on the presence of COVID-19

in surgical plumes, but theoretically it is possible. Hepatitis B and HIV have been detected in surgical plumes, but there is no conclusive/convincing evidence of increasing risk for disease transmission via surgical plume or pneumoperitoneum.¹⁵⁻¹⁹ On the other hand, filtration devices, smoke evacuation devices connected to trocars, self-sealing trocars connected to negative pressure suction , all of which are necessary precautions in performing laparoscopic procedure on COVID-19 positive patients, add significant financial burden to patients,²⁰ which may not be deemed appropriate in pandemic setting.

In the event that laparoscopic surgery is chosen, these considerations should be put in

practice:^{16,21-23}

1. The laparoscopic procedures should be undertaken by the most experienced surgeon.
2. Choose only easy laparoscopic cases: pre-operative clinical data are utmost important.
3. Strongly consider smoke evacuation system, ideally, ultra-low particulate air filter (ULPA).
4. Incisions for ports should be as small as possible to allow for the passage of ports but not to allow for leakage around ports.
5. Lower pneumoperitoneum pressure as much as possible.
6. Use of monopolar electro-surgery in the

lowest energy possible to minimize plume. Ultrasonic dissectors, and advanced bipolar devices should be minimized, as they can lead to particle aerosolization.

7. If available, monopolar diathermy pencils with attached smoke evacuators should be used.
8. Beware of any damage to Personal Protective Equipment (PPE).
9. Beware of aerosol-producing procedures such as when removing trocars, or inserting trocars while on pneumoperitoneum.
10. Avoid sudden release of pneumoperitoneum, follow the guidelines for smoke and gas evacuation.
11. Retrieve surgical specimens in bags

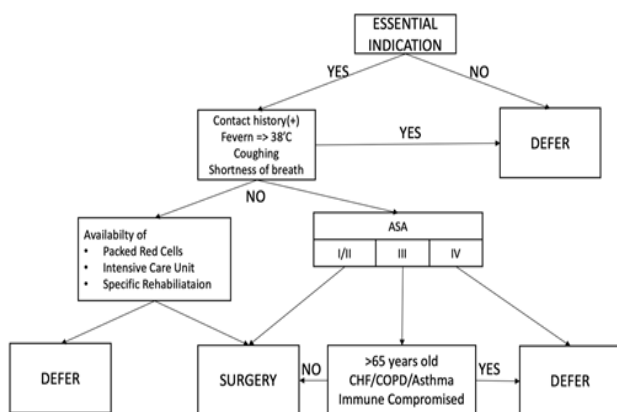


Figure 1. Surgical Consideration Flowchart

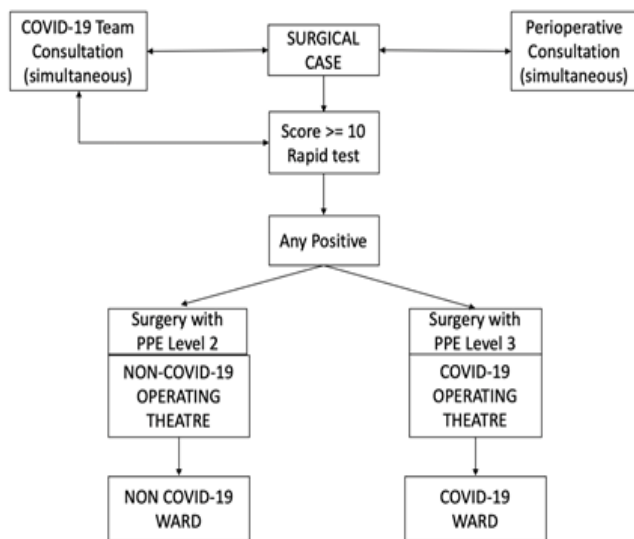


Figure 2. PPE and Operating Theatre Consideration Flowchart

Table 2. PPE Level (Indonesian COVID-19 Task Force)

Level	PPE types
1	Surgical Mask, Surgical Gloves, Surgical Scrubs
2	Surgical Mask, Surgical Gloves, Eye Shield, Head Cap, Surgical Gown
3	N95 Mask, Surgical Gloves, Eye and Face Shield, Head Cap, Cover-all, Shoe cover

Recommendation 4

In general, non-surgical treatments are to be preferred for non-urgent gastrointestinal cancer cases. These surgeries can be done once the epidemic is more or less controlled, taking into account the gradual return to the new normal.

Risks and benefits for chemotherapy should be measured based on cancer types, prognosis, patient age, comorbidity and performance status. Aim to reduce patient visit to hospital by considering oral regimens and less toxic regimens. Chemotherapy can be used as a bridge to surgery.

Recommendations for specific cancer site are as follows:

Esophago-gastric Cancers^{6,24}

- Gastrectomies and esophagectomies must be deferred, and neoadjuvant systemic therapy should be carried out.
- Patients finishing neoadjuvant chemotherapy can stay on chemotherapy if responding to and tolerating treatment.
- Defer surgery for less biologically aggressive cancers, such as gastrointestinal stromal tumours (GISTs), unless symptomatic or bleeding.

Pancreatic Cancers^{6,24}

- In case where there is no histological data, defer radical surgery for periampullary tumors, but surgery for low operative risk corpora-caudal lesions may be carried out.
- In case where there is histological proof of pancreatic adenocarcinoma, Interim chemotherapy for cephalic lesions is advisable, but lesions requiring left spleno-pancreatectomy may be carried out in patients with low operative risk.
- In case where there is malignant obstructive jaundice, biliary drainage procedure is mandatory. Types of biliary drainage depends on local expertise.

Liver Cancers^{6,24}

- Given the low risk of tumour growth over the duration of the epidemic, liver resections must be deferred for patients with early liver tumours.
- Patients who are candidates for tumour destruction by thermal ablation can be treated according to the possibilities of access to surgery and interventional radiology facilities and how the epidemic unfolds.

Colorectal Cancers^{6,10,11,24}

- Operate if obstructed (divert only if rectal), perforated, or acutely transfusion-dependent.
- Defer surgery for early-stage disease.
- Consider all options for neoadjuvant therapy and wait until the peak of the epidemic has passed before proposing radical surgery.
- For surveillance CT scan, CEA, or colonoscopy should be delayed until the pandemic is over.
- Biopsy for diagnosis should be reconsidered. Balance benefit and risk of corona virus infection, and temporarily use only imaging for diagnosis, if possible.
- Short course radiotherapy is preferred if needed, with surgery performed 6-8 weeks after radiotherapy.
- Consider postponing locoregional therapy (intraarterial chemotherapy/ metastasectomy/ ablation/ radiotherapy) until the pandemic is over.

Systemic Therapy on Colorectal Cancer

- Consider all options for neoadjuvant as a bridge to surgery and adjuvant therapy.
- Oral capecitabine is preferred if clinically adequate. Capecitabine 1000 mg/m² 2 times daily on day 1 to 7, and day 15 to 21, repeat cycle at day 28. This regiment may reduce toxicity and require less monitoring.

- Cancer patient with comorbidity should be considered for empiric dose reduction (e.g. patient with leukopenia or neutropenia on previous cycle can be given lower dose to avoid patient visit for filgrastim injection only).
- For unresectable metastases case or palliative maintenance therapy, capecitabine without biologic therapy should be considered (e.g. de-escalation of folfox + bevacizumab to capecitabine monotherapy) and considered chemotherapy “holiday” up to 12 weeks if already in optimal state.
- Consider giving targeted therapy for refractory or progression after 5FU/capecitabine single agent. Cetuximab should be given once every 2 weeks.
- Any rectal cancer, whether penetrates the rectal fascia or not, should be given short course chemoradiation while in pandemic.

Comprehensive care for cancer patients in time of COVID-19 pandemic should also consider:²⁵

- “Social distancing“ must be done, with selective physical contacts and examination. Aimed for phone/online consultation
- Personalization of care
- Nutritional support with balanced diet, providing nutritional supplements or by enteral tube feeding when necessary
- Avoidance of serious adverse effects on the immune system caused by aggressive treatment
- Minimalization of hospital visits and stays that favor contamination by the virus

To further ease the treatment assignment, Mazzaferro et al,²⁶ suggest a combined approach to classify gastrointestinal cancer into red, orange, yellow and green category, as follows:

Red category: *urgent because of cancer-related clinical conditions and complications including patients lacking any treatment alternatives and at risk of early mortality if not surgically treated.*

- Gastric tumours presenting with uncontrollable bleeding
- Pancreatic tumours with obstructive jaundice in which endoscopic palliation has failed
- Intestinal obstruction from tumours of the right colon
- Tumour perforation

Orange category: *nearly-urgent because of negative cancer-related biologic factors including patients with risk of progression be-*

yond resectability, thus mandate surgical intervention within few weeks. Or tumours in which progressive or stable disease following neoadjuvant treatments appears still resectable

- Resectable mass-forming cholangiocarcinoma or gall bladder cancer or locally advanced rectal cancer.
- Colorectal liver metastases, lymph node-positive gastric cancer, pancreatic adenocarcinoma

Yellow category: *non-urgent because of non-biologically aggressive tumour, without any alternatives nor neoadjuvant treatments.* The risk of progression is relatively low and does not imply a risk of death in a short time, while the expected outcome after surgery is generally good, thus maintaining a high net benefit of delayed surgery. Also include, tumours following neoadjuvant treatments with partial/complete response.

- T1b-T2 N0 gastric cancers

- Most of hepatocellular carcinomas
- Colorectal liver metastases, lymph node-positive gastric cancer

Green category: *non-aggressive tumours or deferrable because of presence of non-surgical alternatives including*

1. Surgery shares equal survival with alternative non-surgical treatments (i.e. T1a gastric cancers, single HCC <2 cm, etc);
2. Comparable surgical outcomes or even better if underwent neoadjuvant (i.e. borderline resectable pancreatic tumours, >T2N1 asymptomatic gastric adenocarcinoma, colorectal liver metastases, etc);
3. Within TNM stage 1 or bearing biologically low aggressive cancers (i.e. neuroendocrine tumours, asymptomatic GISTs, pancreatic IPMNs).

Any progression in green or yellow category mandates reclassification to a higher category (green to yellow or yellow to orange)

Table 3. Malignancy Urgency Category²⁶

Grade of Priority (Allowed Time to Surgical Intervention)	Tumor-Related Adjustment	Age/Comorbidities Adjustment									
 ≤ 1 week	Urgent because of complications of oncologic disease Risk of imminent patient death if tumor-related conditions or complications are left untreated	<table border="1"> <tr> <td></td> <td>Age ≥ 80</td> <td>Age < 80</td> </tr> <tr> <td>ASA 3-4</td> <td></td> <td></td> </tr> <tr> <td>ASA 1-2</td> <td></td> <td></td> </tr> </table>		Age ≥ 80	Age < 80	ASA 3-4			ASA 1-2		
	Age ≥ 80	Age < 80									
ASA 3-4											
ASA 1-2											
 2-4 weeks	Near-urgent because of biological factors High or intermediate tumor aggressiveness or stringent therapeutic window (ie, after neoadjuvant chemo/radiation therapy) in which surgical intervention may avoid progression beyond resectability	<table border="1"> <tr> <td></td> <td>Age ≥ 80</td> <td>Age < 80</td> </tr> <tr> <td>ASA 3-4</td> <td></td> <td></td> </tr> <tr> <td>ASA 1-2</td> <td></td> <td></td> </tr> </table>		Age ≥ 80	Age < 80	ASA 3-4			ASA 1-2		
	Age ≥ 80	Age < 80									
ASA 3-4											
ASA 1-2											
 5-8 weeks	Non-urgent, absence of therapeutic alternatives Intermediate tumor aggressiveness in which interventional radiology or neoadjuvant treatments can be proposed to defer surgery	<table border="1"> <tr> <td></td> <td>Age ≥ 80</td> <td>Age < 80</td> </tr> <tr> <td>ASA 3-4</td> <td></td> <td></td> </tr> <tr> <td>ASA 1-2</td> <td></td> <td></td> </tr> </table>		Age ≥ 80	Age < 80	ASA 3-4			ASA 1-2		
	Age ≥ 80	Age < 80									
ASA 3-4											
ASA 1-2											
 > 8 weeks	Deferrable, Non aggressive (low grade) tumors or presence of non-surgical therapeutic alternatives										

Rationale:

Patients with cancer are more likely to be infected by COVID-19 because of their immunocompromised state induced by either their cancer, chemotherapy, surgery or combinations. These patients are at a higher risk of developing severe episodes than that of non-cancer patients (39% vs 8%).²⁵ However, delaying cancer treatment also has a

deleterious effect concerning the disease progression and patient survival. Thus, the utility of diagnosis and treatment of cancers must be weighed against the risk for COVID-19 exposure in the health care system.⁶

Recommendation 5

Endoscopic cases should be reconsidered based on urgency level. Elective cases should

be postponed while urgent and emergency procedures should be managed properly to maximize reduction of COVID-19 transmission.

Elaboration:²⁷⁻²⁹

Urgency stratification for endoscopic procedure need to consider patients variables and diseases

type.

This following table can serve as guidelines, but every surgeon should evaluate all procedure on a case-by-case basis. (see Recommendation 1)

Table 4. Endoscopic Urgency Classification

Urgency Classification	Examples of Procedures/Indication
Elective (should be postponed)	<ol style="list-style-type: none"> 1. Screening and surveillance colonoscopy on asymptomatic patients. 2. Screening and surveillance on asymptomatic upper GI disorders, including surveillance on cirrhosis patients with esophageal varices. 3. For interval endoscopy on esophageal varices post hemorrhage, evaluate individually. 4. Evaluation of non-urgent or diseases that does not change clinical management (in 4–6 weeks) e.g. EGD for non-alarm symptoms, EUS for medium risk of pancreatic cyst. 5. Motility procedure -manometry of esophagus, pH test, wireless motility capsule test, anorectal manometry.
Urgent/emergency Procedures (should not be postponed)	<ol style="list-style-type: none"> 1. Symptomatic upper or lower GI bleeding. 2. Dysphagia which significantly affecting oral intake (including EGD for foreign body impaction or malignancy). 3. Cholangitis or impending cholangitis (ERCP). 4. Symptomatic pancreaticobiliary disease (e.g. EUS drainage for necrotic pancreatitis or nonsurgical cholecystitis, if failed with antibiotics only). 5. Palliative procedure on digestive tract obstruction (upper GI, lower GI, including colonic stenting) and pancreaticobiliary (ERCP + Stent). 6. Patient with time sensitive diagnostic (pre-malignant, malignancy, staging for surgery or chemotherapy). 7. Cases where urgent endoscopic procedure may alter the management (e.g. IBD).

Guidelines on Endoscopic Procedures in COVID-19 Pandemic

Preprocedural

1. Stratify patient risk factors 1 day before and on the day of endoscopy
2. On the day of endoscopy, use recommended surgical mask and maintain 1–2 meter distance with the patient, or use physical barrier (barrier glass or face shield) and measure the temperature
3. No patient companion may enter
4. Separate pre- and post-endoscopy recovery room for COVID-19 high risk patients
5. All patients entering endoscopy room should use mask

During procedure

1. Use proper PPE when performing endoscopy
2. PPE includes gloves, disposable hair net, goggles or disposable face shield, waterproof disposable gown, boots/shoe cover, and surgical mask for low risk patient or N95/FFP 2 or higher for high risk and positive patients
3. If possible, for COVID-19 high risk pa-

tients, procedure should be done in negative pressure room

4. For ICU patients, procedure should be performed bed side

Post-procedure

1. Trace the patient 7 and 14 days after procedure to find out whether there is a new diagnosis or related symptoms of COVID-19
2. Contaminated products of high risk COVID-19 patients should be disposed as high-risk medical waste according to hospital regulations

Gastrointestinal Symptoms in COVID-19

Incidence of gastrointestinal related symptoms in COVID-19 patients varied from 3-79%, including anorexia (39.9 – 50.2%), diarrhea (2 – 49.5%), vomiting (3.6 – 66.7%), nausea (1-29.4%) and gastrointestinal bleeding (4 – 13.7%). Both in pediatric and adult cases, diarrhea is the most common symptoms with mean duration of 4.1 ± 2.5 days. All of these symptoms might occur without any pulmonary problems.³⁰

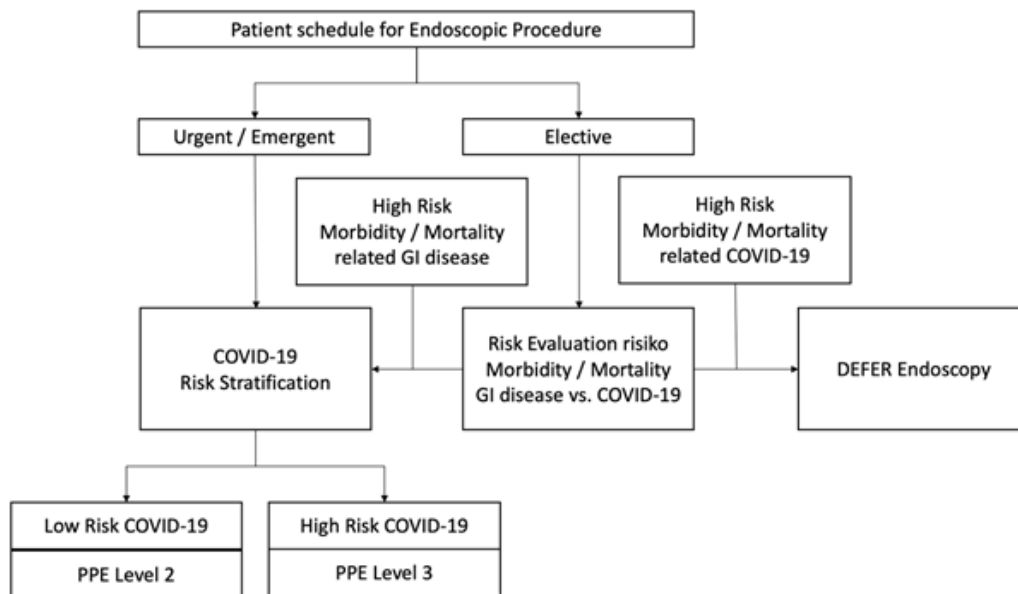


Figure 3. Decision Pathway for GI Endoscopic Procedures During the COVID-19 Pandemic²⁸
GI, gastrointestinal; PPE, personal protective equipmet

It was difficult to assess whether the gastrointestinal symptoms were primary or secondary outcomes of SARS-CoV-2 infection. In critically ill patients, due to long-term hypoxemia, cell necrosis from tissue hypoxia may produce gastrointestinal mucosal cell injury, resulting in ulceration and bleeding. In addition, corticosteroids and NSAIDs, together with the physiological stress in patients with severe illness could have affected the mucosa of the gastrointestinal tract. Several changes in the gastrointestinal tract including segmental dilatation and stenosis of the small intestine, with microscopic appearance of degeneration, necrosis and shedding of the mucosa. However, no apparent mucosal epithelial damage was found in the oesophagus, stomach, duodenum and colorectum. Histology also indicated occasional lymphocytic infiltration in the oesophageal squamous epithelium, and abundant infiltrating plasma cells and lymphocytes with interstitial oedema in stomach, duodenum and rectal lamina propria. ACE2 positive stain were mainly distributed in the cytoplasm of gastric and intestinal epithelial cells and cilia of glandular epithelial cells, but rarely observed in oesophageal squamous epithelial cells. Meanwhile, viral nucleocapsid protein was detected in gastric, duodenal and rectal glandular epithelial cell's cytoplasm, but not in oesophagus. These findings suggest that gastrointestinal symptoms of COVID-19 are due to both direct viral attack and immune related tissue and organ damage.³⁰ Both Angiotensin Converting Enzyme (ACE) 2 and viral nucleocapsid protein were detected

in gastrointestinal epithelial cells, thus make it possible for the virus to be isolated from feces. PCR test on fecal specimen showed similar accuracy with pulmonary specimens, where 36 – 53% of positive fecal PCR will be followed by positive sputum PCR in 2–5 days.³⁰ Recent study showed a high incidence of hepatobiliary, hypomotility, and ischemic GI complications from COVID-19. Of 141 patients reported by Kaafarani et al,³¹ fifty-eight patients had ileus, two had an Ogilvie-like syndrome, one had extensive hepatic necrosis, and four had bowel ischemia necessitating bowel resection surgery. GI complications could be the result of pharmacologic adverse events and metabolic-electrolyte disturbances found in critically ill, but could also related to SARS-CoV-2-induced small vessel thrombosis or viral entero-neuropathy. In the absence of specific diagnostic tools, high index of suspicion for GI symptoms, warranting surgical consultation in suspected COVID-19 patient should be the new standard of care.

Summary

The COVID-19 pandemic has a direct impact on digestive surgery service, with changes in healthcare priorities and how we manage our cases, including cancer. Emergency surgery is still a priority, whereas functional and radical surgery is to be deferred. Any treatment options must follow strict rules so as not to expose healthcare professionals to added risk.

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