



Retained foreign body migration to the colon: A rare cause of small bowel obstruction

Nada Garrouche¹, Ibtissem Hasni¹, Hiba Ben Hassine²,
Jaafar Mazhoud², Nadia Arifa¹, Hela Jemni¹

¹Department of Radiology, Sahloul University Hospital, Sousse, Tunisia, North Africa, ²Department of General Surgery, Sahloul University Hospital, Sousse, Tunisia, North Africa

Address for correspondence:

Nada Garrouche,
Department of Radiology,
Sahloul University Hospital,
Route de la Ceinture
4011, Sousse, Tunisia.
Phone: 0021621345775.
E-mail: nadagarrouche@
yahoo.fr

Received: June 09, 2017

Accepted: July 31, 2017

Published: September 15, 2017

ABSTRACT

Retained foreign bodies also called retained swab, or gossypiboma is a term for a surgical complication resulting from foreign materials accidentally left in a patient's body. The symptoms following this entity are non-specific which make clinical diagnosis difficult. The computerized tomography scan is the most useful method for diagnosis; however, sometimes, the pre-operative diagnosis remains uncertain even after the imaging exam. In that case, laparoscopy arises as a valuable diagnostic tool, as well as, a prompt treatment option. We report a case of a 22-year-old woman with a 2-week history of abdominal pain and, recurrent then complete small bowel obstruction, 3 months after the lower segment cesarean section. Laparotomy showed an intraperitoneal gossypiboma that has penetrated into ileum through two fistulae communicating with the proximal ileum and the colic sigmoid.

KEY WORDS: Gossypiboma, ileus, imaging, intestinal obstruction, retained surgical sponge, textiloma

INTRODUCTION

A retained foreign body (RFBs) is a term for a surgical complication resulting from foreign materials accidentally left in a patient's body. The term "gossypiboma" (gossypium: Latin, cotton; boma: Swahili, a place of concealment) refers to a mass composed of non-absorbable surgical material with cotton matrix retained within the human body that acts as a pseudotumor [1,2].

It has been estimated that one case of a retained item post-surgery occurs at least once a year in any hospital where 8000-18,000 major procedures are performed annually [3]. The major reasons of RFBs are emergency interventions and unplanned changes during the operations [4].

We report a case of intraperitoneal gossypiboma that has penetrated into ileum causing complete small bowel obstruction 3 months after lower segment cesarean section.

CASE REPORT

A 22-year-old, gravida 1, para 1 woman who had undergone a cesarean section 3 months ago got admitted to our outpatient

clinic with pelvic pain accounting for 2 weeks along with abdominal distension, constipation, and multiple episodes vomiting. The patient had no medical records showing the details of her previous surgery.

On examination, she was conscious, oriented with a heart rate of 90/min, respiratory rate of 20 breaths/min, and temperature of 100° F.

The abdominal examination showed an infraumbilical midline cesarean section scar along with abdominal distension and diffuse mild tenderness predominant in the lower abdomen. There was no pallor or icterus and no abnormality was found on digital rectal examination. Laboratory workups were unremarkable, except for a slightly elevated C-reactive protein (4 mg/dl), while other tests, including tumor markers, were within normal limits.

A plain abdominal radiograph showed relative gaslessness in the refugee information form and pelvis with centrally located dilated bowel loops likely of small bowel origin [Figure 1].

Colonoscopy provided no additional information about the bowel recurrent obstruction etiology.

Computerized tomography (CT) of the abdomen showed 9 cm × 10 cm intraluminal mass with hypodense foci within the ileum and distended small gut loops [Figure 2]. Thereafter, a diagnostic laparotomy was performed for the ileus and resection of the cavitory lesion. At laparotomy, we found a retained surgical sponge in the ileum 60 cm from the ileocecal valve. The cavitory mass had two fistulae communicating with the proximal ileum and the colic sigmoid. The mass was resected en bloc together



Figure 1: Plain abdomen radiograph showing relative gaslessness in the upper abdomen and pelvis with centrally located dilated bowel loops likely of small bowel origin

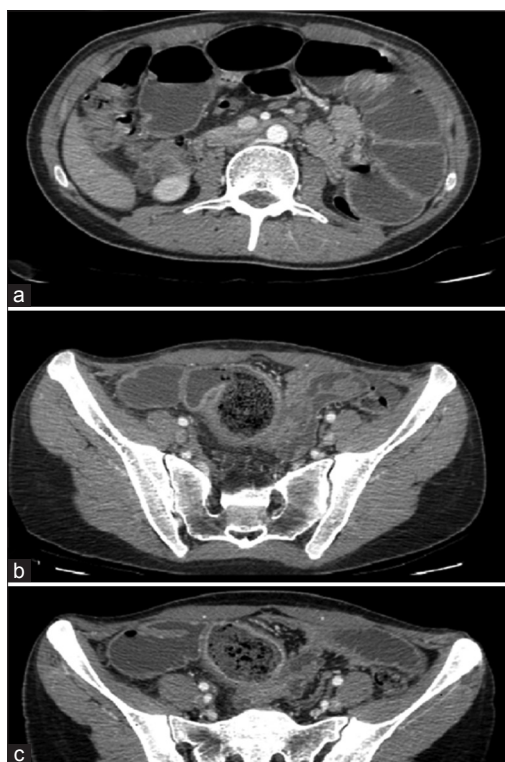


Figure 2: Multidetector contrast-enhanced computerized tomography. Transverse images of the lower abdomen are shown. (a-c) Distended gut loops with fecal-like masses seen at the end of dilated loop of the small intestine; (b and c) thick-walled cavitory lesion communicating with the distal ileum sponge (white arrow)

with the transverse colon, part of the jejunum, and the ileoileal anastomosis established bowel continuity. Post-operative period was uneventful. Oral feeds started on fifth post-operative day and patient was discharged on the 7th day.

DISCUSSION

First reported by Wilson in 1884 [3], gossypoma is a rare iatrogenic complication, which incidence is largely underreported due to medicolegal considerations. Recent reviews based on malpractice claims it occur in 1/8801-1/18760 of intra-abdominal operations [3,5].

Gossypiboma most commonly occurs in emergency interventions, in upper abdominal surgery, and gynecology procedures [4,6].

Several risk factors have been reported including an emergency operation, long operation times, hurried sponge counts, inexperienced staff, and obesity of patients female patients due to difficult gynecological procedures were reported to be the risk groups for this iatrogenic complication [3,6].

In our patient, body mass index was within the normal limits, but we had no further information about the previous procedure because of lack of the medical records.

Cotton or gauze pads are inert substances and can cause foreign-body reactions in two forms of reactions has been described against gossypiboma: An exudative reaction leading to abscess formation with or without bacterial infection and an aseptic fibrinous response that results in adhesion or encapsulation leading to granuloma formation [1,7,8].

Gossypiboma-related complications normally appear within 2 years after the original surgery. Transmural migration of sponge can occur in various intra-abdominal locations. During the first 2 months of retained gauze, there is little reaction. From 2 months to 2 years, infective inflammation and abscesses are found. During this period, extrusion of the gauze may occur internally or through an external fistulous tract [9]. In delayed phase, presentation may be as a mass and/or intestinal obstruction [10].

Clinical presentation is variable and depends on the location of the foreign body and on the type of inflammatory reaction presented by the host [1]. Gossypiboma usually remain asymptomatic for many years or may present in different symptoms varying from mild discomfort, pain, vomiting, and fever to more severe complication as bowel obstruction, perforation, pseudotumors, and granulomatous peritonitis [11].

The low index of suspicion due to the rarity of the condition and the long latency in the manifestation of the symptoms frequently result in misdiagnosis (or even missed diagnosis) leading to inordinate delay in proper management [7]. Imaging modalities used for the diagnosis of gossypiboma include radiographs, ultrasound abdomen, CT, and magnetic resonance imaging (MRI) abdomen. Sonographic findings in cases of gossypiboma can be divided into three types as follows [1,11-13]:

- Hyperechogenicity image with posterior acoustic shadowing;
- Well-defined mass with cystic contents and echogenic undulated internal structures;
- Non-specific finding of complex and/or hypoechoic mass. Invariably, internal vascular flow is absent at Doppler study.

Acoustic shadowing is observed in all cases. This is due to the attenuation of beam by foreign bodies as well as presence of gas and sometimes calcification [7]. Radiographs are the most commonly used method to detect retained sponges. In most countries, surgical sponges contain radiopaque material that facilitates detection by standard abdominal radiography.

Radiolucent material such as sponges can cause diagnostic problems [1]. However, rarely present [14], the diagnosis of gossypiboma may be suggested on radiographs as an heterogeneous mass containing gas and surrounded by fibrotic capsule. Radiographs can also suggest the diagnosis when a characteristic whorl-like pattern is present [14]. This finding may be due to gas of an intestinal origin trapped between the fibers of the swabs. This imaging method is not helpful when these markers are disintegrated or fragmented in the delayed phase. In cases complicated by fistula formation, radiographic contrast material instillation may be helpful to define the anatomy and extent of the abnormality [1,13]. CT is the method of choice for detecting gossypibomas and possible complications [13,15]. The reported CT appearances of gossypiboma are often not pathognomonic, and most of the times they are nonspecific [16,17]. On CT, gossypibomas are identified as a well-circumscribed mass, presenting soft tissues density, and high or even mixed masses with or without gas, mottled mural calcification or high-density capsule that may present enhancement in the post-contrast phase [11,17]. Gossypiboma may be also be detected as a cystic lesion with internal whirl-like or spongiform appearance due to the presence of gas trapped within the mesh of sponges [1,12,15].

Gossypibomas appearance in a MRI can be variable, being most commonly identified as a heterogeneous mass, sometimes showing a solid-cystic component, with well-defined contours, surrounded by a well-delimited capsule. For the majority of patients who have undergone MRI more than 1 year after surgery, the retained sponge appeared as a well-defined mass with some degree of increased T2-weighted signal intensity centrally. Often, characteristic wavy low-signal-intensity non-enhancing internal structures that have a whorled appearance due to the sponge material are present as pathognomonic finding.

The differential diagnosis of gossypiboma includes faecaloma, hematoma, abscess formation, tumors, and stones which cannot be unequivocally distinguished on MRI or CT [18,19]. Although it is rarely seen in daily clinical practice, the diagnosis of gossypiboma should be considered in acute mechanical bowel obstruction in either the immediate or delayed post-surgical phase [5].

When the diagnosis of gossypiboma is made, removal of the retained sponge is recommended through surgical, endoscopic,

or laparoscopic method to prevent severe complications that may lead to death (15-22%) or morbidity [20].

Concerning gossypiboma, prevention is preferred rather than treatment. Notwithstanding, there is no highly reliable prevention system. Counting sponges is a method based on staff communication during the surgery with only 77% sensibility [16]. Routine surgical post-operative X-ray (SPOX) constitutes an early detection system, but the need to incorporate a radiopaque marker and to expose the whole surgical field to maximize its efficacy limits its use [16]. More recently, electronic dispositives based on barcode detection and other technological adjuncts for counting sponges are being developed. None of these prevention systems are reliable when used alone [21].

CONCLUSION

The gossypiboma is a rare surgical complication in which the diagnosis may be challenging due to non-specific symptoms. The imaging techniques are very useful in both acute and the delayed phase, and CT scan is considered the method of choice for diagnosis; however, in some cases, the pre-operative diagnosis may remain uncertain even after the imaging examination. In those cases, the surgeon has to endorse the medicolegal consequences of such diagnoses.

REFERENCES

1. Manzella A, Filho PB, Albuquerque E, Farias F, Kaercher J. Imaging of gossypibomas: Pictorial review. *AJR Am J Roentgenol* 2009;193 6 Suppl: S94-101.
2. Ribalta T, McCutcheon IE, Neto AG, Gupta D, Kumar AJ, Biddle DA, *et al.* Textiloma (gossypiboma) mimicking recurrent intracranial tumor. *Arch Pathol Lab Med* 2004;128:749-58.
3. Gawande AA, Studdert DM, Orav EJ, Brennan TA, Zinner MJ. Risk factors for retained instruments and sponges after surgery. *N Engl J Med* 2003;348:229-35.
4. Bani-Hani KE, Gharaibeh KA, Yagha RJ. Retained surgical sponges (gossypiboma). *Asian J Surg* 2005;28:109-15.
5. McIntyre LK, Jurkovich GJ, Gunn ML, Maier RV. Gossypiboma: Tales of lost sponges and lessons learned. *Arch Surg* 2010;145:770-5.
6. Sharifiaghdas F, Beigi FM, Abdi H. Laparoscopic removal of a migrated intrauterine device. *Urol J* 2007;4:177-9.
7. Prasad S, Krishnan A, Limdi J, Patankar T. Imaging features of gossypiboma: Report of two cases. *J Postgrad Med* 1999;45:18-9.
8. Arpit N, Abhijit R, Narlawar R. Gauze pad in the abdomen: Can you give the diagnosis without knowing the history. *J Radiol* 2002;10:132-6.
9. Shyung LR, Chang WH, Lin SC, Shih SC, Kao CR, Chou SY. Report of gossypiboma from the standpoint in medicine and law. *World J Gastroenterol* 2005;11:1248-9.
10. Wan W, Le T, Riskin L, Macario A. Improving safety in the operating room: A systematic literature review of retained surgical sponges. *Curr Opin Anaesthesiol* 2009;22:207-14.
11. Cengiz H, Kaya C, Deniztas C, Ekin M, Ayag ME, Yasar L. Gossypiboma: After 13 years of a gynecologic procedure-masquerading as an ovarian tumor. *J Obstet Gynaecol India* 2014;64 Suppl 1:81-2.
12. Dar H, Dogra V, Lone S, Farooq S. Transmural migration of a retained sponge through bowel wall causing intestinal obstruction. *Int J Surg Med* 2016;2:239-41.
13. O'Connor AR, Coakley FV, Meng MV, Eberhardt SC. Imaging of retained surgical sponges in the abdomen and pelvis. *AJR Am J Roentgenol* 2003;180:481-9.
14. Kiernan F, Joyce M, Byrnes C, O'Grady H, Keane F, Neary P. Gossypiboma: A case report and review of the literature. *Ir J Med Sci* 2008;177:389-91.

15. Choh NA, Jabeen S, Ashraf O, Khan A, Shaheen F, Wani GM, *et al.* Computed tomography of retained intra-abdominal sponges: Eight-year experience at a tertiary care center. *Saudi Surg J* 2017;5:1.
16. Greenberg CC, Regenbogen SE, Lipsitz SR, Diaz-Flores R, Gawande AA. The frequency and significance of discrepancies in the surgical count. *Ann Surg* 2008;248:337-41.
17. Lu YY, Cheung YC, Ko SF, Ng SH. Calcified reticulate rind sign: A characteristic feature of gossypiboma on computed tomography. *World J Gastroenterol* 2005;11:4927-9.
18. Bellin M, Hornoy B, Richard F, Davy-Miallou C, Fadel Y, Zaim S, *et al.* Perirenal textiloma: MR and serial CT appearance. *Eur Radiol* 1998;8:57-9.
19. Alessandrino F, Dellafiore C, Eshja E, Alfano F, Ricci G. Medical imaging in clinical practice. Differential Diagnosis for Female Pelvic Masses. Rijeka: InTech; 2013.
20. Sun HS, Chen SL, Kuo CC, Wang SC, Kao YL. Gossypiboma-retained surgical sponge. *J Chin Med Assoc* 2007;70:511-3.
21. Justo JW, Sandler P, Cavazzola LT. Retained surgical sponge mimicking GIST: Laparoscopic diagnosis and removal 34 years after original surgery. *J Minim Access Surg* 2013;9:29-30.

© **EJManager**. This is an open access article licensed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted, noncommercial use, distribution and reproduction in any medium, provided the work is properly cited.

Source of Support: Nil, Conflict of Interest: None declared.