



GOSSYPIBOMA – NIGHTMARE OF A SURGEON

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ABSTRACT Gossypiboma, the retained surgical sponge, is a rare yet serious postoperative complication with potentially severe clinical and medico legal consequences. We report the case of a 46-year-old male presenting with abdominal pain and fever seven months after undergoing open cholecystectomy. Imaging revealed a heterodense lesion with air foci and surgical clips suggestive of gossypiboma, complicated by fistulous communication between the ileum and transverse colon. Surgical management included resection of the affected bowel segment, gossypiboma removal, and jejunostomy. This case highlights the diagnostic challenges and importance of preventive strategies, including meticulous surgical counts and adoption of technology to enhance patient safety.

KEYWORDS : Gossypiboma, retained surgical sponge, surgical complication, fistula, open cholecystectomy, jejunostomy, postoperative abdominal mass, CT diagnosis, foreign body, surgical safety.

INTRODUCTION

Gossypiboma is a term used to describe a mass forming around a surgical sponge that is left inside accidentally during a surgical procedure. (1) The term derived from the amalgamation of “gossypium,” signifying cotton, and “boma,” denoting a concealed or hiding place, represents a significant clinical phenomenon(2). It can be asymptomatic or present as obstruction, peritonitis, adhesions, fistula, abscess formations, erosion into the gastrointestinal tract to present as intestinal obstruction or even pass via the rectum. (3) It is a very rare event, which can also be due to underreporting of these events as they can lead to medico legal issues and critical press coverage. (4) It is most commonly found in abdomen but may also be present pelvis, thorax, retro peritoneum, neck and even in cranium. They are most commonly seen after caesarean section and open cholecystectomy.

CASE REPORT

A 46-year-old male presented with a 7-month history of dull, gradually progressive right flank abdominal pain, which worsened with food intake and improved with medications. The pain was non-radiating and associated with intermittent fever. He had undergone an open cholecystectomy for symptomatic gallstones at a local hospital 7 months prior. He reported no vomiting, bleeding per rectum, melena, or altered bowel habits. He was tolerating a full diet, passing flatus and stools normally, and had no comorbidities or history of smoking or alcohol use. On examination, the patient was alert and oriented. Vitals were notable for a temperature of 99.8°F, pulse of 130/min, respiratory rate of 22/min, and blood pressure of 148/85 mmHg. BMI was 21.55 Kg/m². Abdominal examination revealed a right sub costal scar, mild tenderness in the right upper quadrant, and a vague, firm, ill-defined mass in the same region. Bowel sounds were present, and the rest of the systemic examination was unremarkable.

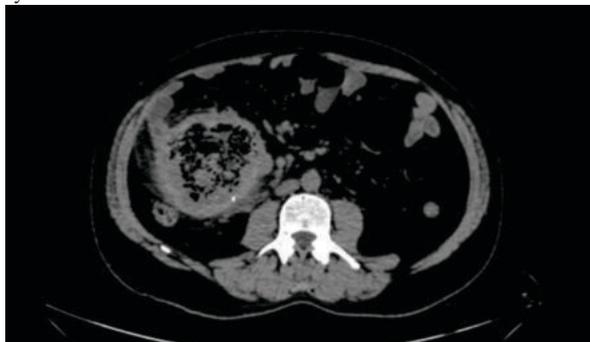


Fig 1 – CT abdomen showing heterodense lesion with internal air foci.

Ultrasound revealed a right renal cortical cyst with peripheral calcification, and the gallbladder was not visualized. CT abdomen showed a heterodense lesion with internal air foci, surgical clips, and a heterogeneously enhancing wall, suggestive of a gossypiboma. The lesion measured 8 × 9 × 9 cm and was located in the right lumbar region, abutting the transverse colon and ileal loops with signs of fistulous communication.

The patient underwent emergency exploratory laparotomy. Intraoperatively, multiple interbowel adhesions were noted. The bowel was free for 150 cm from the duodenojejunal flexure and 130 cm from the ileocecal junction. A 20 cm segment of unhealthy bowel encasing the abscess cavity containing gossypiboma was resected. A fistula between the ileum and transverse colon was identified. The gossypiboma was removed, adhesiolysis performed, and a side-to-side jejuno-jejunostomy and a proximal double-barrel jejunostomy were created. The rest of the abdominal viscera appeared normal.

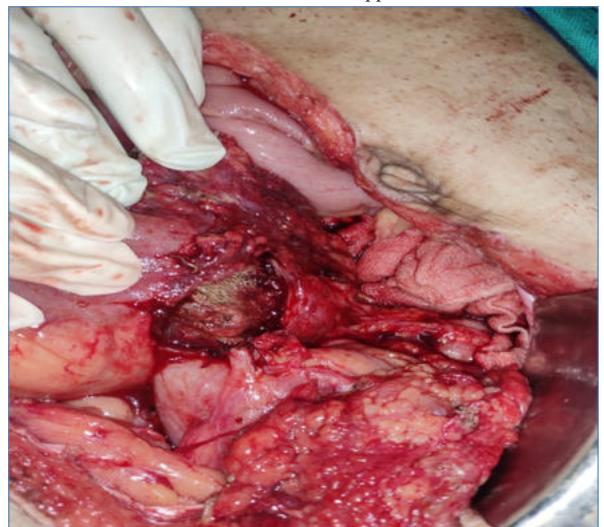


Fig 2 – Abscess cavity containing gossypiboma. (Black arrow)

Postoperatively, the patient was extubated and vitally stable. The jejunostomy became functional on postoperative day (POD) 2 with high output, prompting initiation of total parenteral nutrition and a high-protein, low-residue diet. He developed a surgical site infection (SSI) with Southampton grade 3a, managed with daily dressings. On

POD 9, he developed a burst abdomen secondary to SSI, for which a laparostoma bag was applied and daily wound washes were performed. Hyperbaric oxygen therapy (HBOT) was administered in 10 cycles, resulting in healthy granulation tissue. On POD 10 and 11, the patient had febrile episodes. An ultrasound showed a pelvic collection (6.5 × 9 × 3.5 cm), which was aspirated. A distal loopogram showed no leaks, allowing distal enteroclysis to begin. The patient was discharged on POD 30 in a stable condition, tolerating oral intake, with a functioning stoma and healthy wound granulation. He was advised on stoma care, enteroclysis continuation, and scheduled for stoma reversal after six weeks.

DISCUSSION

Gossypiboma, or a retained surgical sponge, is a rare but serious postoperative complication that can have devastating consequences for both patients and surgeons. Although uncommon—occurring in approximately 1.32 per 10,000 surgeries and in 0.3% to 1% of abdominal operations—it carries significant physical and psychological implications. (5) The likelihood of gossypiboma increases in emergency surgeries, especially those conducted at night. Contributing risk factors include heavy intraoperative bleeding, rushed procedures, staff changes during surgery, prolonged operation time, surgeon fatigue, and patients with a high BMI. The first documented case was by Wilson in 1884. Abdominal procedures, particularly open cholecystectomies, caesarean sections, and hysterectomies, are most commonly associated with this condition. The abdomen is the most frequent site (56%), followed by the thoracic cavity (11%) and pelvis (8%), with the ileum being the most commonly involved intestinal segment.

Two primary types of pathological reactions occur in response to a retained sponge: an exudative reaction, leading to abscesses due to infection, and a fibrotic reaction, resulting in mass formation and adhesions. (6) In rare instances, the sponge can erode into the bowel, leading to fistulas, perforation, or transmural migration. The body's immune response depends on the sponge's antigenic nature—low-antigenicity materials induce a mild, chronic response with encapsulation and calcification, while high-antigenicity sponges cause a more aggressive exudative reaction with abscess formation and early symptom onset. Transmural migration may result in bowel obstruction, particularly at the ileocecal junction, and in rare cases, the sponge may pass out via the rectum. This migration typically follows four stages: initial encapsulation, secondary infection with tissue breakdown, mass formation with bowel invasion, and scar remodeling at the site of entry.

The clinical presentation varies widely. Some patients remain asymptomatic for years, while others may develop non-specific symptoms such as abdominal pain, distension, fever, or signs of sepsis from abscesses or bowel perforation. Diagnosing gossypiboma can be challenging, as it often mimics tumors or other intra-abdominal conditions.

Radiological imaging plays a critical role in detection. Plain X-rays may detect radiopaque markers but can yield false negatives. Ultrasound usually shows well-defined hypoechoic or cystic lesions with internal echogenic strands. MRI may show hypointense rims on T1-weighted images and hyperintense signals on T2-weighted ones, though radiopaque materials may not be easily visualized. CECT is the most reliable diagnostic tool, revealing a characteristic mottled or spongiform appearance, often with internal air bubbles and hyperdense areas. (7) If imaging is inconclusive, and clinical suspicion remains, diagnostic laparoscopy or laparotomy should be considered. Surgical removal is the only definitive treatment. In complex cases with bowel involvement or dense adhesions, segmental resection and reanastomosis may be required. Occasionally, intraluminal sponges may be removed via endoscopy.

Prevention is critical. Strict adherence to counting protocols before, during, and after surgery—as recommended by the Association of Perioperative Registered Nurses (AORN) and the American College of Surgeons—is essential. (8) All surgical sponges should be radiopaque for intraoperative detection. However, despite correct counts, up to 88% of gossypiboma cases have still occurred, underscoring the need for technological solutions like barcode tracking, RFID-tagged sponges, and intraoperative radiography before closure. These innovations reduce human error and enhance patient safety. Clear communication among surgical, anesthetic, and nursing teams is vital. Retained sponges are considered “never events” by

major health organizations, reflecting systemic shortcomings rather than individual errors. (9) Preventing gossypiboma requires a standardized, team-based approach to maintain surgical safety and quality care.

CONCLUSION

Despite significant advancements in surgical techniques and healthcare systems, gossypiboma remains an unfortunate and preventable iatrogenic complication encountered in current surgical practice. A single retained surgical sponge can undermine the success of an otherwise well-executed procedure, carrying serious implications for both patient outcomes and the surgeon's professional reputation. The diagnosis is often delayed, not only due to the non-specific clinical presentation but also because of the reluctance to consider it, given the medicolegal and ethical concerns involved. However, acknowledging the possibility of human error is essential, and a high index of suspicion should prompt timely radiological investigations—such as abdominal X-rays, ultrasound, and contrast-enhanced CT scans—particularly in patients with a prior surgical history. The clinical presentation can vary from being completely asymptomatic to severe cases involving intestinal obstruction or perforation peritonitis. Rarely, intraluminal migration of gossypiboma with fistula formation may occur without symptoms. Surgical removal remains the definitive treatment, and any delay can significantly worsen the prognosis. Thus, prevention is paramount. Adherence to meticulous surgical sponge counts, adoption of technologies like barcoding, radiofrequency detection systems, and intraoperative imaging when needed, can greatly minimize risk. Continuous education, awareness, and system-based checks are key to enhancing surgical safety and preventing such avoidable errors.

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