



A Giant, Chronic, Irreducible Inguinoscrotal Hernia with Cecal Perforation in a Hospitalized COVID-19 Patient: A Case Report and Review of Literature

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Abstract

The COVID-19 pandemic has required the medical system to adapt to new regulations and has led to new operational protocols for standard surgical practice. We do not have a lot of objective information on pandemic's effect on surgical practice. We do know, however, that a great burden is placed on global and local healthcare systems, including surgical infrastructure. We present an 89-year-old male with a history of hypertension, carotid artery stenosis, heart failure, cerebrovascular disease, chronic renal failure, and positive, asymptomatic COVID-19 and active coffee-ground emesis and fever. The patient was immediately admitted to the dedicated COVID-19 ward. Physical exam exposed a giant right-sided, irreducible inguinoscrotal hernia. On day 2, his clinical condition deteriorated with hypotension and generalized abdominal tenderness. Blood tests revealed lactic acidosis and the CT scan demonstrated a likely bowel perforation within the hernia sac. Explorative laparotomy exposed a complete herniation of the small bowel and cecum into the hernia sac without no signs of strangulation. All attempts to mobilize the bowel from the hernia sac failed and a decision was made to open the groin to try to reduce the hernia. During examination of the bowel, the cecum was found to be ischemic and perforated without fecal spillage. A right hemi colectomy with terminal ileostomy was performed. The patient was returned to the COVID-19 ward for recovery in an unstable condition. The management of surgical patients in the COVID-19 era requires expert clinical judgment. Disease manifestations may not present themselves pre-operatively but may play a role in the post-operative state and this should be taken into account when planning patient treatment.

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Keywords: COVID-19; Inguinoscrotal hernia; Hypotension; Computed Tomography; Ileostomy

Abbreviations

COVID-19: Novel Coronavirus 2019; ED: Emergency Department; CXR: Chest Radiograph; AKI: Acute Kidney Injury; CT: Computed Tomography

Introduction

The current pandemic led by novel Coronavirus 2019 (COVID-19) has lasted for more than a year. It has required the medical system to adapt to new regulations and has led to new operational protocols for standard surgical practice. Not much information is available on the exact impact of the COVID-19 pandemic on surgical practice [1]. What is known is that a great burden is placed by the pandemic on global and local healthcare systems. The status of the virus and its effect on the population is constantly changing and requires the medical infrastructures to adapt. Surgery is a cornerstone of the medical system and multidisciplinary communication with a new clinical practice like restructuring operating rooms, intensive care units, and adapting Emergency Department (ED) workflow [2]. As it relates to our discussion, materials or objects not essential for the operation which limited our ability to photographically document physical findings. In addition, given the unclear ability or inability of the virus to transmit *via* a fecal-oral route negative pressure is required and non-essential personnel are restricted [3].

According to regulations set forth by University Hospital Würzburg in Germany, strangulated hernias are categorized as "Level I Urgency," requiring immediate surgical intervention [2]. Hospitals around the world are reporting a decrease in elective hernia repair cases since the start of the pandemic due to a combination of patient apprehension and hospital burden [4,5]. This is

leading to more watchful waiting management of hernias, increasing later risk of complications [6].

In isolated, hospitalized COVID-19 patients where patient examination and evaluation is done *via* cameras and minimal physical examination due to the obvious risks involved, which poses a significant challenge in the diagnosis of hernias [7,8].

The clinical definition of a giant inguinoscrotal hernia is extension below the midpoint of the thigh when standing [9]. These cases require emergent surgical intervention due to risk of complications and any co-morbid conditions increase these risks [9,10]. Our case presentation discusses the complex surgical management of an elderly male with comorbid conditions and advanced disease.

Case Presentation

An 89-year-old male with a history of hypertension, carotid artery stenosis, heart failure, cerebrovascular disease, chronic renal failure, and positive asymptomatic COVID-19 presented to our institution from a nursing home with coffee-ground emesis and fever of 38.6°C (101.48°F). The patient was immediately admitted to the dedicated COVID-19 ward without signs of respiratory distress and clear chest X-Ray (CXR), but with a 90% O₂ saturation on room air. Upon admission, it was noted that the patients' COVID-19 disease history included a 3-day hospitalization, 2 days prior to current hospitalization, in a different hospital with rectal bleeding and no note of a present hernia.

A limited physical exam carried out by dedicated COVID-19 physicians indicated a giant, right-sided scrotal hernia without signs of strangulation. The abdomen was soft, diffusely tender, and mildly distended. Digital rectal exam showed no signs of bleeding. The abdominal pain noted by the dedicated COVID-19 team was not attributed to the present hernia. A surgical consult was not called in order to limit COVID-19 exposure.

On day 2 of admission, the patient's condition began to deteriorate with lethargy, tachypnea, acute kidney injury (AKI) [Cr=5.98 mg/dL; Urea =168.7 mg/dL], and worsening fever of 39.5°C (103.1°F), hypotension. Lab results revealed high anion-gap acidosis with elevated lactate levels [pH=7.3, HCO₃=10.8 mEq/L, 37 mg/dL]. An abdominal Computed Tomography (CT) scan was ordered to assess the any abdominal condition that might lead to diffused abdominal tenderness and clinical instability. The CT scan demonstrated a giant inguinoscrotal hernia with intestinal contents spanning part of the jejunum, ileum, cecum, and ascending colon (Figure 2). Pneumoperitoneum was present in the abdominal cavity and the



Figure 1: Clear CXR of the patient on admission.

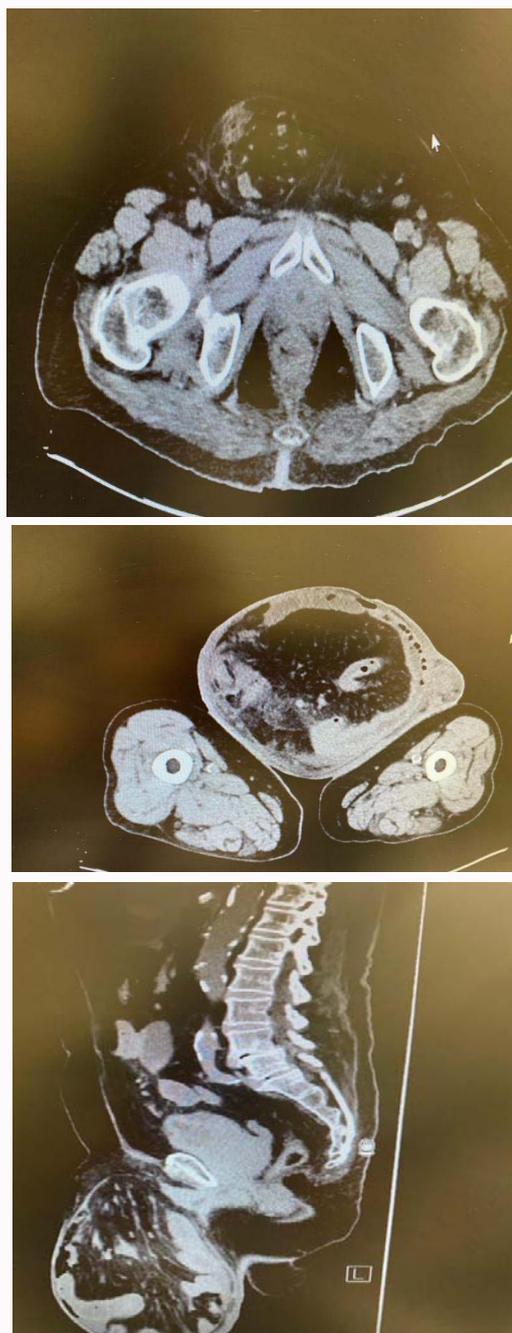


Figure 2: CT scans of hernia sac at multiple levels.

hernial contents demonstrated jejunal wall thickening, submucosal fat deposition of the cecum and colon, and extraluminal free air and bowel contents. Together, these findings are highly suspicious for perforation and are urgent indication for surgical intervention. The case was discussed with patient's family and given their power-of-attorney; they opted to proceed with the emergency procedure. Meanwhile, the patient received vasopressors and antibiotics.

The patient was rushed to the operating room for an explorative laparotomy and the surgical team prepared for the case with the appropriate protective equipment. A midline incision was performed to enter the abdomen. The majority of the small intestine along with the cecum was found in the inguinoscrotal sac on the right and completely irreducible. An intraoperative decision to incise the

hernia was made and an ischemic cecum was identified. The colon was deemed unviable and a colectomy and terminal ileostomy was performed. The patient was returned to the COVID-19 ward for recovery in an unstable condition. Later that night, the patient's condition deteriorated and despite resuscitation efforts, he passed away.

Discussion

There is still much to learn about the gastrointestinal manifestations of the 2019 novel coronavirus. However, we now know that this current medical crisis is not only manifested in pulmonary symptoms but also a generalized burden on hospital resources, which includes surgical services [11,12]. We know that a proper physical exam of all patients is crucial in identifying hernias and that early diagnosis can have major implication in the patient prognosis [13].

In these times of COVID-19, the importance of the physical exam is amplified. Unfortunately, the transition of COVID-19 wards into the digital frontier for the protection of healthcare workers has made a fully encompassing physical exam near impossible [14]. Many dedicated COVID-19 wards have specialized vital sign tracking systems using artificial intelligence and specialized algorithms [15,16]. However, as technology provided for remote management evolves, the patient-physician interaction declines. Through this case study we directly observe how the limited physician contact available to hospitalized, isolated patients detracts from their ability to receive adequate care. Thus, hernias in the setting of COVID-19 accompanied with other active diseases makes these patients especially susceptible to missed diagnosis and delayed operative treatment. Not only are physician-patient interactions extremely limited, external consults are only called to assess severe cases in order to avoid physician exposure, leading to many possible missed diagnoses and delayed treatments [17]. In addition, patient isolation in facilities without specialized personnel can lead to missed symptoms of emergency conditions. While CT scans are an incredible tool in diagnosing and assessing the severity of hernias, the physical exam is the pillar of identifying key symptoms to indicate further examination [18]. It is unclear if active COVID-19 disease, asymptomatic or otherwise, has any patho-physiologic mechanisms in hernia development or deterioration. However, it is possible that the acute postoperative state can lead to disease eruption in asymptomatic patients, significantly worsening prognostic outcomes [19]. Healthcare workers and personnel that have direct supervision of COVID-19 patients should maintain a heightened state of awareness when observing their patients and any red-flags should be discussed with the relevant medical specialists.

Conclusion

It is evident that we are always discovering new information about the effects of the COVID-19 pandemic, both clinically and in-terms of workflow management. The limited in-room interaction with hospitalized patients creates a system lacking accurate physical exams. The management of surgical patients in the COVID-19 era requires expert clinical judgment. Disease manifestations may not present themselves pre-operatively but may play a role in the post-operative state and this should be taken into account when planning patient treatment. Complex patients with multiple comorbidities require careful management and special consideration. Limited physician-patient interaction should be kept at a minimum, but guidelines should be amended to avoiding patient harm. Consults should never be avoided to help deliver accurate patient assessment and personal protective equipment should be the primary form of

physician protection. Giant inguinoscrotal hernias are a rare finding and can present with complex systemic symptoms due to altered intra-abdominal pressures. Delayed clinical assessment of hernias directly leads to worse disease outcomes. Early detection of hernias opens the possibility of manual reductions and less cases of strangulation. In cases of suspected and detected strangulated hernias, emergency surgery is the best course of management.

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