

# A Case Series on Gossypiboma - Varied Clinical Presentations and Their Management

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## ABSTRACT

Retained surgical sponges in the peritoneal cavities are an infrequent operative/surgical complication and an error which is avoidable. The unfortunate situation of forgotten or missed foreign bodies after any surgical procedure may lead to medico legal problems. Though gossypiboma can be found at any operative site but intraperitoneal cavity is the most frequent site reported in literature. Over a period of three years, June 2009-2012, we conducted retrospective analysis of case summaries of eight patients who underwent re-laparotomy for retained surgical sponge at our institute. Pre operative diagnosis was made in 7 out of 8 patients, 5 of whom underwent re-laparotomy and one had sponge removed through the caesarean incision, while in another it was removed per-vaginum through the open vault (post hysterectomy). In one patient, gossypiboma was an incidental finding on laparotomy done for adnexal mass. There was no mortality in any of the cases.

**Keywords:** Retained sponge, Surgical sponge, Foreign body

## CASE REPORTS

### CASE 1

A 42-year-old multiparous lady, two weeks post total abdominal hysterectomy for menorrhagia at a private hospital presented to us with abdominal distension, fever and pain abdomen. Imaging with ultrasonography and Computerized Tomographic scan for clinical suspicion of gossypiboma revealed minimal free fluid in peritoneal cavity and features of sub-acute intestinal obstruction and no retained sponge. She improved on conservative management. Two months later, she again presented with faeculent discharge through vaginal vault. On examination, surgical sponge along with faecal matter was seen coming out through the vault which was removed vaginally. Laparotomy, peritoneal lavage and colostomy was done for management of colonic fistula. She was discharged in a satisfactory condition with a functioning colostomy.

### CASE 2

A 56-year-old patient, presented with pain abdomen one month after staging laparotomy, total abdominal hysterectomy and bilateral salpingo-oophorectomy for malignant ovarian tumour. General measures did not relieve her pain. CECT for suspicion of lump in right hypochondrium led to diagnosis of gossypiboma. Relaparotomy and removal of surgical sponge was done uneventfully. Intraoperative, gut was found adherent to sponge in sub hepatic region, without any fistulous tract in gut loops. Most probably the sponge was left inadvertently when it was used to pack the gut away from operating field. The patient had an uneventful recovery.

### CASE 3

Three weeks post emergency LSCS for fetal distress, came in emergency ward with complaint of fever, pus discharge from abdominal wound for three days. On exploring the wound, tail end of surgical sponge was seen coming out at one end. It was removed under local anaesthesia, through the abdominal incision without any complications. She was discharged in good condition allowing for secondary healing of wound.

### CASE 4

Gossypiboma was incidental finding in a patient who underwent exploratory laparotomy for presumptive diagnosis of ovarian

tumour. Retrospectively, she had undergone emergency LSCS one year back. The sponge was found lying adherent to uterovesical fold of peritoneum and was removed uneventfully, which might have been kept on the incision line for haemostasis during LSCS. Preoperative imaging was not suggestive of foreign body as it was a well circumscribed mixed echogenicity mass lying anterior to uterus and clinically it was suspected to be adnexal mass with torsion as there was history of pain lower abdomen.

### CASE 5

Three months post staging laparotomy for mucinous cyst adenocarcinoma, the 50-year-old patient was referred to us with a diagnosis of recurrence of tumour. CECT done for mass abdomen had revealed a tumour mass in pelvis extending up to umbilicus and there was suspicion of gossypiboma. Relaparotomy was done for debulking and sponge removal. Tumour mass was removed and the surgical sponge was found on exploration lying deep in pelvis, buried beneath the adherent gut loops. Gut loops were intact forming the wall of cavity containing the sponge, without any fistulous communication.

### CASE 6

Two weeks post emergency peripartum hysterectomy came to us with features of puerperal sepsis. Ultrasound done in our department was suggestive of foreign body in the peritoneal cavity in right flank as a mixed echogenicity mass in a whorled manner, which was confirmed by CECT. The patient was started on antibiotics for control of sepsis. Relaparotomy was done after gut preparation, which revealed inflamed gut loops adherent to the sponge in the abdomen. It was removed without any complications. She had an uneventful recovery.

### CASE 7

An 8 months post emergency peripartum hysterectomy for scar rupture presented with lump abdomen and fever. She had presented 3 weeks postoperative with same symptoms to another institute, where she was treated for sepsis and improved on conservative management as USG was unremarkable. CECT for persistent pain, fever and mass abdomen revealed a gossypiboma. Relaparotomy was done for its retrieval. It was found burying into lumen of intestinal loop. Fistulous tract was excised and end-to-end anastomosis was

CASE	SURGERY	PRESENTING SYMPTOMS	DURATION SINCE SURGERY	DIAGNOSTIC MODALITY	GOSSYPIBOMA RETRIEVAL	GUT PERFORATION
1	TAH (DUB)	Fever, pain, Distension	2 month	CECT(not detected)	Spontaneous Through vaginal vault	Yes
2	TAH BSO (Ca. ovary)	Pain, mass abdomen	1 month	CECT	Relaparotomy	No
3	Em. LSCS	Abdominal Wound discharge	3 weeks	Clinical	Abdominal wound	No
4	Em. LSCS	Adnexal mass	1 year	USG	Relaparotomy (for adnexal mass)	No
5	TAH BSO (Ca. ovary)	Mass abdomen	3 month	CECT	Relaparotomy	No
6	Peripartum hysterectomy	Sepsis	2 weeks	USG, CECT	Relaparotomy	No
7	Peripartum hysterectomy	Sepsis, mass abdomen	8 months	CECT	Relaparotomy	Yes
8	Ovarian cystectomy	Lump, pain	1 year	USG, CECT	Relaparotomy	Yes

**[Table/Fig-1]:** Summary of the cases.

LSCS-lower segment cesarean section, USG-ultrasonography, CECT-contrast enhanced computerized tomography, TAH-Total abdominal hysterectomy

carried out. Postoperative recovery was satisfactory and she was discharged in a good condition.

## CASE 8

One year post ovarian cystectomy for benign ovarian tumour, a patient presented with USG diagnosis of recurrent adnexal mass. CECT revealed pelvic mass with air foci in it suggestive of gossypiboma. Relaparotomy revealed a surgical sponge buried into the lumen of multiple gut loops surrounding the sponge. Resection and end-to-end anastomosis was done. Postoperative period was uneventful with no anastomotic leak. Summary of all case is presented in [Table/Fig-1].

## DISCUSSION

Gossypiboma literally means “cotton” derived from Latin word *Gossypium* and “a place of concealment” for Swahili word ‘boma’ [1,2]. When found in the peritoneal cavity, these are infrequent, avoidable operative complication [3]. These retained foreign bodies after surgical procedures, which may be left behind inadvertently are a matter of concern, as these are a cause of medico-legal issues [1,4].

Wilson reported the first case of gossypiboma in 1884. The actual incidence of gossypiboma is difficult to determine, as the condition is usually under-reported because of associated medico legal implications [5]. Though it can be found at any operative site but intra-peritoneal cavity is the most frequent site reported in literature as was seen in our patients. It occurs once in 100-5000 of all surgical interventions and one per 1000-1500 for all intra-abdominal operations [6], although this represents only tip of the iceberg. Other uncommon sites reported are chest, extremities, CNS and breast [7,8]. The retained surgical sponge can have varied presenting features and can mimic various pathologies, which lead to unnecessary diagnostic and therapeutic interventions, further increasing the morbidity. Gossypiboma retained in the body after surgery causes foreign body reactions which may vary from infection or abscess formation to a latent period of many months to years before being discovered as usually there are no specific clinical manifestations [9-11]. As cotton fibers are biochemically inert, therefore surgical sponge usually does not cause any specific reaction in the body, but may lead to adhesions and granuloma formation around them and become encapsulated – the aseptic fibrous reaction [12] as was seen in cases no 4. If secondary bacterial infection occurs in the post operative period, it can cause fistula formation [13], the risk increases with the duration of sponge being retained in the abdominal cavity, as was seen in case no.1, 7 and 8.

The presentation may be acute or sub acute. In acute manifestations of gossypiboma, there may be non-specific abdominal pain, vague abdominal lump, nausea/vomiting and abdominal distension

suggesting intestinal obstruction in the immediate post-op period [14] as was seen in case no.1,2 and 7. The palpable mass in the abdomen may be confused with soft tissue tumour according to its location, as in case 4 the gossypiboma was misdiagnosed as adnexal mass, which may further lead to unnecessary interventions in the form of biopsy and imaging studies, as was also reported as dermoid cyst of ovary in a post caesarean patient [5].

Similarly, gossypiboma in intrathoracic cavity, paraspinal area, rarely after breast surgery and even endonasal surgery present with symptoms and signs related to their location as persistent cough, shoulder tip pain, backache, breast carcinoma and nasal discharge respectively [12].

Extensive inflammatory reaction may lead to fistula formation and erosion into the adjacent hollow viscous or gut as in case 1 and 8 in whom the sponge was retained for longer duration. This happens over a period of months to years during which patient may present with pain abdomen, abdominal mass, malabsorption, diarrhea and weight loss. In a few cases, once the gauze goes into the gut lumen, the peristalsis of gut may lead to spontaneous expulsion per rectum [14]. The intestinal loop closes after complete migration of sponge [15]. In case 1, there was fistulous communication with gut, the sponge was expelled through vaginal vault.

In a study by Jaffary et al., mass abdomen was the most common presentation (50%) followed by features of intestinal obstruction (43%) [16]. Another study by Moyle describes pain (42%), mass abdomen (27%) and fever (12%) as the presenting symptoms [17]. In the present study, 4/8 (50%) presented with mass abdomen and sepsis each while pain was the presenting complaint in three of them along with other features.

Gynecological surgery is responsible for retained sponge in more than half of surgical cases (53%) [18]. The risk factors reported are emergency surgery, unexpected change in surgical procedure, change of operating surgeon, uncontrolled haemorrhage, obesity [15,19]. In our study, 4 of the eight reported cases were emergency surgeries, with excessive intraoperative haemorrhage. The preoperative diagnosis needs a high index of suspicion, to be confirmed with imaging studies [14-17]. Abdominal radiograph is first line investigation which may show a whorl-like pattern of impregnated thread. It may also present as encapsulated heterogeneous mass with air bubbles in it [3], or calcified mass in contact with gut loops or bladder as seen in case no. 4. Some sponges, if impregnated with radiopaque thread, may be easily seen on plain X-ray abdomen. Use of ultrasound, MRI and CECT is also well documented for diagnosis of gossypiboma. CECT was the confirmatory diagnostic modality in our study in almost all cases while it was missed even on CECT in case no. 1 even when clinical index of suspicion was high. In case of fistula formation and intrusion into the gut, contrast studies may help site and extent of the complication, but are usually not required as re-laparotomy is always warranted for its management.

Ultrasound features suggesting gossypiboma are, a wavy internal echoes inside a well defined cystic mass surrounded by a hypoechoic ring and posterior acoustic shadowing because of the sponge as in case no. 6. In the solid type, it is the complex mixed echogenicity mass. CECT is the investigations of choice for suspected gossypiboma, which shows a soft tissue mass that does not enhance and has a space occupying effect [12]. Spongiform appearance is typical finding on CT scan and marked enhancement with contrast [20]. On MRI, whole internal configuration on T2-weighted and hypo intense on T1-weighted [21] according to fluid filled (abscess) or fibrotic encapsulation of the retained sponge. PET CT [22] is also reported as a tool for diagnosis. The fibrotic inflammatory capsule shows high uptake of FDG and low central uptake because of gauze itself.

Sometimes, the surgical sponge with a radio opaque marker, can be picked up on X-ray or CT scan [1] but may be fragmented if retained for longer duration and therefore undetectable [1,2]. In order to decrease the incidence of retained foreign body, new technologies in the form of electronic article surveillance system which can identify tagged surgical sponge electronically are being developed [8].

**Management:** Surgical management is the optimal management once gossypiboma is diagnosed. If superficial, it can be retrieved from the skin wound or excision of sinus tract can be carried out [3] as was carried out in case number three, and no further intervention was needed. Most of the patients require surgical exploration under anaesthesia for retrieval of the sponge, as was done in other patients in our study.

The interval between primary surgery and re-exploration varies from weeks to years and longest report is 40 years [16] according to host tissue reaction. In our patients it varied from weeks to months to maximum one year. Laparoscopic removal is also documented. Rarely, as was reported in one case [2], a gossypiboma after transabdominal surgery for renal cell carcinoma was left untreated as it was not causing any intestinal symptoms.

With the advancement in field of endoscopic surgeries, the incidence of retained sponges may decrease. Still, human errors tend to occur and prevention of gossypiboma remains elusive to surgeons till date. The importance of accurate sponge count, once before the surgical procedure and twice after the surgery is universally recommended [3]. If the count is incomplete intraoperative, a thorough search is made and if still not found, a radiograph is mandatory. Most of the cases of retained sponge are with accurate postoperative count. Early recognition of this entity will ensure prompt institution of appropriate treatment, reducing morbidity and mortality in such patients.

**Medicolegal issues:** There are no set guidelines or laws which directly address this issue in India. All efforts are made to prevent this complication and if it happens, it should be managed with audit of the system and of the operating team with the best possible management of the patients [3]. Gossypiboma is considered to be the classic example of medical negligence as the operating surgeon has failed to achieve the standard of care, defined as 'a care needed for a medical doctor who has same situations and same conditions in consideration of scientific and technique developing level of

medicine science, labor conditions, and educational level of medical doctor [23]. It is difficult to decide whether gauze left in the abdomen is always due to a real lack of quality on the part of the surgeon or of the theater nurse. In some places as per law, legal responsibilities of retained foreign body lies with the operating surgeon even for the errors committed by the members of his surgical team [24].

## CONCLUSION

Gossypiboma is rarely reported because of the long latent period of clinical manifestations of retained sponges and hence low index of suspicion. The actual management is usually delayed as correct diagnosis is difficult. If diagnosed early, morbidity can be reduced by timely intervention.

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