



“GOSSYPIBOMA- BLACK SPOT ON WHITE COAT”

General Surgery

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ABSTRACT

BACKGROUND: Gossypiboma refers to incidences of retained foreign bodies usually forgotten within the abdominal cavity at the end of an operation. It may be a surgical sponge, gauze pad, or other forms of textiles, instruments. **AIMS AND OBJECTIVE:** To try and identify the factors which are responsible for the formation of Gossypiboma. **MATERIAL AND METHOD:** A Retrospective study was carried out in patients presented with postop (following open surgery) complications; diagnosis is made first followed by looking into possible causative factors. **RESULTS:** In our study of 900 patients (age group >20 yrs; underwent open surgery in past); Out of 900 patients included in the study, it was found that 5 patients were found to have retained foreign objects in the abdomen. Among four patients two were operated for caesarian-section, one for open cholecystectomy, and one underwent laparotomy for intestinal perforation. The Surgical safety checklist was not being followed in all five cases; the adequacy and compatibility of OT staff was questionable in 2 cases. **CONCLUSION:** By following standard surgical protocol of Surgical safety checklist along with proper teamwork (good rapport and communication among the dedicated OT staffs and operating surgeon); allocation of ample working hours; regular teaching and training of OT staff personnel about the maintenance of standard surgical protocols and finally addressing the consequences of legal repercussions as well as ignominy faced by hospital administration; such rarely occurring incidences can be minimized to never happening incidence.

KEYWORDS

Gossypiboma, Mops, Sponge, Surgical Safety Checklist.

INTRODUCTION

In the current era of laparoscopic and minimal access surgery, open surgical procedures are not so common but in rural areas open surgical procedures are still prevalent. In most of these setups, the surgical safety checklist isn't followed properly which seldom leads to very rare but unfortunate complications. Gossypiboma refers to such incidences of retained foreign body usually forgotten within the abdominal cavity at the end of an operation. It may be a surgical sponge, gauze pad, another form of textile or instrument.¹ The term Gossypiboma is derived from Latin word Gossypium meaning cottonwool, cotton, and the suffix -oma meaning tumor or growth. Such retained objects act as a nidus of inflammation and infection often lead to severe consequences for both the patient and the surgeon including risk of medicolegal consequences and increased morbidity and mortality of the patient.² The most common retained foreign body during surgery is woven

cotton surgical sponge, which includes both laparotomy pads and smaller sponges. Sponges are easily retained because of their ubiquitous use, relatively small size, and when soaked in blood, sponges conform to and can be difficult to distinguish from surrounding tissues.³ It may be asymptomatic or may present with symptoms like- obstruction, peritonitis, fistula, adhesion, abscess, erosion into the GI tract, and urinary retention.⁴ weight loss resulting from obstruction or a malabsorption type syndrome caused by the multiple intestinal fistulas or intraluminal bacterial overgrowth

There are two major types of reaction which occur in response to a retained foreign object in one type, an abscess may form with or without secondary bacterial infection and in another type, an aseptic fibrinous response resulting in tissue adhesion and encapsulation and eventually foreign body granuloma is formed.

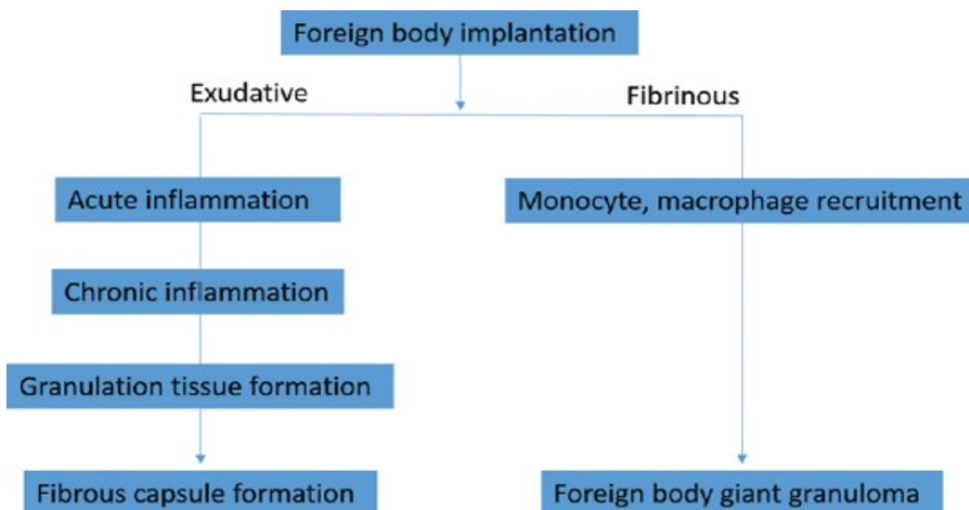


Image 1: Types of reactions in response to Gossypiboma

MATERIALS AND METHODS

A retrospective study included patients of the age >20 years selected randomly, who presented postoperatively (open surgery in the past 2 years) after open surgical procedure with c/o abdominal pain and discomfort in Swaroop Rani Nehru Hospital, Allahabad during April 2015 to May 2020.

Exclusion criteria include age <20yrs, no previous history surgery, history of laparoscopic /endoscopic surgery. The patient kept under observation and manage conservatively. The patient further evaluated using imaging modalities like- USG and CT SCAN and other relevant investigations come to a diagnosis.

Each patient was assessed independently by the surgeon and the need

for operative intervention and type of operative modality (explorative laparotomy or diagnostic laparoscopy) was individualized as per the patient presentation and requirements. In Cases whom gossypiboma or RFB found either directly while operating or exploring followed by evidence in any imaging modality, were followed back retrospectively to look for data including time and place of surgery, operative notes, preop investigations, any associated comorbidities. Finally additional information like qualification and expertise of surgeon; the hospital administration, facilities, and infrastructure; the source and authenticity of preop investigations to which hospital is linked; the adequacy and compatibility of OT staff, their working hours and shifts; whether standard protocols like WHO surgical safety checklist is followed properly or not, by paying the visit to the hospital where the patient was previously operated.

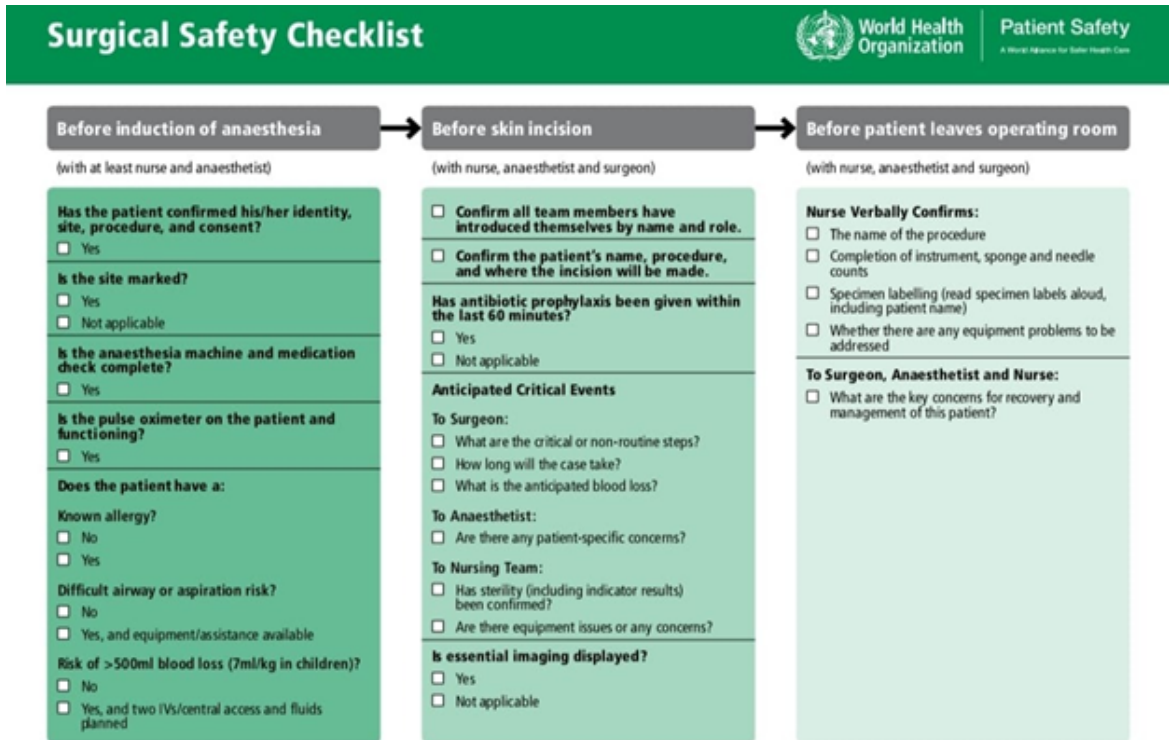


IMAGE 2: WHO SURGICAL SAFETY CHECKLIST⁶

OBSERVATION

The study included 900 patients, having a complaint of abdominal pain and discomfort, who attended the emergency or OPD were admitted to the department of surgery in Swaroop Rani Nehru Hospital, Allahabad. Accordingly, out of 900 patients included in the

study, it was found that 5 patients were found to have retained foreign objects in the abdomen. Among five patients two were operated for caesarian-section, one for open cholecystectomy, and one underwent laparotomy for intestinal obstruction one for intestinal perforation.

S.No.	Age	Previous Surgery	Duration	Presenting Symptoms/Signs	Radiological Findings	Intraop Findings
Patient-1	65yr/F	Laparotomy (for intestinal obstruction)	1 months 5 days	Pain, Fever, Abdominal distension, obstipation; guarding, rigidity present	CT scan shows a well-circumscribed mass with a thick wall; Whirl-like/ spongiform appearance noticed.	Single mop found encroaching small bowel (ileum 3 feet proximal to ic Junction)
Patient-2	35/M	Laparotomy (for intestinal perforation)	22days	Pain, distension, receding ileostomy with something coming out from stoma site with sepsis	Not done	Mop seen peeping through prolapsed ileostomy site on exploration mop adhered to rectus sheath below
Patient-3	34/F	Caesarian-section	2 months	Pain, Abdominal distension, obstipation	X-ray shows calcified irregular mass in the right iliac fossa. CT scan shows hyperdense well-defined mass showing instance but heterogeneous contrast enhancement.	Mop found in Right iliac fossa near IC Junction
Patient-4	27/F	Caesarian-Section	2months 12days	Urinary Frequency, Fever, Pain, Diarrhea	USG shows well-defined cystic mass containing distinct internal hyperechoic wavy structure seen, Acoustic shadows seen	Mop found in pelvis anterior to Urinary Bladder
Patient-5	50/M	Open cholecystectomy	4 months 3 days	Pain, Jaundice Abdominal distension, Fever, Vomiting with sepsis	Not done	Mop found in the subhepatic region, behind hepatic flexure

Patient 1: 65 year old female presenting with a chief complaint of abdominal pain, fever, abdominal distension, obstipation for ~5 days. On further investigation, CT scan shows well-circumscribed mass with thick walls; with internal air foci and few hyperdense linear areas of calcification, showing enhancement of the wall after administration of contrast. The internal structure appears whirl-like or spongiform due to the presence of gas trapped in the mesh of sponges. Associated well defined loculated ascites is also seen with mild peritoneal thickening and enhancement adjacent to the described mass. On operative exploration, a single mop/ sponge found encroaching small bowel (ileum 3 feet proximal to IC Junction). She had a past history of intestinal perforation ~1 month back. For which, laparotomy was done 1 month 5 days back in a private hospital. On retrospective study, it was found that she was admitted to a private hospital with complaints of abdominal pain and distension with complete obstipation, guarding and rigidity was present. Dilated bowel loops were seen on Xray She was operated in emergency OT for intestinal obstruction by adhesiolysis of small bowel Patient discharged on POD 10.

Patient 2: 35-year-old male presenting with a chief complaint of abdominal pain, fever, abdominal distension, retracted ileostomy with and something coming out of stoma site. patient operated from local site and sponge removed which was adhered to the rectus sheath below and the ileostomy is revised. On retrospective study, it was found that he was admitted to a private hospital with complaints of abdominal pain and distension with features suggesting of peritonitis, guarding and rigidity was present. On X-ray gas under diaphragm was present. He was operated in emergency OT for ileal perforation 1.5 * 1.5 cm, 1.5 feet proximal to IC junction for which loop ileostomy formation was done. The patient discharged on POD 12.

Patient 3: 34 year old female presenting with a chief complaint with severe abdominal pain, abdominal distension, obstipation for ~4 days. X-ray shows calcified irregular mass in the right iliac fossa. On further investigation, a CT scan shows hyperdense well-defined mass showing instance but heterogeneous contrast enhancement. On operative exploration, a single mop/ sponge found in the right iliac fossa near the IC junction. On retrospective study, it was found that she was admitted to a rural clinic with 8-month pregnancy G2 P1+0 (previous history of LSCS 2 years back) 2 months back. The patient underwent a caesarian section and the baby was healthy. Patient discharged on POD7.

Patient 4: 27 year old female presenting with a chief complaint with Lower abdominal pain, Increased frequency of urination, diarrhea ~8 days. USG shows well-defined cystic mass containing distinct internal hyperechoic wavy structure seen, Acoustic shadows seen. On operative exploration mop found in pelvis anterior to Urinary Bladder. On retrospective study, it was found that she was admitted to a rural clinic with 9-month pregnancy G1 P-0+0 with obstructed labor 2 months and 12 days back. Patient underwent a caesarian section and the baby was healthy. The patient discharged on POD-6.

Patient 5: 50-year-old male presented with a chief complaint of abdominal pain, fever, vomiting, jaundice, abdominal distension, peritonitis for ~2 days. The patient was in shock after resuscitation immediate explorative laparotomy was done in which Mop was found eroding hepatic flexure and abscess and multiple pus pockets and plaques were seen in the perihepatic area. On retrospective study, it was found that she was admitted to a private hospital with complaints of on and off right hypochondriac pain, obstructive jaundice ~10 days, USG shows chronic cholecystitis with cholelithiasis for which open cholecystectomy was performed (due to lack of laparoscopic set up in that area). The patient discharged on POD-6.



Image 3: Intra-op finding, showing surgical mop encroaching small bowel (ileum)



Image 4: Mop peeping out from stoma site

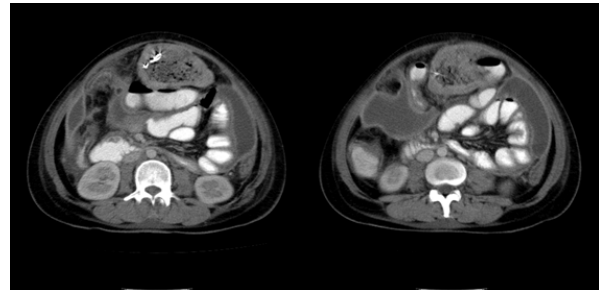


Image 5: CT SCAN of a patient showing a well-circumscribed mass with thick walls; with internal air foci and few hyperdense linear areas of calcification, showing enhancement of the wall after administration of contrast. The internal structure appears whirl-like or spongiform due to the presence of gas trapped in the mesh of sponges. Associated well defined loculated ascites is also seen with mild peritoneal thickening and enhancement adjacent to the described mass.



IMAGE 6: USG shows complex hetero-echoic mass lesion in mesentery echogenic lesion with posterior acoustic shadowing in the right adnexal region with mild surrounding collection

The differential diagnosis of gossypiboma includes faecaloma, hematoma, abscess formation, and tumor. Faecaloma may have a spotted appearance on CT but has a recognizable colonic wall and lacks thick well-defined capsule. An abscess is visualized as a mass of fluid density and has a well-defined enhancing wall. Gas within it produces an air-fluid level rather than the spongiform pattern characteristic of gossypiboma. However, abscess formation can occur as a complication of gossypiboma formation. Gossypiboma mimicking tumor is usually seen as a palpable abdominal mass in a patient who is asymptomatic or has non-specific abdominal complaints with a past history of laparotomy. This condition must be kept in mind for correct diagnosis to be made. In conclusion, the diagnosis of a retained surgical sponge depends on observation of a mass with strong acoustic shadowing and characteristic CT appearance in a patient with a history of previous surgery that is either recent or remote.

DISCUSSION

Gossypiboma is rare complication nowadays, the true incidence is almost certainly underestimated due to a reluctance to report occurrences arising from fear of legal repercussions, by retained surgical sponge. In our study, we found that apart from not following WHO's Surgical safety checklist the incidence of such kind of

mishappening can be attributed to other causes like deficiencies in training and experience; fatigue, overwork, time pressures; personal or psychological factors(e.g. depression or drug abuse); lack of recognition of dangers of such errors; inadequate staffing levels; lack of coordination at handovers; disagreements about proceedings; improper postop care.

CONCLUSION

By following standard surgical protocol of Surgical safety checklist (theatre 'swab counts' at the end of the procedure before 'closing up') along with proper teamwork (good rapport and communication among the dedicated OT staffs and operating surgeon); allocation of ample working hours; regular teaching and training of OT staff personnel about the maintenance of standard surgical protocols and finally addressing the consequences of legal repercussions as well as ignominy faced by hospital administration; such rarely occurring incidences can be minimized to never happening incidence and possibly wipe-off the BLACK SPOT ON WHITE COAT.

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