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WisdomGale

CASE REPORT

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Transmigration of surgical gauze: A rare case of intraluminal gossypiboma

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ABSTRACT

Gossypiboma, a rare but significant complication of retained surgical gauze, can lead to considerable morbidity and presents diagnostic challenges. We describe the case of a 40-year-old female who presented with a 3-day history of generalized abdominal pain, accompanied by bilious vomiting and bowel obstruction. Her medical history included an open cholecystectomy 7 months earlier. An abdominal X-ray suggested a linear radio-opaque foreign body, which was confirmed as gossypiboma by contrast-enhanced CT. During an exploratory laparotomy, a 30 × 30 cm surgical gauze was found within the ileum and successfully removed. This case highlights the ongoing risk of retained surgical items, even with modern advancements in surgical practice and technology. It underscores the importance of meticulous surgical technique, including accurate surgical counts, and adherence to standardized protocols. This case serves as a critical reminder for all surgical teams to maintain heightened vigilance throughout all phases of surgery.

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Introduction

Gossypiboma, derived from "gossypium" (cotton) and "oma" (tumor), refers to a retained surgical gauze left inside a patient's body post-surgery. It is also known as textiloma, cottonoid, cottonballoma, muslinoma, and gauzeoma [1]. Despite its significant medicolegal implications, the true incidence of gossypiboma is unknown due to underreporting. Patients can present with symptoms ranging from acute to delayed, with reports of latency of up to 29 years [2].

Retained surgical gauzes occur at a frequency of approximately one per 100-5,000 operations [3]. This possibility should be included in the differential diagnosis for any postoperative patient presenting with pain, infection, or a palpable mass. Pathologically, a retained gauze can lead to two types of foreign body reactions: the formation of a foreign body granuloma due to an aseptic fibrinous response or an exudative reaction resulting in abscess formation. Migration of a retained gauze into the bowel is rare compared to abscess formation and occurs due to inflammation in the intestinal wall progressing to necrosis. The intestinal loop typically closes after the gauze has completely migrated [1,4–7].

Materials and Methods

The diagnostic workup included

X-ray Abdomen (Erect): Identified radio-opaque foreign body.

Contrast-Enhanced CT (CECT) Abdomen: Performed using a 256-slice CT scanner with oral mannitol and IV iodinated contrast to delineate the extent and nature of the foreign body and assess for complications such as bowel obstruction.

Patient presentation

A 40-year-old female presented with:

Abdominal pain for 3 days: insidious onset, gradually progressive, non-migratory, non-radiating, generalized, with no aggravating factors. Bilious vomiting for 8 days. Non-passage of stool and flatus for 2 days. Similar complaints of non-passage of stool and flatus earlier. History of open cholecystectomy 7 months ago and caesarean section 17 years ago.

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Imaging findings

X-ray abdomen (Erect) Revealed a linear radio-opaque foreign body in the lower abdomen, raising suspicion of a retained surgical gauze (Fig. 1).

CECT Abdomen (Fig. 2 A and B) Elongated spongiform intraluminal area of mixed density with curvilinear metallic density (HU +1394) interspersed within mottled air foci, noted in ileal loops showing smooth enhancing thickening for 24 cm length. Surrounding inter-bowel free fluid with minimal mesenteric fat stranding.

Proximal small bowel loops (jejunal and ileal) dilated with a maximum caliber of ~3.5 cm with few air-fluid levels and no obvious wall thickening indicating small bowel obstruction Stomach and duodenum decompressed with NG tube *in situ*. Distally, terminal ileal loops, IC junction, and large bowel collapsed.Minimal free fluid in the pelvis.

Surgical findings

Exploratory laparotomy revealed minimal free fluid in the peritoneal cavity. A 20 cm length of ileum 50 cm proximal to the ileocolic junction contained an intraluminal foreign body. (Fig. 3). Proximal ileum and jejunum were dilated and healthy. Distal bowel loops were collapsed. A foreign body of size 30 × 30 cm was removed (Fig. 4).

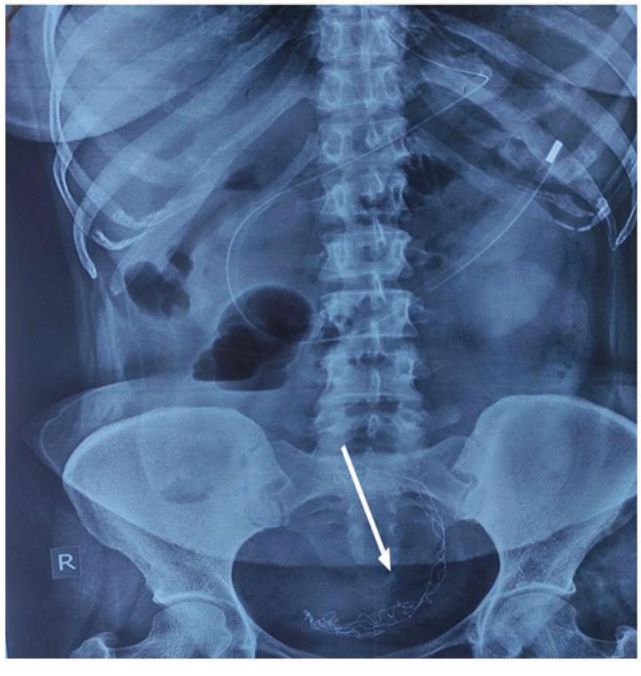

Figure 1. Abdominal radiograph in a patient with clinical suspicion of intestinal obstruction demonstrates a linear radio-opaque foreign body (white arrow) in the lower abdomen, prompting concern for a retained surgical gauze.

Analysis

The patient's symptoms were consistent with small bowel obstruction, which imaging confirmed was due to an intraluminal foreign body. The radiologic findings were characteristic of gossypiboma, with mixed density and spongiform appearance. Surgical intervention confirmed the diagnosis, and the removal of the foreign body alleviated the obstruction.

Discussion

Gossypiboma is a retained surgical gauze post-operatively, leading to severe complications. A systematic literature review of 254 case studies of gossypiboma, identified through MEDLINE of the National Library of Medicine and the Cochrane Library, revealed that gossypibomas most commonly occur in the abdomen (56%), pelvis (18%), and thorax (11%). The longest reported cases of gossypiboma were found in the thorax (43 and 44 years). There is no clear incidence reported in the literature. An estimated incidence is 1/1,000–1/1,0000 surgeries. The mean time to diagnosis of gossypiboma was 6.9 years, and 38% of cases were identified within the first year of surgery [8,9].

The transmigration of such gauzes into the bowel lumen is a rare but significant complication [1,4–6]. The process typically begins with an inflammatory reaction in response to the foreign body. This inflammation can progress to necrosis of the bowel wall, creating a pathway for the gauze to migrate into the lumen [3].

Inflammation and Necrosis:

- **Initial response:** The body initially reacts to the retained gauze by mounting an inflammatory response. This response can be sterile or exudative, leading to granuloma formation or abscess, respectively.
- **Necrotic pathway:** Persistent inflammation can lead to ischemia and necrosis of the bowel wall. The compromised tissue integrity eventually allows the gauze to erode into the lumen [3,5–7].

Transmural migration

- **Migration process:** Once the gauze has eroded through the bowel wall, it continues to migrate intraluminally, propelled by peristalsis. This process may take weeks to months, depending on the extent of the inflammatory response and the gauze's size and position.

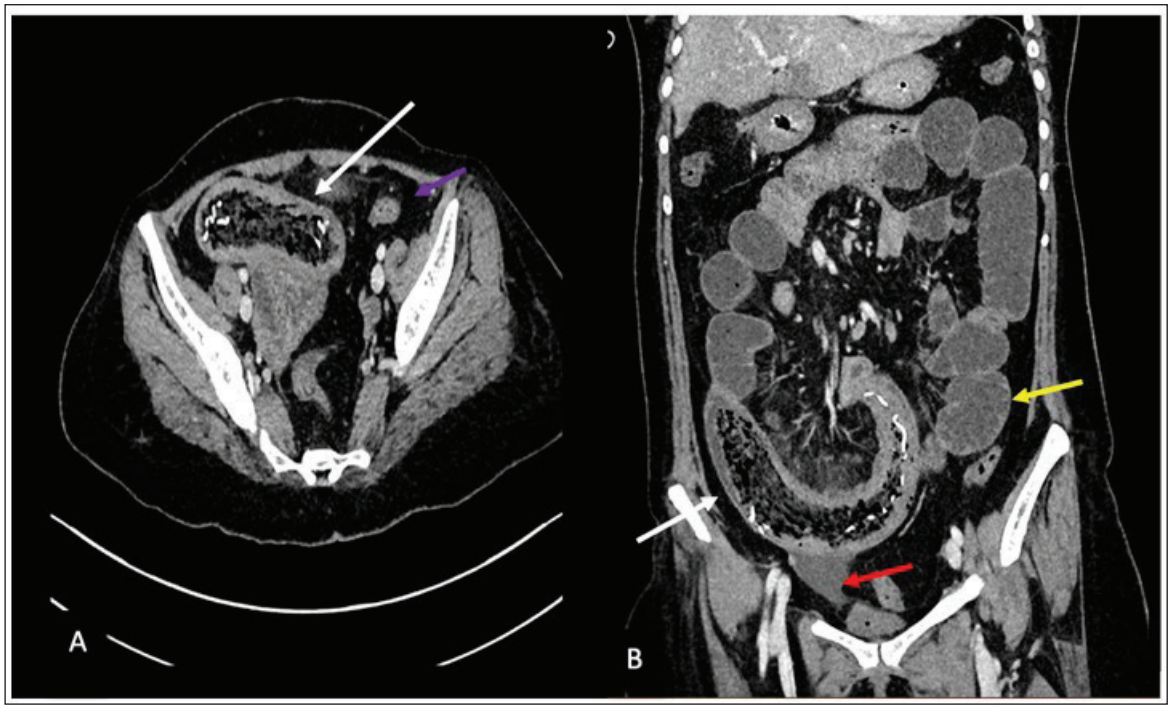

Figure 2. (A) Axial and (B) Coronal CECT abdomen shows an elongated spongiform intraluminal area of mixed density with curvilinear metallic density (HU +1394) interspersed within mottled air foci in ileal loops (white arrow). Surrounding inter-bowel free fluid with minimal mesenteric fat stranding (red arrow). Proximal small bowel loops (jejunal and ileal) dilated with a maximum caliber of ~3.5 cm with few air-fluid levels (yellow arrow). Distally, terminal ileal loops, Ileocecal junction, and large bowel collapsed (purple arrow).

- **Bowel loop closure:** After the gauze has completely migrated into the bowel lumen, the intestinal wall typically closes, leaving the gauze within the bowel [5–7].

Clinical presentation

Patients with intraluminal transmigration of a retained surgical gauze may present with non-specific and varied symptoms, often complicating the diagnosis [10]. In this case report, the patient presented with generalized abdominal pain, bilious vomiting, and signs of bowel obstruction.

Symptoms and timing

- **Acute versus. delayed presentation:** Symptoms can present acutely or years after the initial surgery. Acute symptoms often include severe abdominal pain and signs of peritonitis, while chronic cases may present with intermittent bowel obstruction, weight loss, and recurrent infections.
- **Non-specific symptoms:** The non-specific nature of symptoms such as nausea, vomiting, and abdominal distension can mislead clinicians and delay the correct diagnosis [3,7].

Diagnostic Imaging

Radiologic imaging plays a crucial role in diagnosing gossypiboma, particularly in cases of transmigration. The imaging findings in this case were pivotal in identifying the retained surgical gauze.

X-Ray and CT findings

- **X-Ray:** A plain abdominal X-ray can sometimes reveal a radio-opaque foreign body or dilated bowel loops [5,7]. In this case, the X-ray showed a linear radio-opaque structure, raising suspicion of retained surgical gauze.
- **CECT:** CT imaging is more definitive, offering detailed visualization of the foreign body and associated complications. The CECT findings in this case, such as the spongiform appearance with mixed densities and surrounding inflammation, were characteristic of gossypiboma. The presence of air-fluid levels and dilated bowel loops confirmed bowel obstruction [3,5–6,10,11].

Surgical Intervention and Outcomes

Exploratory laparotomy is often necessary to remove the intraluminal foreign body and alleviate the obstruction [3,10]. In this case, the surgery

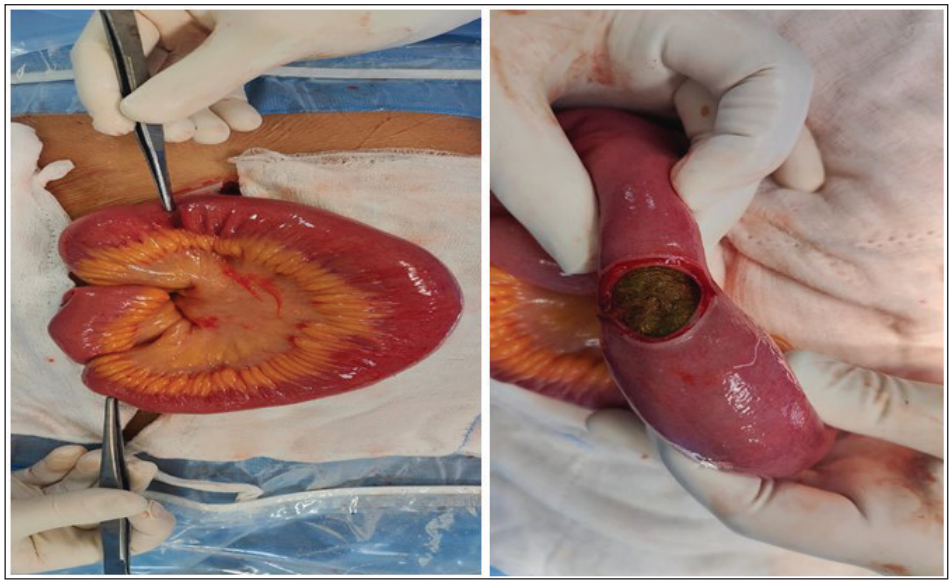

Figure 3. (A) and (B) Intraoperative laparotomy and gauze extraction.

Figure 4. The whole surgical gauze after removal.

confirmed the diagnosis and successfully removed the retained gauze.

Prevention and Recommendations

Forgetting surgical exchanges inside the body during surgery is a preventable medical error that should be avoided at all costs, even in very difficult cases with a high level of tension in the operating room. They can be prevented by implementing a rigorous patient safety protocol and the use of technology to track surgical instruments and materials.

Prevention strategies

- **Surgical counts:** Meticulous counting of surgical gauze before and after surgery is fundamental. Any discrepancy should be resolved before the surgical closure.
- **Radiopaque markers:** The use of radiopaque markers in surgical gauze can facilitate their detection on postoperative radiographs [1,2,10].

Conclusion

Intraluminal transmigration of a retained surgical gauze is a rare but serious complication that requires a high index of suspicion, especially in patients with a history of abdominal surgery presenting with bowel obstruction. Early diagnosis through imaging and prompt surgical intervention are essential for favorable outcomes. Continuous emphasis on prevention strategies, including rigorous surgical counts and the use of advanced tracking technologies, is crucial in mitigating the risk of gossypiboma and enhancing patient safety in surgical practices.

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