BMJ Case Reports

Reminder of important clinical lesson

Incarcerated umbilical hernia leading to small bowel ischemia

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Summary

A 59-year-old male with history of hepatitis C, refractory ascites requiring multiple paracentesis and transjugular intrahepatic portosystemic shunt placement presented to the emergency department with 2 days of abdominal pain. Physical examination revealed blood pressure of 104/66 and pulse of 94. The abdomen was remarkable for distention and a tender incarcerated umbilical hernia. The skin overlying the hernia was pale with areas of necrosis. The patient immediately underwent laparotomy which was successful.

BACKGROUND

The clinical examination and abdominal x-rays were indicative of bowel obstruction secondary to an incarcerated umbilical hernia. The incarcerated hernia caused intestinal ischemia. If not recognised early the patient would have become septic with peritonitis from bowel infarction.

The abdominal radiographs confirmed the clinical picture and led to rapid surgical intervention with a positive outcome.

CASE PRESENTATION

A 59-year-old male with history of hepatitis C, refractory ascites requiring multiple paracentesis and transjugular intrahepatic portosystemic shunt placement presented to the emergency department with 2 days of abdominal pain. He denied vomiting and had a bowel movement 24 h prior to his arrival.

INVESTIGATIONS

Laboratory values revealed lactate level of 3.3 mmol/l (ref. range 0.5–1.5) and normal white blood cell count. Abdominal radiographs demonstrated proximal small bowel dilatation and air fluid levels (figure 1).

TREATMENT

The patient immediately underwent laparotomy with resection of 28 cm of ischemic small bowel and repair of the hernia with mesh. The patient did well and was discharged on postoperative day 6.

OUTCOME AND FOLLOW-UP

The patient is doing well and awaits hepatic transplant.

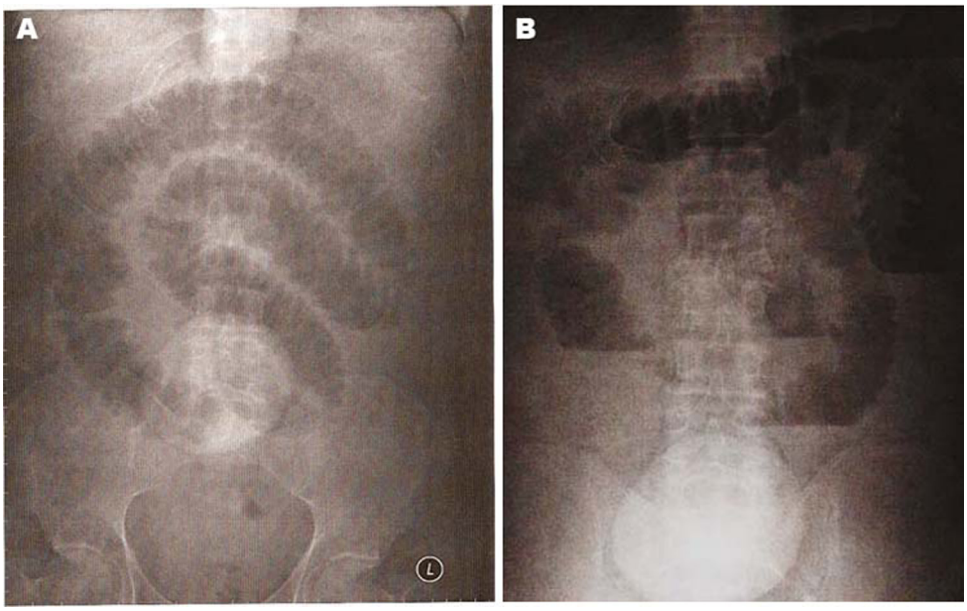

Figure 1 (A) Abdominal x-ray of patient with incarcerated umbilical hernia. (B) Abdominal x-rays revealing proximal small bowel dilatation and air fluid levels.

DISCUSSION

Common causes of mechanical small bowel obstruction include adhesions and incarcerated hernias.[1 2] Umbilical hernias are more common in infants than adults. They occur when there is a defect in the abdominal wall. Normally during development the anterior abdominal wall forms from multiple components. They come together at the umbilical ring. When the umbilical ring does not close completely, an infant may be born with an umbilical hernia. They frequently close before the age of four. Consequently most paediatric surgeons do not perform a herniorrhaphy before that age.[3] If this closure does not occur spontaneously, adults may have a persisting small fascial defect. Many adults have asymptomatic umbilical hernias. However, if there is an increase in intra abdominal pressure, a loop of bowel covered by peritoneum and skin may protrude through the defect. This may occur transiently after coughing or straining at stool. If there is continued increased intra abdominal pressure secondary to a large collection of ascitic fluid from malignancy or liver failure, the loop of bowel covered by peritoneum may not slide back into the peritoneal cavity spontaneously or with slight pressure.

If a loop of bowel is caught in a fascial defect, the venous return decreases leading to swelling of the surrounding bowel wall. That oedema from poor venous return leads to decreased arterial flow to the loop of bowel, thus causing ischemia. Abdominal obstruction secondary to the incarcerated hernia may also result. If the incarceration continues, the bowel loop will become more swollen. The patient then experiences pain, abdominal distention, nausea and or vomiting and does not pass flatus. The bowel loops that are distended become tender and the overlapping skin may appear dusky or necrotic from poor arterial flow. Once there is deficient arterial flow to the loop of incarcerated bowel, the bowel may strangulate, become necrotic and perforate. Necrosis of the strangulated loop may occur within 5 h of incarceration. With obstruction of the bowel loop, bacteria rapidly multiply in the lumen of the intestine. Perforation and gangrene of the intestinal loop can lead rapidly to peritonitis and septic shock. If the bowel obstruction and ischemia of the intestine is not recognised early by history, examination and radiographs revealing proximal bowel dilatation and air fluid levels, the patient's condition will rapidly deteriorate. Without surgical intervention, the mortality will be high particularly in older patients with multiple comorbidities. Without release of the incarceration, with continued poor arterial flow to the bowel loop, the patient will become toxic from the gangrenous segment of intestine. This will be manifested by fever, hypotension, tachycardia and change in mental status. The patient, at that point, needs fluid resuscitation, intravenous broad spectrum antibiotics and immediate surgical intervention. Laparotomy may reveal a large segment of black bowel that has infarcted from ischemia. This requires resection to prevent further deterioration. Laboratory tests may reveal sepsis with leukocytosis with bandemia, metabolic acidosis with compensatory respiratory alkalosis, elevated lactate level and hyperglycaemia if the patient is diabetic. If the patient is septic, they will require fluid boluses with normal saline or ringers lactate, central intravenous access, electrocardiographic monitoring, in dwelling urinary catheter, and careful monitoring of input and output. As the bowel becomes ischemic and oedematous, there will be third spacing of fluid, and the intravascular volume will need replacement. With septic shock, the patient may require pressor agents in addition to intravenous fluid resuscitation to maintain adequate blood pressure. Hourly urine output should be monitored to gauge perfusion of essential organs. Adequate oxygen saturation of the patient also must be ensured.

Incarcerated hernias may occur in the inguinal area, periumbiical area, or with incisional hernias. If the defect is relatively small, there is a greater chance of incarceration of bowel. Patients may also present with partial small bowel obstruction from adhesions which may be managed with nasogastric suction, intravenous fluids and careful observation. If the clinical picture indicates total obstruction, however, immediate surgical intervention is necessary.[1 2 4–7]

Learning points

- Incarcerated abdominal hernias present with gastrointestinal tract obstruction or peritonitis.
- Incarcerated external hernias are the second most common aetiology of small bowel obstruction.
- Incarcerated external hernias may cause intestinal ischemia leading to bowel infarction. Early recognition is imperative to prevent poor outcomes.

Competing interests None.

Patient consent Obtained.

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