

CLINICO-LABORATORY PRESENTATIONS OF ABDOMINAL GOSSYPIBOMAS: A REVIEW OF LITERATURE

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ABSTRACT: *Objective: Gossypibomas (retained surgical sponge) are costly and avoidable medical errors, and they are usually under reported basically because of the medico-legal reasons. Clinical and laboratory features of abdominal gossypibomas mimic classical acute abdomen in some cases. This gives rise to a variety of clinical features and laboratory findings. In this article, we undertake a study of the common clinico-laboratory findings in some cases of abdominal gossypiboma. Method: Using various search engines as Google Scholar, Medline, Yahoo. Results: Abdominal gossypibomas are commoner in females, especially following emergency gynaecological surgeries. Abdominal pains, vomiting, abdominal distension, and intestinal obstruction are the common clinical presentations. Complicated cases lead to electrolyte imbalances, anaemia, malabsorption and weight loss. Conclusion: Retained surgical sponges should be considered as a differential diagnosis of abdominal symptoms in a patient who has had an abdominal surgery. Metabolic complications arising from abdominal symptoms should be thoroughly investigated with a background knowledge that abdominal gossypiboma can be a possibility.*

KEYWORDS: *abdominal, gossypiboma, clinico-laboratory, retain sponge*

INTRODUCTION

Generally, surgical swabs left after surgical operations are rare¹. There are few of such cases generally reported. Gossypibomas are retained surgical sponges. They are foreign bodies left in the body after surgical procedures¹. The term “Gossypibomas” is derived from the Latin word “*gossypium*” which means cotton, and “*boma*” which is a Swahili word for “a place of concealment”.² Usually, gossypibomas are composed of cotton masses retained in human body. Because the reporting rate of gossypibomas is very low, the accurate data is usually conflicting. It is estimated that the occurrence is between 1 in 100 to 1 in 500 abdominal surgeries^{1,3,4}. Other authors put the incidence at between 1 in 100 to 1 in 15,000 abdominal surgical procedures.⁶⁻⁷ Abdominal gossypibomas present with various metabolic complications, though many patients may be asymptomatic or may present with non-specific clinical symptoms. The complications of abdominal gossypibomas may occur in early post operation or months or years later after the operation. Studies of various authors confirm these findings. Gossypibomas have been reported in various sites of the body such as neck, throat, thigh, etc.⁸, however most gossypibomas have been reported after abdominal surgeries⁸.

Abdominal gossypibomas are majorly associated with metabolic complications mostly due to the dehydration and electrolyte imbalance. Yousuf et al reported a case of a 8-year old girl with thalassemia who had splenectomy and cholecystectomy and later developed multiple episodes of vomiting which was initially non-bilious and later bilious with abdominal pain of 2 days prior to presentation. Laboratory work up revealed anaemia (hemoglobin 7.7g/dl) with deranged serum electrolyte (serum Na⁺=127 mmol/L, serum chloride =92mmol/L). Her coagulation profile was deranged with elevated prothrombin time (PT). Radiological investigations eventually revealed a circumferentially dilated ileal loops with focal enhancement containing ill-defined heterogeneous lesion with spongiform appearance. It turned out to be a gossypiboma. Patient was operated and later discharged home without post surgical complication.⁸

Ogundiran *et al* reported a case of a 41 year old lady at Ibadan, Nigeria, who had an earlier surgery for myomectomy and appendectomy several years earlier, but recently presented with a recurrent colicky abdominal pain, recurrent bout of bilious post prandial vomiting and weight loss of a month duration. The abdominal pain was insidious in onset, periumbilical, and radiating to the right lower abdomen. On examination, she was moderately dehydrated and had a midline

infraumbilical scar and a mobile tender mass of 10cm x 6cm in the right iliac fossa. Radiological investigation revealed a widespread dilated bowel of loops with narrowing non-visible peristaltic activity in the right iliac fossa and extending to the right adnexium. Exploratory laparotomy was done. Post surgical findings revealed a widely intraluminal and intact surgical mop approximately 30cm x 30cm in size. The pathologists showed an histopathological examination of the resected bowel with focal mucosal ulcerations and erosion with transmural infiltration by neutrophils, lymphocytes and plasma cells. The patient did well after laparotomy⁹. Ferraz de Campos *et al* also made a case report in a journal of a case involving a 58 year old woman who had total abdominal hysterectomy with right oophorectomy sixteen (16) years earlier followed by surgical removal of the right ovary 3 years later. She later presented in the emergency unit several times due to recurrent episodes of colicky abdominal pain over the last 8 years. Her Hemoglobin was 5.1 g/dL and was diagnosed of hypochromic, microcytic anemia. The anemia persisted for several years and patient had blood transfusion. Over time, she developed weight loss, recurrent abdominal pain, and chronic fatigue. A full blood count later showed hemoglobin of 7.3g/dL, mean cell volume of 63 fl, mean cell hemoglobin concentration of 18 Pg, red cell distribution width of 19.9%, normal leucocyte and discrete thrombocytosis. The serum ferritin was 15ng/ml. Following a computed tomography (CT) and other radiological investigations, the patient underwent laparotomy and a hard intraluminal mass corresponding to a surgical sponge was found with entero-enteric fistula. Post operative management was successful¹⁰.

Topal Fidres *et al* reported a case of a 35 year old lady who was referred to their clinic on account of abdominal pains, vomiting and weight loss. Her post medical history revealed a caesarian section done five months earlier. She had abdominal pain which started soon after the surgery. She also had developed a cachectic appearance, pale, abdominal tenderness, weight loss of 6kg within these five months, nausea, vomiting and fatigue. Her hemoglobin was 7.1g/dL, platelet count was 593,000/mm³. The investigation for hepatitis B surface Antigen anti-HCV (hepatitis C virus antibody) and anti-HIV (human immunodeficiency virus) were all negative. Tumor makers were negative. The abdominal CT showed an intra-abdominal mass (gossypiboma). This was surgically removed and abdominal pain, nausea and vomiting resolved after the operation¹¹. Silva CS *et al* had also reported an earlier case of a 24 year old woman who presented with diffuse abdominal pain in form of colic, nausea, vomiting and intestinal constipation. Finding suggested intestinal obstruction due to a foreign body. She had had a caesarean section four months earlier at another hospital. An ileostomy was performed and it was observed that an intraluminal surgical sponge that had migrated into the interior of ileum and stopped next to the ileocaecal valve. Surprisingly, no fistula or open intestinal wall were observed. Zbar AP *et al* in their case report mentioned a 28-year old female with recurrent abdominal pain following a lower uterine segment caesarian section which had been performed at another hospital months earlier. Examination revealed a palpable abdominal mass extending to the umbilicus from the pelvis. There was no clear evidence of adnexal mass. Ovarian tumor makers (CEA and CA-125) were both normal. The patient was taken to theatre for exploratory laparotomy with a presumptive diagnosis of ovarian tumor. At laparotomy, findings were a mass containing 2 liters of yellow seropurulent fluid and a centrally located large laparotomy pack adherent to the side of a formed abscess cavity wall. Post operative findings was uneventful¹³. Kataria S *et al* reported another case of a 41 year multiparous woman presenting with abdominal pain, nausea, vomiting of 3 days duration, and inability to pass stool and flatus. She had an abdominal hysterectomy 2 months earlier.

All routine investigations were normal. Radiological findings were inconclusive and exploratory laparotomy revealed omentum with adherent sallow cotton gauze which was removed. Post operative course was uneventful¹⁴. Garg MK *et al*. similarly reported another case of a 50 year old lady presenting with vague abdominal pain in the right lumbar region of 5 years duration. She had appendectomy done 17 years before. There was no history of vomiting, constipation and loss of appetite. A clinical diagnosis of mesenteric cyst was made. All blood investigations were within the normal limit. Exploratory laparotomy was done which revealed an encapsulated sponge surrounded by omentum which was removed in piece meal. Post operative period was uneventful¹⁵. Kierman F. *et al* reported a 67 year woman in a journal presenting clinically with a 2-day history of fever, collapse and confusion. She had unexplained pyrexia, and 4 year old post-gynecological surgery in another hospital. Following CT-guided biopsy, she had

retroperitoneal biopsy and a retained swab was discovered in the theatre.¹⁶ Basmah A Rafe *et al* reported yet another case of a 21 year old woman presenting with colicky abdominal pain, nausea, repeated vomiting, constipation and progressive abdominal distension of 7 days duration. She had undergone emergency caesarian section 9 months earlier at a private hospital and since then had been complaining of recurrent non-specific abdominal pain and occasional episodes of vomiting. She had lost 10kg after the C/S. Laboratory investigations showed a WBC of 10,700/mm³ and a serum sodium (Na) of 123mmol/L. Other biochemical parameters were within normal limit. Abdominal exploratory was done and a retained surgical sponge was found. It had undergone transluminal migration.¹⁷

In 2011, Rays S and Das K reported a case of a 54 year lady who had abdominal pain and a slowly growing lump of 7 years after open cholecystectomy. The CT scan of the abdomen showed a mass of enhanced internal septae and a radio-opaque markers within it, raising the suspicion of a foreign body. The mass was at the right hypochondrion. Blood investigations showed a hemoglobin of 8.5g/dL, WBC of 9,600/mm³, serum bilirubin of 29mg/dL, ALP of 507 IU/L. At exploration, a large globular lesion was found which turned out to be a large surgical lump and foreign body within it. The patient had uneventful recovery.¹⁸ Lourenco SC *et al* reported a rare case of fever of unknown origin in a woman who had abdominal surgery 3years earlier. She had weight loss and fever. After extensive workup, gossypibomas was discovered and removed leading to complete cure.¹⁹

Table 1: showing the summary of various findings of various authors in involving gossypibomas(see appendix)

Ekpe *et al* reported a case of a 41-year Nigerian businesswoman who had undergone caesarian section about 1 year and 2 months earlier. She complained of a left sided abdominal pain of 2days duration after the C/S with vomiting, weight loss, occasional fever and she was dehydrated, pale and weak. The laboratory investigation showed hemoglobin of 7 g/dL and white blood cell was within the reference range. Plain abdominal X-ray was inconclusive, but a CT scan showed the presence of a rounded mass with a thick wall(See figures 1 and 2). Exploratory laparotomy was done and a large surgical sponge was removed at the left iliac fossa. It was an abdominal gossypiboma²⁰. Asuquo *et al* reported a case of 27 year old lady who had undergone an emergency caesarian section in another hospital but later presented with abdominal distension, fever, vomiting, abdominal pain at the Calabar teaching hospital. Laboratory investigations showed a Packed cell volume(PCV) of 30%, WBC of 6.8×10^9 , and urea of 6.8mmol/L. Plain abdominal X-ray showed a radiopaque shadow in the right side of the abdomen (approx.10 x 15cm.) with mottled appearance, . There were dilated loops of bowel and evidence of free intraperitoneal fluid. Ultrasonography showed multiple calculi in the gallbladder, thick-walled, markedly dilated bowel loops with no significant peristaltic activity and moderate free peritoneal fluid especially in Morrison's pouch. Following this, an explorative laparotomy was done and 3litres of pus was evacuated and a large surgical sponge measuring 30cmx15cm was removed in the right paracolic gutter.²¹



Fig 1: Plain anteroposterior abdominal radiograph showing a vague opacity of soft tissue (straight arrow) density with subtle internal lucencies in the left iliac fossa with a lobulated

filling defect (curved arrow) within the adjacent sigmoid colonic loop. Punctate fecal gas lucencies were noted in the regions of the ascending, transverse and descending colonic loops.



Fig 2: Coronal abdominal computed tomographic image showing a thin-walled ovoid left flank mass (arrow) with internal whorl-like pattern (characteristic of cotton woven materials) and air density spaces.

DISCUSSION

The word “gossypibomas” is a term used to describe a retained surgical sponge or scrub. It is derived from a Latin word “*gossipium*” which means cotton and “*boma*” a Swahili word meaning place of concealment². The incidence of gossypiboma is estimated to be between 1/1000 and 1/1500^{1,3,4}. Despite improvement in the development of surgical techniques and operating room facilities and awareness of the importance of check counts at the end of operation, the presence of foreign bodies within patients after surgery still remain a problem.^{10,22}. A surgical sponge (gossypiboma) is the most common foreign body left in the body following completion of operation. Gossypiboma should be especially considered in the differential diagnosis of a patient reported with post operative abdominal pain.^{11,23} Incidence of gossypiboma is low in developed countries due to advanced operation room conditions, and radiological techniques. It is more frequent in women. More than 60% of gossypibomas are formed in female patients.^{11,24,25}. The incidence of intra abdominal gossypiboma is pegged at 1/300 to 1/1000 by some authors.^{16,26}.

Risk factors for gossypiboma have been identified as: emergency operation, being forced to perform unexpected surgical procedures, poor organization, hasty sponge count, long duration of surgery, unstable patient, operation conducted by assistant and obesity.^{24,27,28}

The National library of medicine has a documented case of one hundred and seventy cases of gossypiboma at a period of 35 years (1978-2011)¹⁵. About 45 cases of gossypiboma with

transmural migration were found during the literature review over a period of 2000-2010.²⁹ The reported mean age is 49 years (6 – 92 years) and the most common site of gossypiboma is the abdomen (56%) of cases, Pelvis (18%) and thorax accounts for 11%.¹⁵ A surgical sponge can be retained after any surgery but more common after hysterectomy, appendectomy, cholecystectomy³⁰. Clinical presentations of abdominal gossypiboma include abdominal pain, infection (42%), palpable mass (27%), fever (12%) or unusual symptoms similar to tumors and abscesses.¹⁵ Other complications/presentations are weight loss, diarrhea, constipation, fistula, intestinal obstruction, abdominal distention, tenesmus, and vomiting¹⁵. The majority of the described cases occurs after gynaecological surgery (53%)^{22,31}, followed by cholecystectomy (28%)²². A retained surgical sponge can penetrate as intestine, urinary bladder, throat or vagina^{12,32}. Intestinal perforation can occur in any point of the intestinal tract although it is more frequent in the colon.¹² Various complications arising from gossypiboma are adhesions (31%) abscesses (24%), fistula (20%) and migration¹⁵. The patient usually develops symptoms of abdominal pain, nausea, vomiting, anorexia, weight loss resulting from obstruction or malabsorption caused by intestinal fistulas or intestinal bacterial growth³³.

The omentum are intestinal loops usually surround the foreign body (sponge). They encapsulate it and this causes the sponge to develop pressure and irritation which result in pressure necrosis of intestinal walls. The sponge can then erode partially or fully in the lumen of the intestine.¹⁵ Generally two types of reaction are recognized in the early phase. First in exudative reaction while the second type is the omentum and intestine may surround the intra abdominal sponge and the resultantly form a pseudo-capsule formation. The increased pressure due to intra abdominal mass and irritation of the sponge on the bowed lump can lead to obstruction or fistula.^{11,34} This eventually leads to abdominal pain, nausea, vomiting, weight loss and electrolyte imbalance.

The diagnosis of gossypiboma is difficult because of the non specific presentation and this causes patients' death. Symptoms may follow surgery immediately or may come later months or years after surgery.³⁵ Usually, a retained foreign body does not rank high in the list of differential diagnosis as a cause of intestinal obstruction even in the face of a previous laparotomy.⁹ Gossypiboma may be diagnosed by plain abdominal radiography, when a radio-opaque image is seen. However, CT and magnetic resonance imaging (MRI) usually revealed comprehensive details of the mass in most cases¹⁵. On CT, surgical sponges may be seen as a well circumscribed masses¹⁰. Barium enema and follow through may be helpful when a fistula develops between the cavity containing the foreign body as the lumen of the gut as it shows the site of fistulation²⁸. Prognosis is excellent after surgical removal, but mortality rate of 10-17.6% has been reported in association with delayed diagnosis and treatment.²²

CONCLUSION: A high index of suspicion should be made by any physician managing post laparotomy patients presenting with abdominal symptoms; as gossypibomas may not be as rare as presumed, though under reported.

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APPENDIX

S/N	Author	Case	Clinical features	Type of study	Sex, Age	Laboratory findings
1.	Garg M. K. <i>etal</i> (2014)	Post appendectomy 17yrs	Abdominal pain constipation, anorexia	Case report	F, 50yrs	All investigations were normal
2.	Kerman F. <i>etal</i>	Post gynecological surgery 4yrs	Fever, confusion, collapse	Case report	F, 67	-
3.	Basmah <i>etal</i> (2013)	Post emergency C/S 9 months	Colicky abdominal pain, abdominal distension, vomiting weigh loss	Case report	F, 29	Serum Na = 123mmo/L WBC = 10,700/mls
4.	Rays <i>etal</i>	Post cholecystectomy, 7 yrs.	Abdominal pain, growing lump in abdomen	Case report	F, 41	Hb 8.5g/dL,WBC 9600/mm3,Serum bilirubin 2.9,ALP 507U/L
5.	Gary M <i>et al</i>	Post abdominal hysterectomy	Abdominal pain, nausea, vomiting, inability to pass stool/flatus	Case report	F	-
6.	Lourenco S. C <i>etal</i>	Post abdominal surgery	Weight loss, abdominal; pain, fever	Case report	F	-
7.	Raye <i>etal</i>	Post Caesarian section, 3yrs.	Abdominal pain, vomiting, constipation	Case report	F, 34	Serum Na = 123mmo/L WBC = 10,700/mls
8.	Yousuf <i>etal</i> 2014	Post splenectomy , cholecystectomy in a thalasemia girl	Abdominal pain, vomiting	Case report	F 8yrs.	Hb = 7.7gldL, serum sodium – 127mmol/L, serum chloride = 92mmol/L prothrombin time - elevated
9.	Ogundiran <i>etal</i> 2011	Post abdominal surgery, 1yr.	Abdominal pain, vomiting, weight loss, fatigue, pale	Case report	F, 35yrs	-
10.	Topal Firders <i>etal</i> 2011	Post caesarean section	Abdominal pain, vomiting, weight loss, fatigue, pale	Case report	F, 41	Hb = 7.1gldL platelet = 593,000/cm3 HepBSAg Anti-HCV Anti-HIV } Negative
11.	Feraz de Campos (2010)	Total abdominal hysterectomy with oophorectomy	Colicky abdominal pain, fatigue, anemia	Case report	F, 58	Hb 5.1gldL, low ferritin 15ng/ml ,MCV 63fl, RBC distribution 19.9%, MCHC 18,
12.	Zbar <i>etal</i> (1998)	Post C/S 6 months	Recent abdominal pain	Case report	F, 28	CEA CA125 } Norma
13.	Ekpe <i>etal</i> 2015	Post emergency Caesarian section	Abdominal pain, weight loss, vomiting, loss of appetite	Case report	F, 41	Hb = 9g/L, others – nomal
14.	Asuquo <i>et al</i>	Post emergency Caesarian section	Abdominal pain,abdominal distension,fever,vomiting	Case report	F,27	PCV-30%,WBC-6.8x10 ⁹ ,urea-6.8mmol/L