

Emergency surgical gastrostomy in an esophageal cancer patient unable to receive COVID-19 treatment due to obstruction, and operating room measures as per pandemic guidelines: Case report

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ABSTRACT

We present here a gastrostomy procedure performed on a patient diagnosed with COVID-19 with no oral intake due to esophageal cancer in order to permit the initiation of COVID-19 treatment, and the COVID-19 protocols followed as per the pandemic guidelines. A 55-year-old female patient diagnosed recently with esophageal squamous-cell carcinoma was consulted for a surgical gastrostomy in the absence of oral intake due to complete esophageal obstruction prior to neoadjuvant chemotherapy. The patient had a new-onset cough and elevated body temperature (38°C) on admission to our clinic, and so was tested for COVID-19, with the final diagnosis established with PCR. In order to initiate COVID-19 treatment, a surgical gastrostomy was performed under semi-emergency conditions, following COVID-19 infection prevention guidelines. COVID-19 treatment, nutrition, and supportive therapy were initiated through the gastrostomy catheter. The patient is clinically stable on day 7 of treatment. A COVID-19 patient may require emergency surgical intervention during the fight against pandemic. When a surgical procedure is performed, all guidelines defined to protect healthcare workers from COVID-19 infection should be followed.

Keywords: COVID-19; esophageal cancer; gastrostomy; pandemics; personal protective equipment.

INTRODUCTION

The outbreak of COVID-19 disease that first emerged in China in December 2019 was declared a pandemic by the World Health Organization in January 2020. COVID-19 has become a serious health issue in our country and around the world, and pandemic hospitals have been established solely for the treatment of infected patients. Pandemic hospitals are high-risk places for transmission. Healthcare workers are the most important force in the fight against the pandemic. It is beyond argument that healthcare workers who are in direct contact

with COVID-19 patients during their treatment are at high risk of infection. Emergency surgical interventions may be required during the treatment of COVID-19 patients, and there will be an increased risk of transmission to the surgeon, anesthesiologist, nurse, and other allied health personnel unless appropriate measures are taken during such procedures. The requirements and protocols for safe surgery in patients with a confirmed or suspected COVID-19 diagnosis have been established around the world and in our country.^[1-4] We present here a gastrostomy procedure performed under emergency conditions on a COVID-19-diagnosed patient with no oral intake due to

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esophageal cancer in permit the initiation of COVID-19 treatment and describe the COVID-19 protocols followed.

CASE REPORT

A 55-year-old female patient who was recently diagnosed with esophageal squamous-cell carcinoma was consulted at our clinic after presenting with no oral intake prior to neoadjuvant chemotherapy. Complete obstruction was detected in the lower thoracic segment of the esophagus in the endoscopy (Fig. 1). FDG pozitron emission computed tomography scan revealed a metabolic involvement compatible with the mass lesion extending from the carina level to the gastroesophageal junction in the esophagus (Fig. 2). On admission, the patient had a cough that she reported had started 2 days previous, and a body temperature of 38°C. In blood tests, WBC was 10370 10³/ul, Albumin was 33 g/l, and CRP was 72.1 mg/l. Upon suspicion of COVID-19 pneumonia, the patient was isolated in our clinic and a nasopharyngeal-oro-pharyngeal swab sample was taken using personal protective equipment (PPE) A computed thoracic tomography revealed a peripheral ground-glass density with irregular lines, consistent with viral pneumonia, in the lower lobe of the right lung (Fig. 3). The swab sample was reported as PCR and test COVID-19 positive by the laboratory of our hospital. The patient initiated COVID-19 treatment at the suggestion of the Infectious Diseases Physician (a peroral [PO] loading dose



Figure 1. Endoscopic view of the esophageal lesion.

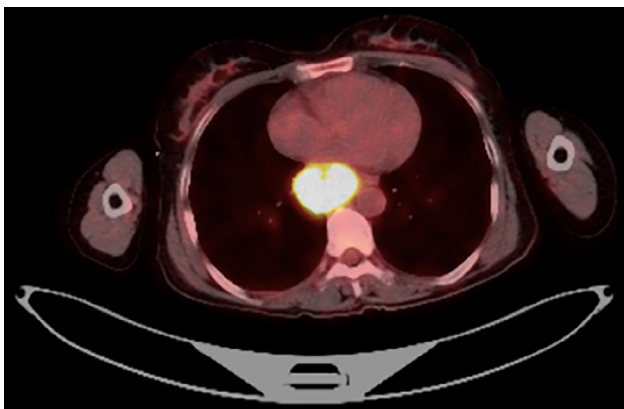


Figure 2. PET/CT image of the lesion in the lower thoracic esophagus.

of hydroxychloroquine 2×400 mg followed by a maintenance dose of 2×200 mg, a PO loading dose of azithromycin 1×500 followed by a maintenance dose of 1×250 mg, oseltamivir 75 mg PO). Since the patient could not receive oral treatment due to complete esophageal obstruction, and the distal to the existing lesion could not be accessed endoscopically, an emergency surgical gastrostomy was scheduled in order to permit the initiation of medical treatment.

Prior to the operation, the patient and her family were informed about the high mortality risk of COVID-19 patients. Informed consent was obtained for the anesthesia and surgical procedure.

The operation was performed in a negative-pressure (<5 Pa) operating room designed for patients with infectious diseases, which had sufficient space to minimize contact. All operating room staff to be in contact with the patient wore PPE under their surgical attire^[5] (Fig. 4) (N95 respirator, eye protection, full-face shield, moisture-barrier fluid-repellent gown, long boots, and long fitted gloves).

Assuming COVID-19 infection, regional anesthesia was administered to the patient as the anesthetic method in order to protect health workers, as recommended, being also safer for the patient. The patient, who was not contraindicated for regional anesthesia, was administered epidural anesthesia in the sitting position by an anesthesiologist wearing PPE.^[6,7] The patient was then placed in the supine position and fitted with a surgical mask, with oxygen support provided through the mask. The surgery was started after an adequate block was identified at the surgical site dermatome. Following a method defined as a hybrid technique, the abdomen was accessed through the midline with a 3-cm incision made over the anterior surface of the stomach, and a percutaneous gastrostomy tube was inserted. The defect on the anterior gastric surface was closed with a linear stapler. Following the bleeding check, the layers were closed as per anatomical planes^[8] (Fig. 5).

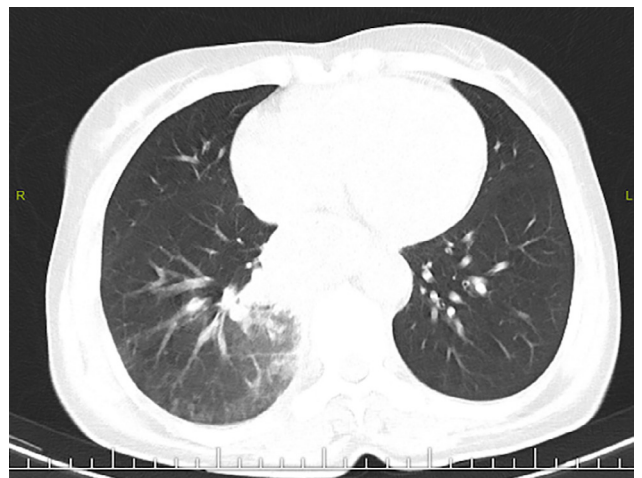


Figure 3. Thoracic tomography image of peripheral ground-glass density with irregular lines in the lower lobe of the right lung.



Figure 4. All operating room staff with Personal Protective Equipment.

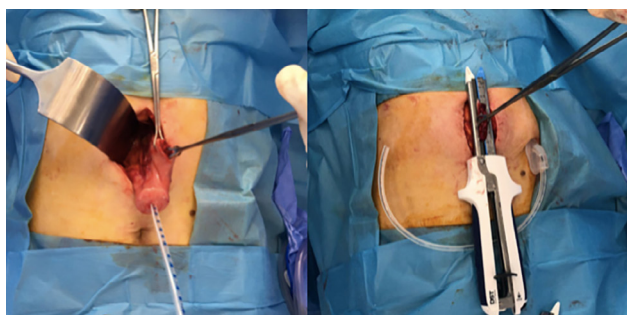


Figure 5. Surgical procedure of hybrid gastrostomy.

After the operation was completed, the staff took off their PPE in such a way that contamination was prevented, with assistance provided by a clean nurse who was not a member of the operating team, before they left the operating room. Once outside the operating room, each member of the team washed their hands with virucidal agents or alcohol. The clothes were collected in the dirty utility room or at a distance point within the operating room. All walls, floors and objects, and lastly the air, were disinfected in the operating room.^[9] The operating room was further decontaminated using a hydrogen peroxide vaporizer.^[5]

In the postoperative period, the patient was transferred to the COVID clinic within our hospital and managed with a multidisciplinary approach (support of anesthesiology and reanimation specialist, thoracic diseases, infectious diseases, and other clinical specialists). COVID-19 treatment, nutrition, and supportive therapy were initiated through the gastrostomy catheter. Our patient remains clinically stable on the 7th day of treatment.

DISCUSSION

It is without doubt very important to protect healthcare workers through the most appropriate use of financial resources in order to not lose power in the provision of healthcare services during the fight against this pandemic. There must be a conscious effort to minimize the possibility of contact with COVID-19 among physicians, nurses, and other allied health personnel working in the healthcare sector. In this regard, all hospitals should organize specific protocols

and provide focused workforce training as a part of the fight against the current pandemic. Our country has developed COVID-19 protocols to protect all healthcare workers in the operating room.^[1-4] As a pandemic hospital, our hospital rapidly established a multidisciplinary pandemic fight team under the guidance of infectious diseases, thoracic diseases, and anesthesiology and reanimation clinics to steer the fight against COVID-19. This team continuously provides healthcare workers with updated information.

The international and national protocols developed to prevent the spread of COVID-19 infection in the preoperative preparation stage, during and after the operation should be followed meticulously. Negative-pressure operating rooms should be used where possible to minimize the risk of infection.^[5] The equipment in the operating room should be minimized. The anesthetic method selected for the patient should be the most appropriate method for minimizing the risk of infection and maintaining patient safety. After the operation has been started, there should be minimum transition personnel inside and outside the operating room. An alcohol-based solution should always be available for hand hygiene. It is recommended that commonly used non-disposable devices be avoided. All operators (i.e. surgeon, anesthesiologist, nurses, technicians, etc.) should use their time in the operating room in the most efficient way, and make an effort to minimize the total length of room stay. After the operation, the clean room should be accessed only upon the completion of the doffing procedure. The personnel responsible for removing the patient from the operating room should follow different routes of access and wear different PPE to that used in the operating room. After the patient has been removed from the operating room, waste is disposed of. Subsequently, all of the room surfaces, the indoor air, and the equipment in the operating room should be cleaned in accordance with the defined protocols.

In cases when the lumen is completely obstructed in esophageal cancer, a feeding catheter cannot be inserted using the endoscopic method. In such cases, a surgical gastrostomy or jejunostomy is recommended for the provision of nutrition prior to neoadjuvant chemotherapy in cases of locally advanced esophageal cancer with obstruction.^[10] The first gastrostomy was performed in the 19th century, when the Stamm technique, described in 1894, was considered the standard approach to long-term enteral feeding. The percutaneous endoscopic gastrostomy technique was first defined in 1980^[11] and became the method of choice. For obstructions preventing the passage of the endoscope, as in our case, a hybrid technique combining endoscopic and open surgery techniques has been defined and shown to be associated with lower morbidity and mortality rates than standard surgical gastrostomy.^[12]

In this case report, we describe an operation performed on a patient without oral intake to permit the initiation of

COVID-19 treatment under semi-emergency conditions, while following all the defined protocols.

The fight against the pandemic should be multidisciplinary, and healthcare personnel plays a key role in this fight. COVID-19 patients may be encountered that require emergency surgical interventions during this period. When a surgical procedure is performed, all guidelines defined to protect surgeons, anesthesiologists, and allied health personnel from COVID-19 infection should be followed to the letter.

Conclusion

The fight against the pandemic should be multidisciplinary, and healthcare personnel plays a key role in this fight. COVID-19 patients may be encountered that require emergency surgical interventions during this period. When a surgical procedure is performed, all guidelines defined to protect surgeons, anesthesiologists, and allied health personnel from COVID-19 infection should be followed to the letter.

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

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Conflict of Interest: None declared.

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OLGU SUNUMU - ÖZ

Obstrüksiyon nedeni ile COVID-19 tedavisi alamayan özofagus kanserli hastada acil cerrahi gastrostomi açılması ve rehberler gözetilerek alınan ameliyathane önlemleri: Olgu sunumu

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Özofagus kanseri nedeni ile oral alımı olmayan COVID-19 tanılı olguda, COVID-19 tedavisi başlanabilmesi için yapılan gastrostomi prosedürü ve pandemi rehberleri eşliğinde uygulanan COVID-19 protokollerini sunmayı amaçladık. Elli beş yaşında özofagus skuamoz hücreli karsinom yeni tanıli kadın hasta neoadjuvan kemoradyoterapi öncesi özofagusta tam obstrüksiyon nedeniyle oral alamadığı için cerrahi gastrostomi açılması için konsülte edildi. Kliniğimize başvuru anında yeni başlayan öksürük şikayetinin olması ve ölçülen vücut sıcaklığının yüksek olması (38°C) nedeni ile COVID-19 açısından tetkik edildi ve PCR ile kesin tanısı konuldu. Oral COVID-19 tedavisine başlanabilmesi için yarı acil şartlarda COVID-19 bulaş önleme rehberlerine uyularak cerrahi gastrostomi açıldı. Gastrostomi kateterinden COVID-19 tedavisi, nutrisyon ve destek tedavisi başlandı. Hastamız tedavisinin yedinci gününde klinik olarak stabil seyretmektedir. Pandemi mücadelesi içerisinde COVID-19 hastasında acil cerrahi girişim ihtiyacı olabilir. Cerrahi işlem uygulanacağı zaman tüm sağlık personelinin COVID-19 bulaşından koruyacak tanımlanmış rehberlere uyulmalıdır.

Anahtar sözcükler: COVID-19, gastrostomi, kişisel koruyucu ekipman; özofagus kanseri; pandemi.

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