

Gangrene of the Colon Ascendens, Colon Transversum, and Liental Flexure in a Massive Strangulated Umbilical Hernia

Review began 09/21/2022
Review ended 09/29/2022
Published 10/07/2022

© Copyright 2022

Baco et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Stanko Baco¹, Milos Mitric²

1. Surgery, Public Health Institution Hospital "Dr Mladen Stojanović", Prijedor, BIH 2. General Surgery, Public Health Institution Hospital "Dr Mladen Stojanović", Prijedor, BIH

Corresponding author: Stanko Baco, sbaco3@gmail.com

Abstract

This case describes an 80-year-old obese woman who presented with a giant, incarcerated umbilical hernia. The hernia was present for over 15 years, continuously increasing in size. The only symptom was the pain which lasted about two hours before arrival at the hospital. In an emergency laparotomy, gangrenous colon ascendens, transversum, and liental flexure have been found. A subtotal colectomy with the creation of terminal ileostomy without hernia repair has been done. The recovery was uneventful, and the patient was discharged on the fifth postoperative day. After one month, the reconstruction of the digestive continuity with an L-L ileo-descendo anastomosis followed. The patient decided against the hernia repair.

Categories: Emergency Medicine, Plastic Surgery, General Surgery

Keywords: reconstruction of digestive continuity, gangrenous colon, subtotal colectomy, giant hernia, umbilical hernia, strangulation, incarceration

Introduction

A hernia is a protrusion of an organ or a part through connective tissue or through a wall of the cavity in which it is normally enclosed. The umbilical cord, consisting of two arteries and a vein, connects the fetus and placenta and is responsible for the nourishment and oxygen supply from the placenta to the fetus and the removal of waste products [1]. After birth, it is clamped and falls off naturally after a few days. Suppose the abdominal wall does not close solidly, and the umbilical hernia results. European Hernia Society's classification for abdominal wall hernias defines the umbilical hernia as a hernia located from 3 cm above to 3 cm below the umbilicus [2]. The incidence of umbilical hernias in the general adult population is 2%. The female-to-male ratio is 3:1. Nearly 90% of umbilical hernias in adults are acquired with only 10% report having had a hernia in childhood [2-3]. It is the second most common type of hernia in an adult following an inguinal hernia. It accounts for 6%-14% of all abdominal wall hernias in adults [2]. They occur more often in females, multipara, premature infants, and cases of increased intra-abdominal pressure (as in pregnancy, patients with ascites, cirrhosis, and abdominal malignancies) [3]. Umbilical hernias are mostly small, asymptomatic, and contain only omentum [2]. Hernias are classified as reducible when the hernia contents can be placed intra-abdominally through the layers of the abdominal wall. An incarcerated hernia is a hernia in which the content has become irreducible due to a narrow opening in the abdominal wall or due to adhesions between the content and the hernia sac. A strangulated hernia occurs when the hernia contents are ischemic due to a compromised blood supply [4]. The risk of strangulation is estimated at up to 17% and up to three times higher than in femoral hernias [5]. Considering the lack of medical literature reporting umbilical hernia containing colon ascendens, transversum, and descendens we decided to present this case. We think it is important for the readers to see that a big hernial neck and sack, can also cause incarceration and even strangulation, which in older people present with very few symptoms and subtle clinical findings until it becomes very serious [6]. There is a clear message that gangrene of the colon can evolve almost without any symptoms.

Case Presentation

An 80-year-old, obese woman presented in the early morning, to the emergency department with a giant incarcerated umbilical hernia. She complained about abdominal pain, which lasted about two hours before the presentation. The hernia was present for over 15 years, continuously increasing in size; on several occasions reduced by the patient by lying down and applying pressure on the hernia. On examination, there have not been any signs of acute abdomen (guarding or tenderness). An 18 x 18 cm irreducible swelling was present at the umbilicus and infraumbilical. The skin was bluish-colored (Figures 1-4). The patient denied all other symptoms such as nausea, vomiting, or fever, and had had stool three days before. She was obese with a body mass index (BMI) of 32.7 kg/m², had never been operated on, and has regularly taken antihypertensives (Amlopin) and occasionally diuretics and analgesics (NSAID).

How to cite this article

Baco S, Mitric M (October 07, 2022) Gangrene of the Colon Ascendens, Colon Transversum, and Liental Flexure in a Massive Strangulated Umbilical Hernia. Cureus 14(10): e30022. DOI 10.7759/cureus.30022



FIGURE 1: Incarcerated umbilical hernia (right-side view)



FIGURE 2: Incarcerated umbilical hernia (left-side view)



FIGURE 3: Bluish-colored skin (right-side view)



FIGURE 4: Bluish-colored skin over the incarcerated umbilical hernia (anterior view)

The presentation with the incarceration has led us to the decision to operate urgently and not to lose time on an additional investigation (abdomen CT). Intraoperatively we found the ascendant and transverse colon and lineal flexure in the hernia sac, gangrenous but luckily not perforated (Figure 5). The hernia sac was also gangrenous.



FIGURE 5: Intraoperative photography of gangrenous colon

In that environment, we decided against anastomosis creation [7]. We followed the dogma, which not everybody agrees with, of not placing a mesh in a contaminated field. A subtotal colectomy (Figure 6) with the terminal ileostomy creation followed (Figure 7). We have even enlarged the fascial defect (the hernial neck) to reduce the probability of repeated incarceration. Only the skin was sutured. The patient was discharged on the fifth postoperative day without complications.



FIGURE 6: Photography of the specimen

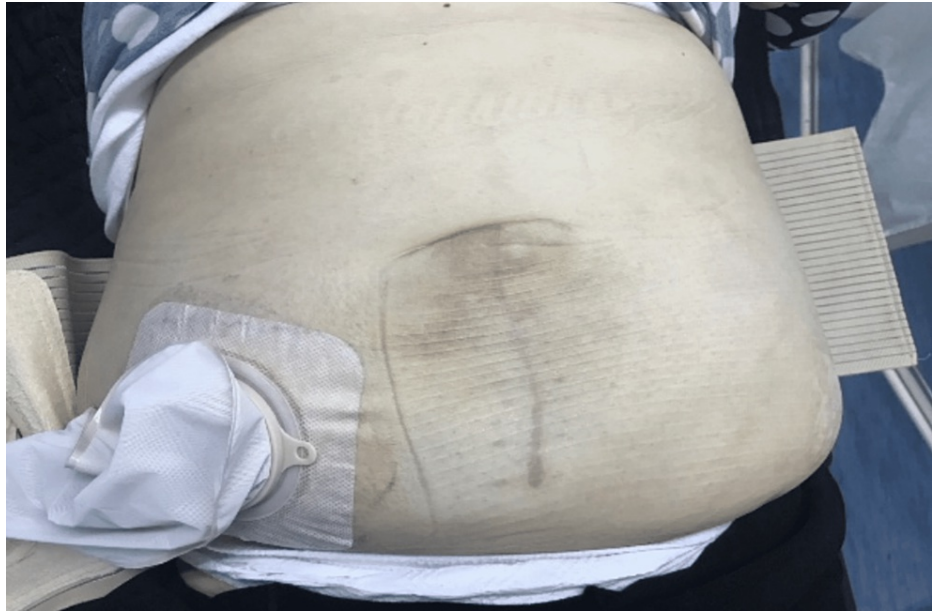


FIGURE 7: Postoperatively temporary terminal ileostomy and the healed wound

One month later, a restoration of the continuity of the gastrointestinal tract with the creation of an L-L ileo-descendo anastomosis followed (Figure 8). The patient did well, the recovery was uneventful and she was discharged on the twelfth postoperative day. She decided against hernia repair due to the highly reduced risk of reincarceration and on account of her fear of operations (eventually required complex surgical repair).



FIGURE 8: Two weeks after the reconstruction of the digestive continuity

Discussion

The first recorded mention of an umbilical hernia was made by Celsus, who in 100 AD called it “an indecent prominence of the navel” [8]. The umbilical hernia, also called exumbilication is a protrusion of abdominal content through the abdominal wall at the umbilicus. It should be distinguished from exomphalos or omphalocele, in which the intestines and organs protrude outside the belly and are covered only by a thin membrane (consisting of Wharton's jelly, peritoneum, and amnion). Patients with an umbilical hernia usually complain about pain in the umbilical region with a sudden onset of swelling. Incarceration of the omentum, from our experience, is often associated with a cough. Clinical diagnosis of strangulation is complicated because there could be a high discrepancy between the clinical presentation and the intraoperative findings, especially in older patients with, e.g., diabetes mellitus [6]. An early operation is important as a delay increases morbidity. Example gratia: A bowel perforation leads to consequential operative complications. It increases the length of the operation, the need for bowel resection, and the anastomosis creation and leads to prolonged recovery). [9]. It also limits the operative possibilities, meaning that operative field contamination reduces the possibility of mesh augmentation because of the possible mesh infection. If the mesh is to be used then it should be a low-weight polypropylene mesh. Umbilical hernias should be repaired using mesh, especially if a patient has multiple comorbidities that are significantly associated with recurrence, such as obesity, diabetes, liver disease, and ascites [10]. A higher incidence of SSI (surgical site infection) also leads to a consecutive higher hernia recurrence. Patients with intestinal strangulation have often associated peritonitis and there are critically ill cases, commonly shocked and at high risk of septic complications.

These patients may experience high intraoperative intra-abdominal pressure. Such hypertension may be the underlying cause of reduced cardiac output, splanchnic hypoperfusion, and oliguria, leading to an abdominal compartment syndrome leading, visceral perfusion, and acute bowel injury [11-13]. An ileostomy creation is recommended in older, unfit patients with comorbidities and anastomosis creation is only when there is no sign of gangrene [11]. When early definitive fascial closure is not possible, progressive closure can be gradually attempted at every surgical wound revision. A skin-only closure is a viable option and subsequent eventration can be managed at a later stage with delayed abdominal closure and synthetic mesh repair (grade 1C recommendation) [14].

Conclusions

Giant hernias with large hernia necks can also incarcerate and strangulate. The presentation of strangulation, especially in older people, can occur with far fewer symptoms (pain) than expected. There is often a high discrepancy between the clinical presentation and the intraoperative findings. This case highlights a unique dilemma, physicians managing chronic large abdominal hernias in the elderly are facing, which carries potentially high morbidity and mortality with minor symptoms and subtle clinical findings. As the population of the elderly is growing worldwide, further research is urgently needed to establish criteria to clearly recognize such cases. An urgent operation should always be undertaken in case of incarceration. Always thinking of possible strangulation, independent of the clinical unreliability of the presentation (absence of abdominal tenderness) and the anamnestic unreliability of the data.

Additional Information

Disclosures

Human subjects: Consent was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

- Basta M, Lipsett BJ: Anatomy, abdomen and pelvis, umbilical cord . Basta M, Lipsett BJ (ed): StatPearls Publishing, Treasure Island (FL); 2022.
- Coste AH, Jaafar S, Parmely JD: Umbilical Hernia. Coste AH, Jaafar S, Parmely JD (ed): StatPearls Publishing, Treasure Island (FL); 2022.
- Coelho JC, Claus CM, Campos AC, Costa MA, Blum C: Umbilical hernia in patients with liver cirrhosis: a surgical challenge. *World J Gastrointest Surg.* 2016, 8:476-82. [10.4240/wjgs.v8.i7.476](#)
- Pastorino A, Alshuqayfi AA: Strangulated hernia. StatPearls Publishing, Treasure Island (FL); 2022.
- Konaté I, Ndong A, Tendeng JN: Umbilical hernias in adults: epidemiology, diagnosis and treatment . The Art and Science of Abdominal Hernia. Konaté I, Ndong A, Tendeng JN (ed): IntechOpen, London; 2020.
- Yang XF, Liu JL: Acute incarcerated external abdominal hernia . *Ann Transl Med.* 2014, 2:110. [10.3978/j.issn.2305-5839.2014.11.05](#)
- Falagas ME, Kasiakou SK: Mesh-related infections after hernia repair surgery . *Clin Microbiol Infect.* 2005, 11:3-8. [10.1111/j.1469-0691.2004.01014.x](#)
- Deysine M : Umbilical hernias. Abdominal Wall Hernias. Bendavid R, Abrahamson J, Arregui ME, Flament JB, Phillips EH (ed): Springer, New York, NY; 2001. 680-684.
- Shin R, Lee SM, Sohn B, et al.: Predictors of morbidity and mortality after surgery for intestinal perforation . *Ann Coloproctol.* 2016, 32:221-7. [10.3393/ac.2016.32.6.221](#)
- Shankar DA, Itani KM, O'Brien WJ, Sanchez VM: Factors associated with long-term outcomes of umbilical hernia repair. *JAMA Surg.* 2017, 152:461-6. [10.1001/jamasurg.2016.5052](#)
- Shah SK, Jimenez F, Letourneau PA, et al.: Strategies for modulating the inflammatory response after decompression from abdominal compartment syndrome. *Scand J Trauma Resusc Emerg Med.* 2012, 20:25. [10.1186/1757-7241-20-25](#)
- Roberts DJ, Ball CG, Kirkpatrick AW: Increased pressure within the abdominal compartment: intra-abdominal hypertension and the abdominal compartment syndrome. *Curr Opin Crit Care.* 2016, 22:174-85. [10.1097/MCC.0000000000000289](#)
- Blaser AR, Björck M, De Keulenaer B, Regli A: Abdominal compliance: a bench-to-bedside review . *J Trauma Acute Care Surg.* 2015, 78:1044-53. [10.1097/TA.0000000000000616](#)
- Birindelli A, Sartelli M, Di Saverio S, et al.: 2017 update of the WSES guidelines for emergency repair of complicated abdominal wall hernias. *World J Emerg Surg.* 2017, 12:37. [10.1186/s13017-017-0149-y](#)