CASE REPORT

Beware of gossypibomas

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SUMMARY

Gossypiboma, a retained surgical sponge, is a rare complication that can occur after any type of surgery. Despite the precautions, the retention of foreign bodies still occurs. We describe a case of a 33-year-old woman with epigastric pain. She was initially diagnosed with acute cholangitis with choledocholithiasis. Although common bile duct stone was successfully removed endoscopically, her epigastric pain did not completely subside. She had undergone an emergency caesarean section at a suburban maternity hospital 6 weeks prior to the referral. A contrast-enhanced CT revealed an encapsulated mass showing a spongiform pattern with fluids and gas bubbles inside, and gossypiboma was suspected. A retained surgical sponge without radiopaque markers was removed surgically. Except for a wound infection, the postoperative course was uneventful. Gossypiboma should always be considered in the differential diagnosis of indeterminate abdominal pain, infection or a mass in patients with a prior surgical history.

BACKGROUND

A retained surgical sponge is a rare condition that can occur after any type of surgery. It is also called a gossypiboma, which is derived from the Latin word *gossypium*, meaning cotton.¹ Gossypiboma has not been reported frequently, possibly due to its rarity and medicolegal aspects. The first case was reported by Wilson in 1884.² We report a case of symptomatic gossypiboma complicated with cholangitis and choledocholithiasis.

CASE PRESENTATION

A 33-year-old woman was referred to our hospital with epigastric pain. She had undergone an emergency caesarean section at a suburban maternity hospital due to pregnancy-induced hypertension 6 weeks prior to the referral. She had no other surgical history. Since the caesarean section, she had been suffering from prolonged epigastric pain. At the time of referral, she was afebrile with a soft and flat abdomen. Her blood test revealed marked elevation of serum hepatobiliary enzymes. Abdominal ultrasound showed slight dilation of intrahepatic bile duct and slightly enlarged gallbladder containing biliary sludge with multiple stones. Endoscopic retrograde cholangiopancreatography was performed and she was diagnosed with acute cholangitis with choledocholithiasis. The common bile duct stone was successfully removed endoscopically. However, her epigastric pain did not completely subside. She gradually became febrile, and a tender mass emerged in her left upper quadrant. At that time, her serum hepatobiliary enzymes had

returned to the normal range, and it was apparent that she was suffering from other disease as well as biliary calculus.

INVESTIGATIONS

Although her white cell count was 7400/dL (neutrophils 77%), C reactive protein was elevated to 9.8 mg/L. A radiograph of the abdomen was unremarkable. Abdominal ultrasound at that time showed a hyperechoic mass with strong posterior acoustic shadowing. A contrast-enhanced CT revealed an encapsulated mass showing a spongiform pattern with fluids and gas bubbles inside (figure 1A). A fabric pattern was more visible on lung window setting (figure 1B). Gossypiboma, a retained surgical sponge, was suspected.

Figure 1 (A) Contrast-enhanced CT image showing an encapsulated mass with a spongiform pattern containing fluids and gas bubbles (arrow). (B) A fabric pattern was more visible on lung window setting (mean, -550 Housefield units (HU); width, 1600).

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Figure 2 (A) Intraoperative photograph showing the retained surgical sponge being removed. (B) Surgical sponge was folded into 16 cm×7 cm×6 cm and covered with pus.

TREATMENT

Laparotomy was scheduled under general anaesthesia. Through the midline incision, a 10-cm mass, adherent to the greater omentum, ileum and descending colon, was detected. The capsule of the mass was dissected, and a malodorous surgical sponge was removed (figure 2A,B). The sponge did not contain radiopaque markers. A fistula had formed with the descending colon. The adhesion between the abscess wall and the small bowel was also too dense to separate. Partial resection of the descending colon and small intestine was performed. Cholecystectomy was also performed to prevent recurrent cholangitis and cholecystitis.

OUTCOME AND FOLLOW-UP

Except for a wound infection, the postoperative course was uneventful. The patient was discharged on postoperative day 12. No residual abscess has been detected and the patient remains symptom-free at 8 months follow-up.

DISCUSSION

The retention of foreign bodies is generally considered to be avoidable. However, despite the precautions, it still occurs. When it occurs, it may become a *gossip* item, and may attract wide press coverage.³ According to recent studies, surgical items are retained at an estimated rate of 1 in 5 000 to 1 in 18 000 operations,^{3 4} although these may be underestimates. Current standards for the prevention of retained surgical items rely on manual counting. To err is human, however, and counts are not always sufficient. Another current method is radiographic screening. In the present case, the count was correct during the emergency caesarean section. Usage of sponges with radiopaque markers and radiographic screening might have prevented the occurrence or have led to earlier diagnosis of the gossypiboma. On the other hand, the intraoperative radiographs may be of suboptimal quality, and they are not a perfect tool for prevention. In a large study, intraoperative imaging failed to detect 33% of retained items.⁴ Newer technologies to reduce or prevent the occurrence of gossypiboma, such as radiofrequency detection systems and bar-coded sponges,⁵ are being developed, but the effectiveness of these tools requires further study. The operative findings and the clinical course of the present case was reported to the maternity hospital, to encourage the prevention of a recurrence.

Gossypibomas may present at any time, from immediately postoperatively to several decades after initial surgery. They

often remain asymptomatic or cause non-specific symptoms. However, a retained sponge can lead to bowel perforation, obstruction, fistula formation, sepsis or even death.³ There are two types of foreign body reactions induced by a retained surgical sponge.^{2 6} The first reaction, usually occurring early in the postoperative course, is an exudative response that leads to acute abscess formation. The second reaction is an aseptic fibrous response that involves slow formation of adhesions such as encapsulation and granulomas. Surgical resection is required in many cases, although spontaneous migration into the hollow viscus resulting in spontaneous evacuation of the foreign body has also been described.⁷ With the absence of radiopaque markers, a retained surgical sponge is difficult to detect with abdominal radiograph. A spongiform pattern with gas bubbles is one of the characteristic signs of gossypiboma on CT,¹ but a high index of suspicion is most important for diagnosis. In the present case, the presence of choledocholithiasis and cholangitis may have masked the presence of gossypiboma, resulting in delayed diagnosis and formation of a fistula with the descending colon. Gossypiboma should always be considered in the differential diagnosis of indeterminate abdominal pain, infection or a mass in patients with a prior surgical history.

Learning points

- ▶ Despite the precautions, the retention of foreign bodies still occurs at an estimated rate of 1 in 5 000 to 1 in 18 000 operations.
- ▶ A spongiform pattern with gas bubbles is one of the characteristic signs of gossypiboma on CT, but a high index of suspicion is most important for diagnosis.
- ▶ Gossypiboma should always be considered in the differential diagnosis of indeterminate abdominal pain, infection or a mass in patients with a prior surgical history.

Contributors TK, YN and NT looked after the patient and wrote the manuscript. TN interpreted CT, and also wrote the manuscript.

Competing interests None.

Patient consent Obtained.

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