

## Case Report

# Transmurally migrated gossypiboma rarely posing as surgical site infection: a case report and review of literature

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## ABSTRACT

The term gossypiboma is used to describe a retained surgical sponge or gauge after surgery. The clinical features range from being asymptomatic to frank bowel obstruction, perforation and peritonitis. Radiological modalities also do not provide a definite diagnosis. We report a case of a 30-year-old lady who presented to the emergency room with recurrent surgical site infection. She had a history of caesarean section 5 months ago. Following the caesarean section, she developed superficial wound dehiscence which was re-sutured. At the present facility, the lady underwent Computed tomography (CT) scan and was suspected to have a foreign body around the gut. She was planned for an exploratory laparotomy. Upon laparotomy, a large thick-walled ileal loop with some unusual intra luminal mass was found. Dense adhesions were present between the ileal loop and sigmoid colon. Adhesiolysis led to an iatrogenic sigmoid colon perforation, around 2 cm length. On incision over the ileal loop, surgical sponge was retrieved. Ileal loop was resected along with perforated site with end-to-end ileo-ileal anastomosis was done. Primary repair of sigmoid colon perforation was done. Patient was stable in postoperative period. Although rare, gossypiboma should be kept in mind as a differential diagnosis in postoperative cases presenting with recurrent surgical site infection.

**Keywords:** Transmural gossypiboma, Surgical site infection

## INTRODUCTION

Gossypiboma is a technical term for a condition where a surgical sponge or a laparotomy pad is involuntarily left in the body after a surgical procedure. The term is derived from a combination of latin words “Gossypium” (cotton) and Swahili word “boma” (place of concealment).<sup>1</sup> Gossypiboma was first described by Wilson in 1881. Many surgical materials may be forgotten in the body, such as artery forceps, pieces of broken instruments, irrigation sets, scissors, needles but textile materials are the most commonly found.<sup>2</sup>

Although a rare surgical complication but it can cause significant morbidity and mortality. Incidence of gossypiboma is found to be around one in 3000 to 5000

surgeries.<sup>3</sup> Gossypiboma has been reported after intrathoracic, orthopedic, intraspinal and neurological operations as well as breast surgery, but the most commonly in intra-abdominal or pelvic surgery. Kaiser et al found 55% retained sponges after abdominal surgery and 16% after vaginal delivery.<sup>4</sup>

Foreign body cases are highly under reported because of medicolegal consequences. Such foreign bodies can often mimic tumors or abscesses clinically or radiologically. The clinical presentation is highly varied. Gossypiboma may remain asymptomatic for a long time with only vague symptoms. Patients present with abdominal mass or subacute intestinal obstruction but rarely may also present with fistula, perforation, or even extrusion per anus. Timing of presentation may vary from as early as 4-6

weeks after surgery to as long as decades after the primary operation.<sup>5</sup>

These foreign bodies may cause adhesions, can act as foci for sepsis, or can be encapsulated. Further, these can erode the bowel and cause intestinal perforation, intra-abdominal sepsis, or an enterocutaneous fistula formation. In rare scenarios, the foreign body after eroding the bowel loop can migrate transminally and may or may not present as intestinal obstruction depending upon the site. A total of 94 cases have been reported for transluminal migration of foreign bodies in the English literature, the first being described in 1963. Females were obviously more affected than males; 73 females and 21 males were reported. Obstetrics and gynecology surgeries are found to be the leading causative surgeries for gossypibomas.<sup>6</sup>

Imaging modalities including plain radiography, ultrasonography (USG), computed tomography (CT), and magnetic resonance imaging (MRI) may help to have exact diagnosis but definite diagnosis is always intra operative [6]. Surgery is the recommended treatment option in these cases. Gossypiboma that presents late may pose a serious diagnostic dilemma. They account for 50% of malpractice claims for retained foreign bodies.<sup>7,8</sup> Gossypiboma should be considered as a diagnosis in patients with intra-abdominal mass and even recurrent surgical site infections with previous history of surgery. We present a case of transmurally migrated gossypiboma presenting as vague abdominal pain and discomfort gradually causing surgical site infection which is a very rare presentation.

## CASE REPORT

A 30-year-old P313A1 lady presented to our emergency room with the complaints of recurrent surgical site infection in a caesarean section scar. She had a history of emergency lower segment caesarean section done due to breech presentation in advanced labor 5 months back. A proper discharge summary or detailed intra-operative notes were not found with the patient. She had an uneventful immediate postoperative period and was discharged after 3 days of admission. No further investigations were carried out at that stage. The patient started developing pain abdomen 2 months post-surgery and noticed some foul-smelling discharge from the site of incision. She underwent regular wound dressing but the surgical site infection (SSI) persisted despite of regular dressing and antibiotics and she developed a wound dehiscence. As a result, she had to undergo the re-suturing of the wound after 4 months of the primary surgery. Even after re-suturing, the pain persisted, and she developed small sinuses with foul smelling serous fluid coming out of it continuously. The patient underwent an ultrasound before consulting the present facility. This USG revealed a 20 cc loculated hypo-echoic collection involving the anterior abdominal wall at the scar site (Figure 1).

Patient was referred to our centre on the grounds of diagnostic dilemma. On admission, she had complains of

on and off fever and fatigue. She did not give any history of altered bladder or bowel habits and was passing flatus and feces normally. General condition of the patient was stable. On clinical examination, two tiny defects on the stitch line were found with purulent discharge. Per rectal examination was within normal limits. Pus from stitch line was sent for culture and sensitivity which showed growth of *Escherichia coli* and *Klebsiella*. A contrast-enhanced magnetic resonance imaging (CEMRI) scan of the abdomen and pelvis was conducted to ascertain the exact nature of the collection. The MRI revealed thick-walled peripherally enhancing heterogeneous collection in the lower abdomen and pelvis (mottled) with suspicious connection with the sigmoid colon, suspecting a gossypiboma. Due to unavailability of any documentation from the previous health facilities, the intraoperative conditions in which the sponge could be left behind could not be ascertained. However, no history of life saving procedure or multiple blood transfusions was elicited.



**Figure 1: USG showing hypoechoic collection at the scar site.**



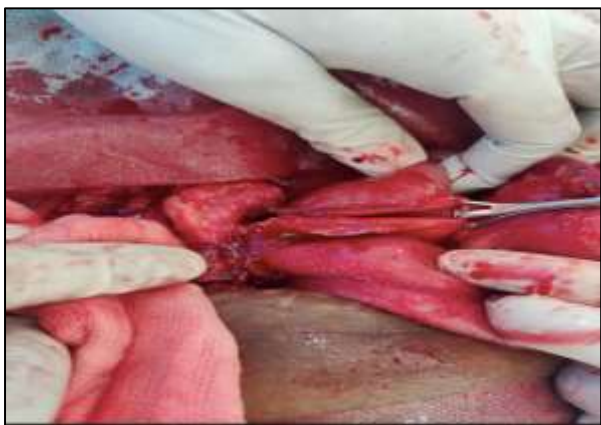
**Figure 2: Intraoperative picture showing the retained sponge coming out of the ileal loop.**

The patient was taken up for exploratory laparotomy. On exploration, dense adhesions were present between multiple areas of small and large bowel with the rectus sheath. Small perforations occurred in the process of adhesiolysis. A large thick wall ileal loop with some unusual intra luminal mass was felt approximately 2.5 feet

from ileocaecal junction. On incision of resected ileal loop abdominal sponge soaked in fecal matter was retrieved. (Figure 2). Ileal segment was resected along with perforated site. (Figure 3). End-to-end ileo-ileal anastomosis was done (Figure 4). Primary repair of sigmoid colon perforation was done. Patient was stable in postoperative period.



**Figure 3: The ileal segment with multiple perforations which was resected and anastomosed.**



**Figure 4: Site of ileoileal anastomosis.**

## DISCUSSION

Gossypiboma leads to significant embarrassment and humiliation and is a common cause of litigations, thereby making it an important topic of discussion. The medicolegal aspect associated with it makes it highly under reported.

Gossypiboma is most commonly seen in cases of emergency surgeries.<sup>9</sup> In obstetric practice they are usually common in cases involving massive obstetric hemorrhage example: placenta accrete syndromes. The massive hemorrhage often leads to very high stress levels amongst the operating teams. Control of hemorrhage becomes the sole aim and quick peripartum hysterectomies are often performed. Under such high-pressure circumstances there are high chances of a “forgotten sponge” especially when extra sponges are being added in the middle of the surgery. Such complication also occurs when there is sudden

change of surgical procedure example: conversions from endoscopic to open procedures. Surgeries involving long time durations example: oncological surgeries frequently involve change in shifts of scrub nursing staffs and this may lead to faulty sponge counts between the two teams. Apart from all these, disorganization, hurried sponge counts, unstable patient, inexperienced staff, inadequate staff numbers, and obesity can lead to inadvertent gossypiboma.<sup>10,11</sup>

Gossypibomas cause two types of responses in the body: exudative and aseptic fibrous. Exudative response leads to suppuration, abscess formation which may later lead to formation of fistulas. Aseptic fibrous reaction can lead to adhesions, encapsulation, and eventually, granuloma formation. The longer the retention time, the higher the risk of secondary infections and fistula formation.<sup>12</sup>

The presenting symptom varies widely depending upon the location, size of retained foreign body, and the type of reaction that occurred. Early presenting complaint is usually pain with or without feeling of lump or it may even remain asymptomatic for a long time with only vague symptoms. Patients may also present with abdominal mass or subacute intestinal obstruction. Foreign bodies may occur into the ileum without any apparent opening of point of entry in the intestinal wall. They are pushed by the peristalsis and are usually get stuck at the ileocaecal valve causing complete intestinal obstruction and malabsorption at this level. However, if they can negotiate through this valve, they are easily passed out through the anus during defecation.<sup>13-15</sup> Fistula can form between the mass and the bowel lumen or urinary bladder. Cases of gastro-cutaneous fistula have also been reported. The mechanism of transmural migration and fistula formation is by inflammation and pressure on the bowel, resulting in necrosis of the bowel wall at that point and subsequent sealing off of the defect.<sup>2</sup>

The present patient also had transmural migration of gossypiboma but had no specific symptoms except recurrent surgical site infection and because of this nonspecific presentation it made the diagnosis dilemmatic. One has to have a high index of suspicion to be able to pick up this less common but highly significant postoperative complication.

Although radiological investigations are quite sensitive in picking up gossypiboma, they are limited in scope if the sponge does not have any radiological marker on itself. Radiographs are the most commonly used method to detect retained sponges. The diagnosis can be made easily on conventional radiography only under the condition if the sponge contains a radiopaque marker. On the contrary, radiolucent material sponges can cause diagnostic problems. Radiographs can also suggest the diagnosis when a characteristic whorl like pattern is present.<sup>16</sup>

Radiographs of the abdomen can reveal a fine opacity and some mottled small air densities superimposed on this



area. In cases complicated by fistula formation, administration of radiographic contrast material may help delineate the anatomy and extent of the fistula. Ultrasound is useful in the diagnosis of abdominal retained gauze. Ultrasound usually features as a well-delineated mass containing a wavy internal echo with a hypoechoic ring.<sup>17</sup> Contrast enhanced CT scan is the investigation of choice for detecting gossypibomas and associated complications. A gossypiboma is believed to be specifically indicated by a CT finding of a low-density heterogeneous mass with an external high-density wall that is further highlighted on contrast-enhanced imaging and that has a spongiform pattern containing air bubbles. The spongiform pattern with presence of gas bubbles is the most characteristic CT sign for gossypiboma.<sup>18,19</sup>

Treatment of gossypiboma is the surgical removal usually through the previous surgery site, but endoscopic or laparoscopic approaches may be attempted whenever feasible. However, sometimes surgical intervention is not required as spontaneous migration leads to expulsion of the foreign material through the anus, cervix and vagina, even through the urethra.<sup>2</sup> Due to chronicity of this disease and intense foreign body reaction, dense adhesion usually forms around the gossypiboma which may lead to a difficult retrieval. In the present case, the gossypiboma had migrated transmurally and formed a chronic ileal lump for which resection of the affected segment and anastomosis was performed.

Prevention of gossypiboma is very important and can be done by simply keeping a thorough pack count during the course of the operation. Surgeons should perform a brief but thorough routine postoperative wound and cavity exploration prior to wound closure. It is now strictly recommended that only sponges with radio-opaque markers be used. Newer technologies are also being developed to decrease the incidence of gossypiboma. One example is a barcode system, which accounts for sponges based on affixed, two-dimensional matrix labels.<sup>20</sup> Two additional technologies embed electronic chips within sponges: the Electronic article surveillance (EAS) system, which uses magneto-mechanical technology and Radio-frequency identification (RFID) microchips, which receive signals sent by a wand-like handheld scanner and respond with unique identification code.<sup>21,22</sup>

## CONCLUSION

Gossypiboma is equally troublesome for the patients and a surgeon. It is a rare, avoidable, but serious, postoperative complication. Being asymptomatic initially with nonspecific radiological findings, delay in diagnosis is very common.

Gossypiboma should best be avoided. The surgeons should comply with the recommendations on the prevention of retained foreign bodies including use of radio-opaque markers and routine pre- and postoperative sponge count. In case of any count discrepancy, an intraoperative X-ray

may be performed. A baseline count of all the surgical stuff preoperatively and counterchecking should be recorded in the operative note. A special care should be taken in emergency surgeries, cases with excessive hemorrhage, or when laparoscopy is converted to laparotomy or there is change in surgical team or scrub nurses. A detailed operative note should be attached to the discharge summary of the patient for follow-up. Gossypiboma should always be included in the differential diagnosis of soft-tissue masses or localized abdominal pains as well as enterocutaneous fistulas in patients with a history of a prior surgery.

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