

Case Report

Gossypiboma - A Rare Diagnosis with Significant Medicolegal Implications: A Case Report.

Mgbehoma AI¹, Sanni DA¹, Anyanwu PC², Obadina OG³, Soyemi SS¹, Obafunwa JO¹.

Departments: 1. Pathology and Forensic Medicine; 2. Radiology; 3. Surgery (General Surgery Unit)
Lagos State University Teaching Hospital, Ikeja, Lagos, Nigeria.

Abstract

Gossypiboma describes the inadvertent abandonment of cotton material (sponge or swab) within the body of a patient by the surgeon at the end of surgery. The patient may or may not manifest symptoms; these symptoms vary according to the site and the type of inflammatory reaction. Clinical diagnosis is difficult, and radiology plays a pivotal role. Its management can result in further medical errors and ultimately, litigations. The authors report a 34-year-old woman, with a history of two previous caesarean sections, who presented with features of intestinal obstruction. Physical examination showed a pfannensteil scar, right iliac fossa mass, and ascites. Computed Tomography (CT) scan revealed a lesion, in the paracaecal area, with an emphysematous core, and enhancing thick rim. A standard right hemicolectomy with ileo-transverse anastomosis were done for a suspected caecal tumour. Histopathological gross evaluation revealed a bulbous paracaecal mass of cotton wool and gauze. Microscopy showed scattered cotton material surrounded by mixed inflammatory cells including foreign-body type giant cells. A histopathological diagnosis of gossypiboma was made. The medical and legal consequences of gossypibomas are traumatising for the surgeon and the patient. Diagnosis requires a high suspicion index with good radiological and histopathological support. Adhering to preventive protocols, such as swap count at the end of surgery, is strongly advocated.

This report discusses the surgical, radiological, pathological, and medicolegal aspects of gossypiboma.

Key words: Gossypiboma, Diagnosis, Caecal Tumour, Medical Malfeasance.

INTRODUCTION

Gossypiboma, also termed textiloma or cottonoid, refers to the foreign materials such as sponge, gauze or swabs inadvertently left within the body cavity of a patient by the surgeon at the end of surgery. The patient may remain with or without symptoms, and these vary according to the site and the type of inflammatory reaction. Clinical diagnosis is difficult.¹ Imaging studies play a pivotal role in the diagnosis and radiologists seldom miss it.² Gossypiboma is thus the result of a medical error that can precipitate other errors. For example, a surgeon forgets to remove a cotton item after a laparotomy, and the radiologist at a later date makes a diagnosis of abdominal

Correspondence:

Dr Alban Ikenna Mgbehoma,
Department of Pathology and Forensic Medicine,
Lagos State University Teaching Hospital, Ikeja, Lagos, Nigeria.
E-mail: albanmorphologia@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

How to cite this article: Mgbehoma AI, Sanni DA, Anyanwu PC, et al. Gossypiboma- A Rare Diagnosis with Significant Medicolegal Implications. A Case Report. *Ann Trop Pathol*, 2023; 14 (1): 41-45

tumour, resulting in another surgeon performing a hemicolectomy. This string of errors, especially where no histopathological examination was conducted, can result

in an aggressive management, with significant morbidity, or sometimes, mortality. Consequently, the patient or patient's relatives may bring legal action against the surgeons and/or the radiologist for medical negligence.³ The index case typifies gossypiboma. The surgical, radiological, pathological, and medicolegal aspects are discussed.

PATIENT AND OBSERVATION

A 34-year-old woman presented with a 3-months history of swelling in the right lower abdominal quadrant, associated with recurrent colicky pains. There was also a 2-months history of melaena stool, and a 2-days history of vomiting. She was reported to have had two previous caesarean sections in a private hospital. The first and second obstetric operations were 3 years, and 6 months prior to presentation, respectively.

Physical examination showed a pfannenstiel scar with a tender, firm, globular (10.0 x 8.0cm) right iliac fossa mass, and ascites. A provisional diagnosis of partial intestinal obstruction secondary to a colonic tumour (to rule out an appendiceal mass) was made.

Computed Tomography (CT) scan revealed a lesion, measuring 9.6 x 8.1 x 7.2cm at the paracaecal area, with an emphysematous core, and enhancing thick rim (Figures 1&2). The radiological differential diagnoses were emphysematous appendiceal abscess and emphysematous caecal tumour.

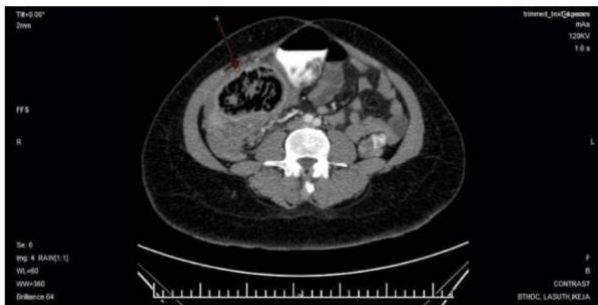


Figure 1: Contrast enhanced axial CT image at the level of the aortic bifurcation shows a hypodense mass (red arrow) on the right-side containing gas bubbles and a thin enhancing capsule.

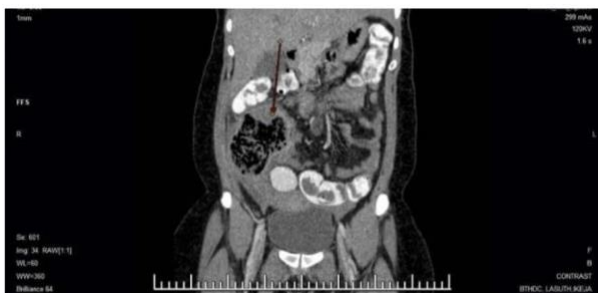


Figure 2: Coronal reformatted view of Figure 1 shows a hypodense mass (red arrow) in the right lower abdominal quadrant, containing gas bubbles and a thin enhancing capsule.

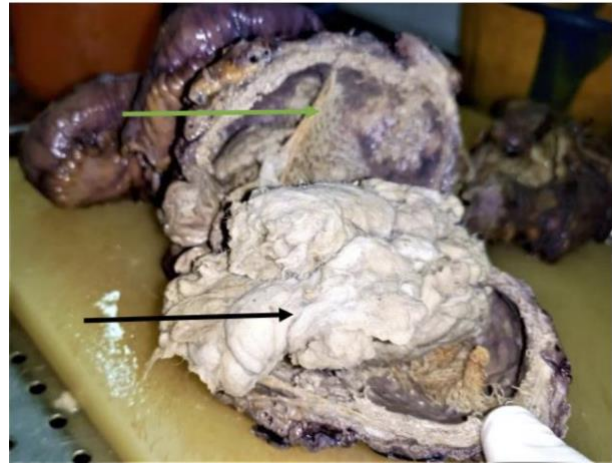


Figure 3: The bisected paracaecal mass shows a lump of cotton wool (black arrow) and adherent gauze (green arrow).



Figure 4: Bisected specimen showing the lumen of the caecum in the centre (double headed black arrow) and the cavities of the paracaecal pseudotumour at the upper (red arrow) and lower (blue arrow) parts of the image. The histology of the red and blue insets is seen in Figure 6 and Figure 7 respectively.

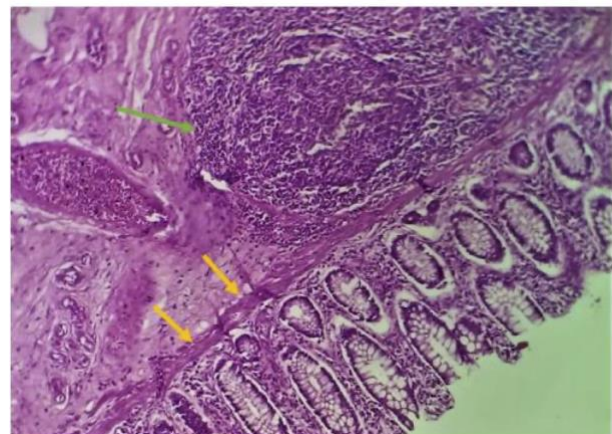


Figure 5: Histological section of the caecal wall shows a viable colonic-type mucosa. The muscularis mucosa (yellow arrows) and submucosal lymphoid aggregates (green arrow) are normal features. (X100, H&E).

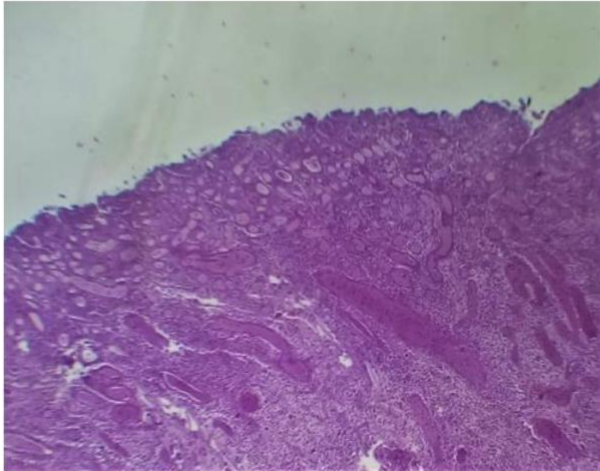


Figure 6: Histological sections of the wall of the paracaecal pseudotumour shows essentially granulation tissue. No epithelial lining is present. (X40, H&E).

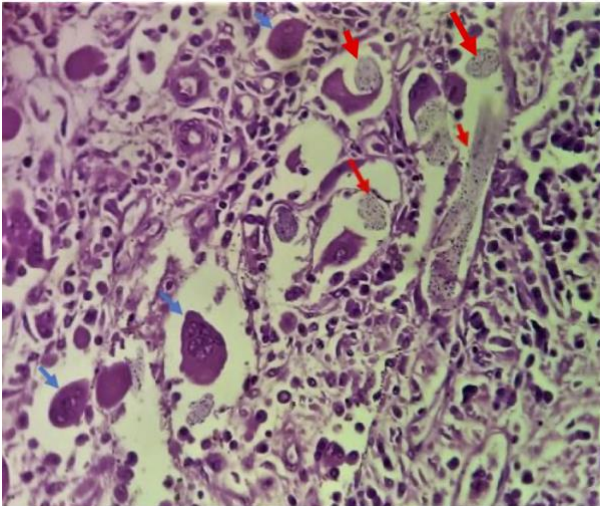


Figure 7: Histological section shows X400 magnification of Figure 7. The wall of the paracaecal pseudotumour shows scattered cotton material (red arrows) and surrounding inflammatory cells, including foreign body giant cells (blue arrows). (H&E)

Exploratory laparotomy revealed a caecal mass, adherent loop of ileum, and enlarged adjacent mesenteric lymph nodes. An extensive surgery comprising a standard right hemicolectomy with ileo-transverse anastomosis were done.

Histopathological evaluation revealed a resected bowel consisting of the terminal ileum, caecum with appendix, ascending colon, and the proximal one-third of the transverse colon, a total of 44 cm of the bowel was resected. The terminal ileum was firmly attached to the caecum. The caecum appeared bulbous and measured 11.8 x 8.0 x 6.5 cm; further exploration revealed a paracaecal cavity filled with a mass of cotton wool and gauze (Figure 3). The lumen of the

caecum was narrowed (Figure 4). Histology revealed scattered cotton material surrounded by neutrophils, lymphocytes, plasma cells, histiocytes and foreign-body type giant cells (Figures 5-7). Sections of the accompanying lymph nodes show follicular hyperplasia and sinus histiocytosis.

Postoperative recovery was uneventful. She was discharged on the tenth day after surgery and has since remained stable for the past 2 years. The present management team are unaware of any recourse to litigations.

DISCUSSION

Cotton materials, artery forceps, irrigation sets, rubber tubes, and pieces of broken instruments are seldom left in the body after surgery; these are referred to as 'Retained Surgical Items', 'Retained Foreign Bodies,' or 'Retained Foreign Objects'. Cotton materials (such as surgical sponge, gauze, and cotton wool) are commonly retained because of their frequent use, small size, and amorphous structure. Expectedly, these retained cotton materials elicit inflammatory reaction, and may form pseudotumours; the latter are called Gossypibomas.⁴

The term Gossypiboma derives from the Latin word '*gossipium*' which means cotton and the Swahili word '*boma*' which means a place of concealment. However, another etymology, '*gossipium*' (cotton) and '*oma*' (tumour or growth) exists in literatures. Synonyms of gossypiboma include textiloma, cottonoid, gauzeoma, muslinoma or cottonballoma.⁴

Gossypibomas can occur at any site in the body; the abdomen is, however, the most common site. The exact incidence is underestimated due to its legal consequences and the unreported asymptomatic cases. The incidence of 1 in 100-3000 of all surgeries and 1 in 1500 of intraabdominal surgeries have been reported.² Gynaecological and gastrointestinal surgeries account for 75% of the intraabdominal surgeries. Emergency surgery, poorly organized operating theatre, prolonged surgery, hasty sponge count, poor surgical skill, and obesity (of the patient) increase the risk of occurrence.² It is thus obvious that any failure of total surgical quality assurance protocol is a potential cause of retention of surgical items within the patient.

Gossypibomas are formed when cotton materials, which may be sterile or contaminated, interact with the body's immune system. Contaminated cotton materials elicit acute inflammatory response to form abscesses while sterile cotton materials elicit chronic inflammatory response to form pseudotumours. Patients with the acute response present, at best, with nonspecific symptoms (fever, malaise, anorexia, vomiting and weight loss), but at worst, with features of sepsis (altered sensorium, cold clammy skin, weak pulse, hypothermia,

hypotension, and oliguria). In contrast, patients with the chronic response may not show symptoms, or they present with compressive or obstructive symptoms (depending on whether the involved organ is solid or hollow).^{2,5} Our patient had a chronic response as evidenced by the interval between the obstetric procedure and presentation, and her obstructive symptoms (vomiting and colicky abdominal pain). Debilitating conditions that complicate abdominal gossypibomas include bowel obstruction, gastrointestinal or genitourinary tract erosion, fistulation, peritonitis, sepsis, and death.¹

Imaging studies play key roles in the diagnostic workup of gossypibomas. Plain abdominal X-ray may reveal a faint soft tissue density with mottled lucencies due to trapped air or abscess formation. Barium/contrast studies assist diagnosis in cases where fistulous communication with the bowel is suspected. Ultrasonographic (US) scan may reveal an echogenic area with intense posterior shadowing, and distinct internal hyperechoic wavy pattern. Magnetic Resonance Imaging (MRI) appearance varies with the composition, fluid content, and the stage of the lesion; however, soft tissue mass with thick, well-defined T1 and T2 hypointense capsule having whorled internal configuration on T2-weighted imaging and irregular enhancement inner wall post gadolinium are the typical features. The most reported CT feature is a heterogenous spongiform hypodense mass containing air bubbles with a thick hyperattenuating or enhancing wall; this feature was seen in our case.² The radiologist however missed the diagnosis in our patient though he gave possible differentials. Reasons for misdiagnosis in radiology can be person-specific and/or system-based. Person-specific reasons include inexperience and faulty reasoning while system-based reasons include excessive workload, inadequate equipment, and poor lighting conditions.⁶

The diagnosis, in our case, was made through histopathological evaluation thus highlighting the need to always send surgical specimens to the laboratory. Laparotomy with retrieval or percutaneous extraction of gossypiboma is cardinal in the management of patients.^{2,7} However, prevention is better than cure; the use of sponges impregnated with radio opaque markers, careful pack count, and meticulous postoperative cavity exploration before closure, are recommended.⁸

Gossypiboma is no longer regarded as a complication of surgery, but as the failure of the surgeon to measure up to his/her professional duty. In other words, it results from a breach of the duty of care. Patients have the right to expect a satisfactory standard of care from their doctors. When a medical error occurs, and the patient can prove that the error resulted from a negligent act or failure by the physician to provide the expected, reasonable standard of care (breach), consequent upon which he/she suffered harm, the doctor

will be liable for malpractice. The harm suffered by the patient includes infection, pain, discomfort, additional surgeries, prolonged hospitalisation, loss of income, and emotional distress. Deriving from the above, the successful establishment of a case of medical negligence requires that four things must be proven.⁹

1. That there exists an established doctor-patient relationship with an established contract;
2. That there was a breach of that contract through the negligent act;
3. That the breach resulted in an injury to the patient;
4. That the patient suffered some harm; *but for* the injury, the patient would not have suffered harm.

The proof by the patient, of a causal relationship between the injury and harm suffered demands that;

- a. The injury is of the kind that does not ordinarily occur without negligence or is uncommon in the course and nature of the said act;
- b. The injury is caused by an agency or instrumentality within the exclusive control of the defendant [medical doctor];
- c. The injury-causing accident is not by any voluntary action or contribution on the part of the plaintiff (patient). In other words, there is no significant contributory negligence;
- d. The defendant's [medical doctor's] explanation does not completely explain the plaintiff's [patient's] injury.

However, a patient will not have to prove the above listed elements in a situation where he or she suffers from a gossypiboma. Here, the fact is so obvious that the doctor (the 'Obstetrician/Gynaecologist' in this case) is forced to provide an explanation, if he or she can; this is the legal doctrine of *res ipsa loquitur* (a Latin phrase meaning 'the facts speak for themselves'). Legal actions that can lead to humiliation, huge financial loss, and disciplinary measures can be brought upon the surgeon.^{10,11}

Towards dousing the medicolegal flame, the surgeon, or any medical professional, is expected to acknowledge his/her mistakes and seek the understanding of the patient. In over 90% of cases, the patients will understand and forgive the doctor. A paternalistic posture or arrogance on the part of the doctor is often responsible for the persistence of the patient to seek legal redress.

In our patient, the 'Obstetrician/Gynaecologist' in the private hospital who forgot the mass of cotton wool and gauze, as well as the radiologist who misdiagnosed the gossypiboma as an emphysematous caecal tumour, are potentially liable for malpractice. However, the radiologist might plead mitigating factors bordering on experience and the fact

that he provided reasonable differentials. The patient underwent extensive surgery though.

CONCLUSION

The medical and legal consequences of gossypibomas are traumatising for the erring surgeon and the patient. Adhering to preventive protocols is strongly advocated. However, where the error has already been committed, a high index of suspicion is required for accurate diagnosis and proper management by the radiologist and the attending surgeon. It is important to always send surgical samples to the anatomic pathologist for definitive diagnosis so as to avoid unnecessary aggressive treatment.

Acknowledgement

The authors thank Mrs Mgbehoma Favour Rubby (LL.B.) for her legal contribution'.

Conflict of Interest

The authors have no conflict of interests.

REFERENCES

1. Celik H, Akin IB, Altay C, Bisgin T, Obuz F. Giant gossypiboma presenting as a pelvic mass. *Radiol Case Rep.* 2021 Aug 26; 16(11): 3308 - 3310. doi: 10.1016/j.radcr.2021.07.075. PMID: 34484537; PMCID: PMC8403700.
2. Fatima K. Intraabdominal Gossypibomas with variable CT appearance: A case report. *J Pak Med Assoc.* 2019 Jan; 69(1): 123 - 126. PMID: 30623927.
3. Biswas RS, Ganguly S, Saha ML, Saha S, Mukherjee S, Ayaz A. Gossypiboma and surgeon- current medicolegal aspect - a review. *Indian J Surg.* 2012 Aug; 74(4): 318 - 22. doi: 10.1007/s12262-012-0446-3. Epub 2012 Mar 27. PMID: 23904722; PMCID: PMC3444596.
4. El Zemity H, Hakami N, Alfaki MAA, Khurizi M, Al-Zahrani A Sr. Intra-Abdominal Gossypiboma: A Rare Cause of Palpable Abdominal Mass with a Review of Literature. *Cureus.* 2020 Oct 13; 12(10): e10930. doi: 10.7759/cureus.10930. PMID: 33194496; PMCID: PMC7660124.
5. Rappaport W, Haynes K. The retained surgical sponge following intra-abdominal surgery. A continuing problem. *Arch Surg.* 1990 Mar; 125(3): 405 - 7. doi: 10.1001/archsurg.1990.01410150127025. PMID: 2306189.
6. Brady AP. Error and discrepancy in radiology: inevitable or avoidable? *Insights Imaging.* 2017 Feb; 8(1): 171 - 182. doi: 10.1007/s13244-016-0534-1. Epub 2016 Dec 7. PMID: 27928712; PMCID: PMC5265198.
7. Noshier JL, Siegel R. Percutaneous retrieval of nonvascular foreign bodies. *Radiology.* 1993 Jun; 187(3): 649 - 51. doi: 10.1148/radiology.187.3.8497610. PMID: 8497610.
8. Gencosmanoglu R, Inceoglu R. An unusual cause of small bowel obstruction: gossypiboma--case report. *BMC Surg.* 2003 Sep 8; 3:6. doi: 10.1186/1471-2482-3-6. PMID: 12962549; PMCID: PMC201033.
9. Gittler GJ, Goldstein EJ. The elements of medical malpractice: an overview. *Clin Infect Dis.* 1996 Nov; 23(5):1152-1155. doi: 10.1093/clinids/23.5.1152. PMID: 8922815.
10. Yakar A, Atacan SC, Yakar F, Ziyade N, Gundogmus UN. Medicolegal Consequences of Thoracic Gossypiboma; A Case Report. *Journal of Forensic and Legal Medicine.* 2016; 42. 10.1016/j.jflm.2016.05.010.
11. Migliorini AS, Bailo P, Boracchi M, Crudele GDL, Gentile G, Zoja R. Forensic - Pathological SEM/EDX analysis in prosecution of medical malpractice. *Leg Med (Tokyo).* 2019 Sep; 40: 43 - 46. doi: 10.1016/j.legalmed.2019.07.005. Epub 2019 Jul 22. PMID: 31351409.