Learning from errors

Gossypiboma: complete transmural migration of retained surgical sponge causing small bowel obstruction

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Summary

The authors report a case of recurrent intestinal obstruction due to complete transmural migration of a retained surgical sponge into the small intestine. A 41-year-old woman presented with recurrent episodes of intestinal obstruction following a previous laparotomy in a private hospital for some gynaecologic procedures. Relaparotomy revealed a mass within the ileum which was resected and, when dissected out, was found to be a completely intraluminal retained surgical sponge. Although rare in daily practice, a retained intraperitoneal foreign body should be remotely considered in patients who present with new abdominal symptoms complex following a history of previous laparotomy.

BACKGROUND

Retained surgical sponge is one of the rare but unfortunate complications of abdominal surgery. The real incidence of this phenomenon may not be known because of the high likelihood of under-reporting occasioned by its medicolegal implications and consequences.¹ Factors such as long complex procedures, emergency off-season operations and inexperienced surgical and nursing staff are theoretically possible predisposing factors to retained intrabdominal sponges. The likelihood increases when surgery is performed by untrained personnel in a less-than-ideal operating room environment.

Among the list of various foreign bodies retained in the abdominal cavity, the surgical sponge is the most frequently encountered object. This may be because of its frequent usage, small pliable size and amorphous structure.² Other foreign bodies have been reported retained in the abdomen including metallic and non-metallic surgical instruments. Retained sponge may result in abdominal pain, abdominal mass, peritonitis, adhesions, fistulas, intrabdominal abscesses, erosion into the gut and extrusion or intraluminal bowel obstruction.^{3 4}

Transmural migration of the retained surgical sponge is rare, although migration into the urinary bladder following inguinal herniorrhaphy has been reported.⁵ We hereby report a case of retained surgical sponge causing recurrent subacute intestinal obstruction due to its spontaneous complete transmural migration into small bowel.

CASE PRESENTATION

A 41-year-old woman was admitted via the surgery out patient department (SOPD) of the University College Hospital (UCH) Ibadan in November 2009. She presented with recurrent colicky abdominal pain, recurrent bouts of bilious postprandial vomiting and weight loss of 9 months duration. The abdominal pain was described as insidious in onset, periumbilical and radiating to the right lower abdomen. She had been managed twice conservatively at the accidents and emergency department of UCH since the onset of the symptoms before referral to our surgical unit. Earlier on in March 2009, she had presented in a private hospital with ectopic pregnancy for which she had laparotomy for right salpingectomy. At the same surgery, she was

Figure 1 (A,B) Ultrasonographic pictures of intrabdominal mass and viscera.

Figure 2 Plain abdominal radiograph showing proximal gaseous bowel distention and distal relative gaslessness.

also offered two other procedures, myomectomy for incidental uterine fibroids and an appendicectomy. There was no history of neuropsychiatric illness.

On physical examination, she was moderately dehydrated. There was a midline infraumbilical scar and a mobile non-tender 10 cm by 6 cm mass in the right iliac fossa (RIF). The liver was not palpably enlarged and there was no demonstrable ascites. A diagnosis of a complex adhesive mass to rule out a caecal pole tumour was made.

INVESTIGATIONS

Ultrasonographic scanning of the abdomen revealed widespread dilated bowel loops with an area of narrowing, non-visible peristaltic activity in the RIF, and an ill-defined RIF mass measuring 15 cm × 9 cm and extending to the right adnexum (figure 1A,B). The liver, spleen, pancreatic bed, para-aortic area and both kidneys appeared within normal limits. Plain abdominal radiograph showed relative gaslessness in the RIF and pelvis with centrally located dilated bowel loops likely of small bowel origin (figure 2). Barium enema examination demonstrated free flow of barium from the rectum to the caecal pole with reflux into the terminal ileum. Large bowel loops showed normal mucosal pattern with no areas of narrowing, out-pouching or filling defects. However, a persistent extrinsic impression on the proximal third of the rectum was noted (figure 3A,B).

TREATMENT

She underwent exploratory laparotomy. At laparotomy, via a midline incision, a sausage-shaped mass was found within the ileum, 20 cm from the ileocaecal junction and was adherent to the dome of the bladder and the right pelvic sidewall. Proximal and distal to the mass, the ileum was dilated and collapsed respectively. There were multiple enlarged mesenteric lymph nodes, no ascites and the liver surface was normal. There was no other visible gross pathology in the intestine or the peritoneal cavity. The ileal mass was dissected off the adjoining structures and about 50 cm of the ileum incorporating the mass with adequate clear proximal and distal margins was resected. Primary anastomosis of the ileal segments was achieved. Ex-vivo examination of the resected specimen by an incision on the antimesenteric border revealed a wholly intraluminal and intact surgical mop approximately 30 cm × 30 cm in size (figures 4 and 5). The pathologists reported receiving an ileal segment with a dilated proximal segment that contained a face towel which was soaked in faeces. Histopathological examination of the resected bowel revealed focal mucosal ulceration and erosion with transmural infiltration by neutrophil polymorphs, lymphocytes and plasma cells.

OUTCOME AND FOLLOW-UP

The patient did well after laparotomy and she was discharged home on the 6th postoperative day. She has been

Figure 3 (A,B) Barium enema showing barium up to the caecum and an extrinsic impression on the proximal rectum.

Figure 4 (A,B) Split ileum showing retained completely intramural surgical sponge.

on follow-up at the SOPD and has remained clinically stable hitherto.

DISCUSSION

The term gossypiboma was coined from two different languages in two different continents. 'Gossypium' in Latin means cotton, while 'boma' in Swahili means place of concealment.³ Thus, gossypiboma is defined as a cotton foreign body accidentally retained inside a patient at surgery. A common cause of small bowel obstruction in adults is postoperative adhesions and this was an earlier consideration in this patient. A retained foreign body does not rank high on the list of differential diagnosis as a cause of intestinal obstruction even in the circumstance of a previous laparotomy. Spontaneous transmural migration of a retained laparotomy towel with consequent intraluminal obstruction will be considered far fetched because of its rarity. In this patient with a history of previous lower abdominal cum pelvic surgery, a surgical mop was used perhaps to pack off loops of small bowel and this sponge subsequently 'disappeared' and was forgotten.

A retained intrabdominal foreign body may present with abdominal symptoms acutely or delayed depending on its size, type, location and the nature of the body's reaction to the assault. One of two foreign body reactions can occur. One is an aseptic fibrinous response that creates adhesions and encapsulation with a resulting foreign body granuloma. The other is an exudative reaction that leads

to abscess formation with or without secondary bacterial infection.⁶ A very rare sequelae is the erosion of the sponge into the intestine where it may lie partially or wholly within the bowel. Depending on the part of the bowel it erodes into, it may or may not be passed spontaneously per rectum.

Silva *et al* reported a case of complete migration of retained surgical sponge into the ileum without any sign of open intestinal wall.⁷ In our case, a similar pathologic process might have been involved. The longer the retention time of foreign bodies within the abdomen, the higher the risk of fistulisation internally or externally. Intraperitoneal surgical sponge evokes an inflammatory response that is surrounded by the omentum and nearby organs. The foreign body exerts pressure which forces an opening into a hollow organ, usually the bowel, with a fold of the sponge penetrating into the lumen of the bowel. The peristaltic activity of the bowel helps in propulsion of the foreign body which usually cannot pass through the ileocaecal valve and thereby cause intestinal obstruction. The obstruction at this point is relative because liquid intestinal contents can still diffuse through the abdominal gauze and this serves to decompress the bowel.

Traditionally, the ideal surgical mop is impregnated with radio-opaque markers which enhance recognition by plain radiography when retention is suspected postoperatively. However, over time, diagnosis may be impossible with plain radiographs when the radio-opaque markers

Figure 5 Full size of retained intramural surgical sponge.

have disintegrated or fragmented.⁸ Non radio-opaque impregnated towels are used as surgical sponge in many operating rooms in poor resource countries. The surgical mop retained in our patient was a face towel which lacked a radio-opaque marker, thus, diagnosis was impossible with plain radiograph. This case presents an example of some of the complications that can arise from use of improvised surgical facilities in the place of conventional and acceptable surgical materials. Moreover in this patient, ultrasonographic scan of the abdomen was suggestive but inconclusive perhaps because the retained surgical mop was completely in the lumen of the small bowel by the time she presented. Ultrasound scan and CT scan appearances of retained surgical sponge may be widely diverse. The classical spongiform pattern seen on CT scan is rare but when present suggests a retained surgical sponge granuloma.⁹

In 2003, Gawande *et al* described the most common risk factors associated with retained foreign body as emergency procedures, unplanned changes in operative routines and higher body mass index of patients.¹⁰ Our patient presented at the first hospital with a gynaecologic emergency requiring immediate laparotomy. At the same laparotomy she had two other procedures which were unplanned for. These two other surgical procedures have their own routines as stand-alone surgical procedures, and these routines could have been breached.

Concerted efforts by all theatre users are needed to prevent this unfortunate complication of abdominal exploration. The time honoured simple task of sponge count is subject to human error and exploration of the surgical site at the conclusion of surgery may not be fool-proof either. The traditional surgical mop is impregnated with radio-

opaque markers that make radiological screening easy when necessary. Though this is practiced in many standard centres, and is highly encouraged, it may still not be conclusive as the risk of false positive count is not completely eliminated. New trends to prevent retention of surgical materials involve multi-level checks, automated counting systems using bar-codes and counters, radiofrequency beacon and reader with base station and the radiofrequency identification system which focus mainly on detection.¹¹

Learning points

- ▶ The case of a patient with intramural migration of retained surgical sponge causing intestinal obstruction has been presented.
- ▶ Although, still a rare entity in daily practice, a retained intraperitoneal foreign body should be considered in patients that present with new abdominal symptoms complex following a history of previous laparotomy.
- ▶ The consequences of such iatrogenic complication, both to the patient and the surgeon alike are unimaginable and can be enormous.
- ▶ All preventive measures should be taken to avoid this inexcusable phenomenon.

Competing interests None.

Patient consent Obtained.

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