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Spontaneous bowel evisceration through umbilical hernia in an adult non-cirrhotic patient

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Accepted 16 March 2024

SUMMARY

Few cases of spontaneous bowel evisceration (SBE) through umbilical hernias (UHs) in adult patients have been reported in the literature. Interestingly, the spontaneous rupture of the hernia sac is a rare complication usually seen in adult cirrhotic patients with persistent ascites or in patients with congenital wall defects. A man in his early 50s was admitted to our emergency department with SBE through a long-standing acquired UH. He was not clinically cirrhotic, although being HCV positive. Surgeons performed an urgent laparotomy with ileal resection, latero-lateral ileal anastomosis and direct hernioplasty without mesh. Given the rarity of this presentation, we reported it and reviewed the available literature on this subject. Elective hernioplasty is currently suggested to lower the risk of complications. Mesh placement should be preferred, but only if comorbidities and infectious risks do not contraindicate its use. In emergency situations, a direct hernia repair is preferred.

BACKGROUND

An umbilical hernia (UH) is a ventral midline hernia located at or near the umbilicus, from 3 cm above to 3 cm below the umbilicus, according to the classification of the European Hernia Society.¹ Being the second most common hernia in adulthood, behind only inguinal hernias,² UH is acquired, rather than congenital, in approximately 90% of adult patients.³ One of its prominent risk factors is an acute or chronic increase in intra-abdominal pressure, such as persistent ascites. In the general population, UH has a prevalence of approximately 2%,⁴ while in cirrhotic patients with persistent ascites, it occurs in around 20% of the cases,⁵ or even up to 40% in large-volume ascites.^{6,7} As an extremely rare occurrence, though more frequent in cirrhotic patients with ascites,^{8–11} a sudden increase in intra-abdominal pressure (eg, coughing, straining, physical exercise, etc.) can rupture the UH sac, with leakage of ascites through a skin lesion, the so-called Flood Syndrome,¹² or, in the worst-case scenario, with spontaneous bowel evisceration (SBE). Ascites develops in over half of patients with cirrhosis and is indicative of advanced hepatic decompensation, making it a poor prognostic indicator,¹³ and therefore accounting for even higher mortality rates in such cases. Surgery remains the only definitive treatment for UH, although there is no clear consensus on the best approach. Management of SBE, a life-threatening complication, necessitates prompt surgical intervention to prevent bowel ischemia, perforation and sepsis. A very uncommon event

with only a handful of documented patients,^{14,15} we present a case of SBE through an UH in a non-cirrhotic adult patient.

CASE PRESENTATION

A man in his early 50s presented to our emergency department (ED) with an overt SBE through a pre-existing acquired UH. His medical history was significant for obesity (body mass index (BMI) 30.1), alcoholism and injecting drug addiction (heroin, cocaine). He reported that during a coughing episode, immediately after a heroin injection, the bowel suddenly burst through the umbilical skin. On physical examination, he was fully conscious and complained of no pain; an ileal loop with subschaemic features was eviscerated through a 4 cm umbilical defect (figure 1). Blood tests showed normal liver function at admission (aspartate transaminase (AST) and alanine transaminase (ALT) were 35 UI and 36 UI, respectively; International Normalized Ratio (INR) was 1.09) but revealed a previously unknown Hepatitis C Virus (HCV) infection. Surgeons performed an emergency laparotomy with ileal resection (figure 2), latero-lateral anastomosis with mechanical suture and interrupted polypropylene suture abdominal fascia closure. During the exploration of the abdominal cavity, there were no macroscopic signs of cirrhotic degeneration of the liver. Additionally, there was no ascites intraoperatively. The patient spent the first 24 hours after surgery in the intensive care unit and was later transferred to the general surgery ward.

OUTCOME AND FOLLOW-UP

The postoperative course was uneventful, and the patient was discharged on the 5th postoperative day. There was no recurrence at 1 year follow-up.

DISCUSSION

An UH is a ventral midline hernia located at or near the umbilicus, from 3 cm above to 3 cm below it, according to the classification of the European Hernia Society.¹ In the general population, UH has a prevalence of approximately 2%,⁴ and about 175 000 UH repairs are annually performed in the United States.¹⁶ As opposed to the paediatric population, where congenital UH is one of the most common conditions,¹⁷ in adults it is acquired in approximately 90% of the cases.³ Accounting for 6%–14% of all abdominal wall hernias in adults, UH is second only to inguinal hernias for incidence.^{2,18} UHs can contain preperitoneal fat, omentum and small bowel, or a combination of these. The



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To cite: Grappolini N, Zanchetta M, Inversini D, et al. *BMJ Case Rep* 2024;**17**:e258602. doi:10.1136/bcr-2023-258602



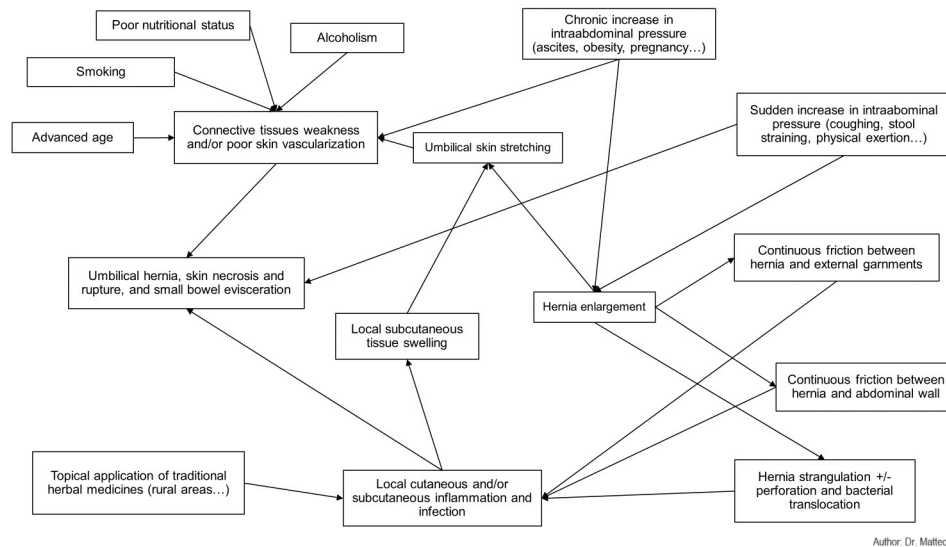
Figure 1 The patient at presentation in the emergency department.

spontaneous rupture of the hernia sac is a sporadic occurrence, and concomitant evisceration is even rarer, especially in non-cirrhotic patients. Complications of untreated UH include bowel incarceration or strangulation, spontaneous rupture with ascitic fluid leakage in cirrhotic patients (the dreadful so-called Flood Syndrome,¹² and evisceration). If such complications arise, the mortality rate is high despite surgical repair.¹⁹ The development of UH is more common in people with increased intra-abdominal pressure, such as in pregnancy, obesity, ascites or chronic abdominal distension, all of which contribute to stretching of the abdominal muscle fibres and weakening of the connective tissue (figure 3).^{20–22} Interestingly, one of the two previously reported spontaneous SBE through an UH in a non-cirrhotic patient was an overweight woman in her fifth pregnancy.^{14 15} Cirrhotic patients with persistent ascites will develop



Figure 2 Segmental resection of ileum.

UH in approximately 20% of the cases, due to an increase in the abdominal pressure from ascites, dilation of umbilical veins and muscular or connective tissue weakness due to poor nutritional status,^{5 23–25} or even in up to 40% of the cases in large-volume ascites.^{7 26} Body positioning and patient activity can exert added pressure on the intra-abdominal cavity, potentially compromising the weakened anterior abdominal wall layers. Skin discoloration, ulceration, ascitic leakage and rapid increase in hernia size are indicators of an impending rupture.⁹ Straining during bowel movements,⁹ coughing¹⁰ and physical exertion¹⁵ are all activities that have been associated with SBE through UH. In our case, the patient complained of skin rupture following a sudden cough. As it has been previously reported twice in the literature, it is important to note that the patient did not exhibit clinical signs of cirrhosis with ascites. Instead, we diagnosed him serologically with a previously unidentified HCV infection that was not associated with cirrhosis or ascites. It is likely that the sustained increase in intra-abdominal pressure due to obesity, his probable malnutrition along with his injection drug addiction, together with the sudden increase due to coughing, caused the hernia sac rupture and evisceration in our patient. Surgery is the only definitive treatment for UH, with an expected 1%–5% recurrence and complication rates,^{27–29} especially in patients with obesity or uncontrolled refractory ascites.³⁰ A recent systematic review reports a recurrence between 2.7% and 27% in mesh repair and non-mesh repair, respectively.³¹ Usually, the neck of such umbilical defects is narrower than their herniated sacs, increasing the likelihood of incarceration and strangulation of their contents. These occurrences may require emergency repairs, thereby increasing the morbidity and mortality of UHs compared with inguinal hernias.³² Although in the past some advocated for a ‘watchful waiting’ approach considering the approximately 1% risk of strangulation per year of UH,³³ due to the severity of its potential complications, each case must be carefully evaluated. Indeed, only asymptomatic UH with no aesthetic compromise should be non-operatively treated.³⁴ According to D’Orazio *et al*, in cases where the skin above an UH ruptures without evisceration, a conservative approach using glue injection may provide a beneficial temporary alternative to surgery. This approach can serve as a bridge therapy, affording more time to optimise the patient’s clinical condition.³⁵ Nevertheless, it is always advisable to undertake early elective repair of UH,^{36 37} because a conservative approach could necessitate emergency surgery for ensuing complications, which would ultimately increase the patient’s risk.³⁸ In urgent and emergent settings, the safest approach is primary closure with sutures, as the use of a mesh would increase the risk of infection and potential serious and life-threatening complications despite decreasing the rate of recurrence.⁷ Several authors, reporting their experience managing similar patients, highlight that inserting a prosthesis, when feasible, lowers the incidence of hernia recurrence,^{10 11} and it is widely accepted in today’s literature that a mesh repair carries a lower risk of recurrence.³⁷ Shankar *et al* advocate for elective UH repair with mesh to be always considered also in patients with multiple comorbidities as it offers partial protection from recurrence without significant morbidity.³ The sublay technique can be used in the elective situation, when feasible, showing a lower rate of infection and recurrence.^{36 39–41} In our case though, we opted for direct repair of the defect due to the significant contamination of the operative field following intestinal resection. Regarding the size of the defect, Kaufmann *et al* have concluded that even in defects of less than 4 cm, there is a higher rate of recurrence with primary repair. Therefore, the use of a mesh should always be considered.³⁷ Primary risk factors for postoperative complications



Author: Dr. Matteo Zanchetta

Figure 3 Factors contributing to umbilical hernia, skin necrosis and rupture, and small bowel evisceration (Author: Dr Matteo Zanchetta).

and recurrences are obesity, liver disease and ascites, diabetes, primary suture repair without mesh and smoking.^{3 42} Factors such as obesity, which is often associated with diabetes, as well as persistent ascites in advanced cirrhosis, contribute to an elevated intra-abdominal pressure that keeps suboptimal tissues under tension. Therefore, strict and proper control of ascites in cirrhotic patients, as well as general attention to weight management and smoking cessation, are crucial to reduce the rate of recurrence and complications after UH repair.^{20 30}

Learning points

- ▶ Spontaneous hernia sac rupture is a sporadic occurrence, and accompanying small bowel evisceration is even rarer, particularly in patients without cirrhosis.
- ▶ Spontaneous bowel evisceration through umbilical hernia (UH) is commonly associated with chronic increase in intra-abdominal pressure, such as refractory ascites in cirrhotic patients, obesity and pregnancy.
- ▶ Each UH patient necessitates tailored management, and apart from asymptomatic UHs with no aesthetic compromise, this abdominal wall defect should always be repaired surgically, possibly electively to decrease the risk of complications associated with emergency repair.
- ▶ Surgery is always necessary for small bowel evisceration through UH; and in emergency settings, a direct repair of the defect is advocated.
- ▶ Mesh placement should always be considered if comorbidities do not contraindicate it.

Contributors The following authors were responsible for drafting of the text, sourcing and editing of clinical images, investigation results, drawing original diagrams and algorithms, and critical revision for important intellectual content: NG: planned and wrote the original draft. MZ: planned and wrote the original draft, reviewed the manuscript and corresponding author. GI: planned, revised the manuscript and supervised. DI: planned, revised the manuscript. The following authors gave final approval of the manuscript: NG, MZ, GI, DI.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Consent obtained directly from patient(s).

Provenance and peer review Not commissioned; externally peer reviewed.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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