Spontaneous intraluminal migration of gossypiboma with intestinal obstruction

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Abstract

Introduction
Gossypiboma or textiloma is a mass of cotton matrix retained in a body cavity following a surgical procedure. Gossypiboma are more frequently diagnosed in the abdominal cavity following emergency surgeries especially involving gynaecological and obstetric procedures and damage control surgeries. It may cause abscess, fistulae, or obstruction but the spontaneous intraluminal migration of retained surgical sponge into the lumen of GIT is considered a rare phenomenon. This paper reports a case of spontaneous intraluminal migration of gossypiboma with intestinal obstruction.

Case Report
We are reporting a rare case of spontaneous migration of surgical sponge into the lumen of ileum in a 40-year-old female, following cholecystectomy done two years ago. The patient presented with sub-acute intestinal obstruction due to gossypiboma.

Conclusion
Aseptic gossypiboma are not frequently diagnosed in routine surgical practice, still it should be considered in previously operated patients, who present with nonspecific abdominal complaints with or without intestinal obstruction. The best approach, to avoid this unfortunate complication, is prevention.

Introduction
Gossypiboma or textiloma is described as a mass of cotton matrix retained in a body cavity following a surgical procedure. It was first reported by Wilson in 1884 and has a reported incidence of 1 in 5500 operations. Gossypibomas are more frequently diagnosed in the abdominal cavity but they can also be found in the chest, CNS, breast and the extremities. They are more frequently seen in gynaecological and obstetric surgeries, prolonged surgical procedures with unexpected change in direction or magnitude of the procedure, in emergency surgeries (especially damage control surgeries) and obese patients. Other reported risk factors for retained foreign bodies (RFB) are involvement of more than one surgical team, change in nursing staff during procedure, and volume of blood loss. It has been found that there is a nine-fold increase in risk with emergency surgery and 88% of cases of retained surgical foreign bodies occur despite ‘correct’ surgical counts.

Although a broad spectrum of GI complications like obstruction or fistulae have been reported, still spontaneous intraluminal migration of a retained surgical sponge into the lumen of GIT is considered rare. We are reporting such a rare case of spontaneous migration of a surgical sponge into the lumen of the ileum, in which the cause or site of migration could not be established.

Case Report
A 40-year-old female, presented with a five-day history of recurrent episodes of colicky abdominal pain, bilious vomiting, abdominal fullness, and constipation. On general examination she had mild dehydration but there was no evidence of jaundice. Her abdominal examination revealed a right subcostal linear incision scar with mildly distended abdomen and mild tenderness, mainly in the right iliac fossa. There was neither any palpable lump or organomegaly nor any evidence of incisional hernia. Bowel sounds were increased and there was no evidence of free fluid in the abdomen. Examination of other systems was essentially non-contributory. She was subsequently investigated. Her haematological and biochemical parameters were within normal limits.

Her abdominal X-ray revealed only a few dilated small bowel loops. Abdominal sonography findings were also unremarkable except dilated proximal small bowel loops.

In the past, the patient underwent an open cholecystectomy two years back but no detail of the surgery was available. The patient had a past history of colicky pain off and on for the last nine months which used to get relieved by itself or on taking medication. The frequency of such attacks of pain increased in the last two months and they were usually associated with vomiting. There was no history of tuberculosis, diabetes, or jaundice.

The patient was initially managed conservatively with nasogastric suction and I.V. fluids. The patient responded well but when feeding was restarted, she again developed symptoms of intestinal obstruction. Further evaluation by double contrast CT scan revealed a distal ileal obstruction with a possibility of stricture (Figure 1). So exploratory laparotomy was done, which showed dilated jejunum and proximal ileum. There was no evidence of any bowel...
pathology or stricture. A bogey intraluminal mass was felt in the distal ileum around two feet proximal to the ileo-cecal junction, which could not be pushed distally. So enterotomy was done and we were surprised to find a coiled up surgical sponge in the lumen as the cause of obstruction. This was removed and enterotomy was closed after ensuring the patency of the proximal as well as the distal bowel (Figures 2 and 3). We explored the proximal bowel and the duodenum to find out the possible entry point for this sponge. But there were no adhesions, fistula, or even a scar over the bowel wall, which could point out the probable site of intrusion for this surgical sponge. The postoperative period was uneventful with bowel movements returning after 48 hours and the patient was discharged on the eighth day after surgery.

Discussion
Pathologically, a retained cotton matrix, despite being clinically inert, may lead to two types of foreign body reactions: (i) an exudative response followed by bacterial contamination leading to abscess formation with sepsis or fistulation, (ii) an aseptic fibrous response with adhesions and encapsulation leading to a granuloma or pseudotumour formation.常用的 retained foreign body is expelled from the body through a wound or sinus tract and uncommonly through a fistula into the intestine, vagina, urinary bladder, or rectum. Rarely an undetected cotton matrix may undergo disruption, calcification, and even complete resorption.

Transvisceral migration of such foreign bodies has been suggested to occur due to the pressure of fibrotic mass leading to pressure necrosis of the intestinal wall followed by invasion into the lumen. Finally in the remodelling stage, a fibrotic scar or a fistula is formed at the site of migration.

Gossypiboma may present from any time soon after surgery to several decades after the surgery. In the early postoperative period, a retained sponge usually presents with continuous discharge from the operative wound and delayed healing. Additionally, it may present with septic complications like abscess, fistula, and even septic shock. Aseptic granuloma or pseudotumour present clinically with non-specific abdominal pain.

Figure 1: CT scan showing dilated small bowel with narrowing in the distal ileum.

Figure 2: Enterotomy site with extruding surgical sponge.

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complaints with or without intestinal obstruction, so diagnosis may be delayed. Abdominal radiography has a limited value, still it can suggest the diagnosis when there is a soft tissue mass with a characteristic 'whorl' like pattern or 'mottled' small air densities or peripheral calcification. If the retained sponge contains a radiological marker, a plain X-ray is very helpful. Sonography of the abdomen is usually the first investigation in patients presenting with chronic insidious abdominal pain. In experienced hands, it may be useful as it can reveal a well-defined mass containing 'wavy' internal echoes with a hypoechogenic ring and strong posterior acoustic shadow.

CT scan is the investigation of choice for detection of gossypiboma as well as its possible complications. Specific findings on CT scan, are low density heterogeneous mass with an external high density wall that is further highlighted on contrast enhanced imaging and has a 'spongy form pattern' containing air bubbles. Our patient presented with insidious abdominal pain and sub-acute obstruction after two years of previous surgery. All the imaging studies could not diagnose gossypiboma, and they could only suggest the small intestinal obstruction. Surprisingly, during exploration, infection or adhesions associated with foreign body reaction were not found and there was no fistula or scar in the bowel wall which could suggest the site of migration of the surgical sponge. Even the retrieved sponge was not surrounded or infiltrated by the fibrous tissue.

Gossypiboma is the most common surgically retained foreign body and its true incidence is not known as they are rarely documented or reported due to fear of medico-legal implications for the surgeon, responsible for this error. The reported incidence is 0.3–1 per thousand abdominal operations and 1 per 5500 in all surgeries. According to Joint Commission, RSIs (retained surgical items) were the most frequently reported sentinel event in 2012. Our patient presented with insidious abdominal pain and sub-acute obstruction after two years of previous surgery. All the imaging studies could not diagnose gossypiboma, and they could only suggest the small intestinal obstruction. Surprisingly, during exploration, infection or adhesions associated with foreign body reaction were not found and there was no fistula or scar in the bowel wall which could suggest the site of migration of the surgical sponge. Even the retrieved sponge was not surrounded or infiltrated by the fibrous tissue.

Medico-legal consequences of gossypiboma are significant both for patients and surgeons. The occurrence of an RSI such as surgical sponge is considered a classic example of medical negligence in which an expert is not required to establish the standard of care. It can also rely on a res ipsa loquitur (i.e., the thing speaks for itself) or common knowledge approach. No rate of retained foreign bodies can be accepted, whatever the environment and conditions of work and in some jurisdictions, the surgeon is held primarily responsible for the errors of the other members of the surgical team. Recent reports suggest that the 'captain of the ship' doctrine is no longer assumed to be true and members of the entire surgical team can be held liable for RSIs. As RSI occurrence is avoidable and frequently injurious, it may lead to malpractice claims which carry profound negative professional and medico-legal implications for surgeons, hospitals, and health care system. Such claims, besides jeopardizing the reputation of the surgeon among professional colleagues and the public, lead to high financial expenditure in terms of legal defence as well as compensation. According to Gawande et al., in USA, malpractice claims regarding RSB resulted in an average of $52,581 in such expenses. Moreover, in some countries, medical negligence cases can be commenced as criminal proceedings, as cases of manslaughter or personal injury. In India, doctors can be prosecuted for medical negligence or malpractice under Consumer Protection Act, 1986, for 'deficiency in service'. At the same time, under the Indian Penal Code, a doctor can be prosecuted under section 304A (rash or negligent act that does not amount to culpable homicide), which is punishable with imprisonment of up to two years or Sections 336, 337, and 338 (rash or negligent act endangering human life).

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Once gossypiboma is diagnosed, it should be removed. Surgery is the mainstay for removal although some reports have suggested alternative methods like percutaneous extraction also. Prevention is the best course to avoid such a dreaded event which has medico-legal implications, and it should be explicitly emphasized. However, no method is known to completely eliminate this unfortunate occurrence. Recommendations to prevent RIS or RSFB have been promulgated by various organizations like the Joint Commission, American College of Surgeons, National Association of Theater Nurses (NATN), Association of peri-Operative Registered Nurses (ARON), Operating Room Nurses Association of Canada, and Australian College of Operating Room Nurses (ACORN). Most of these recommendations are intended as guidelines for all surgical staff and are adaptable to different operative settings where operative or other invasive procedures are done. The main thrust of these recommendations is on keeping a thorough count of all the surgical items (sponge, sharps, and instruments) preoperatively to establish the baseline, followed by intraoperative repeated counting before closure of a cavity, before wound closure, and at the time of skin closure as well as postoperatively before permanent relief of scrub nurse. If a count discrepancy is found, thorough exploration of the entire surgical field along with intraoperative X-ray to check for retained foreign bodies should be immediately done. According to these recommendations, all sponges used during surgical procedures should have radio opaque indicators making them X-ray detectable. Newer techniques and technologies like electronically tagged bar coded sponges with use of a bar code scanner for sponge counting and use of a specialized radiofrequency system using radio labelled surgical sponges may help in preventing this dreaded complication. In addition, creation of a distraction free and focused work environment along with enhanced communication between the members of the surgical team is strongly recommended. In accordance with Residency Review Commission’s mandate, surgical residency in many hospitals in western countries have included a specific training module on medical ethics and patient safety as an effective prevention strategy for such misadventures.

Conclusion
Aseptic gossypiboma is not frequently diagnosed in routine surgical practice; still it should be considered in previously operated patients who present with nonspecific abdominal complaints with or without intestinal obstruction. The best approach to avoid this unfortunate complication is prevention.

Consent
Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Abbreviations list
RFB, retained foreign bodies.

References
Case report


