

# Septic abdominal gossypiboma: A life threatening surgical site infection

Carlos Augusto Gomes,<sup>1</sup> Fausto Catena,<sup>2</sup> Cleber Soares Junior,<sup>1</sup> Massimo Sartelli,<sup>3</sup> Salomone Di Saverio,<sup>4</sup> Felipe Couto Gomes,<sup>1</sup> Camila Couto Gomes<sup>5</sup>

<sup>1</sup>Surgery Department, Therezinha de Jesus University-Hospital, Faculty of Medical and Health Sciences Juiz de Fora (SUPREMA), Minas Gerais, Brazil; <sup>2</sup>Emergency Department, Maggiore University Hospital, Parma, Italy; <sup>3</sup>Department of Surgery, Hospital Macerata, Macerata, Italy; <sup>4</sup>Trauma Surgery Unit, Maggiore Hospital, Bologna, Italy; <sup>5</sup>Surgery Department, Governador Israel Pinheiro Hospital (HGIP-IPSEMG), Belo Horizonte, Minas Gerais, Brazil

## Abstract

Gossypiboma is an uncommon surgical iatrogenic complication due to the retention of textile material inside natural cavities, especially in abdomen. An important aspect of gossypiboma is linked to the kind of inflammatory-triggered reaction: aseptic or pyogenic. In pyogenic reactions, granulomas and pus appear as a response to contaminated material left in the abdomen. Most patients are symptomatic, and clinical history and physical examination combined with computed tomography are essential to establish the diagnosis. The complication has similar pathophysiology from intra-abdominal abscess, however, has worse clinical course, poor prognosis and needs operative removal. Therefore, the gossypiboma deserves special attention and should be considered as a severe surgical site infection involving organs and/or spaces. Prevention is the key point to control the complication and is based on a systematic and systematized conference of such materials at the end of an operation. The purpose of this paper is to show for the first time all pathophysiologic steps of pyogenic gossypiboma. Moreover, to remind the risk factors associated to fungal infection (female, age, acute care unit stay, upper intestinal tract perforation, prolonged broad spectrum antibacterial therapy, parenteral nutrition and central venous catheter placement). At the

same time, highlight that early antifungal therapy (*Candida glabrata*), should be kept in mind and should not be neglected as these was the agent involved in this patient's death. Finally, alert the surgeons about this severe surgical site infection, which may lead to litigation.

## Introduction

Gossypiboma derives from Latin *gossipium*, meaning cotton, and Swahili *boma*, meaning a hidden place. It is therefore an operative iatrogenic complication arising from the retention of textile material within natural cavities of the human body after operative procedures, particularly in the abdomen.<sup>1,2</sup> Gynecological and digestive tract interventions are the main surgeries connected to gossypibomas.<sup>3</sup> In addition, according to Dakubo *et al.* 36% of them occur after gastrointestinal surgeries, 27% in caesarean sections, 18% in hysterectomies, and 13.5% in oncologic surgeries.<sup>4</sup>

The complaints are related to the type of inflammatory reaction developed by the host in response to the presence of a foreign body. Thus, the disease can manifest as abdominal tumors isolated by a fibrous capsule or by early complications such as intestinal obstruction, multiple intestinal fistulae, malabsorption syndrome, or diffuse peritonitis.<sup>4,5</sup>

The purpose of this case report is to alert surgeons about the severity of gossypibomas, review its pathophysiological and diagnostic aspects and indicate preventive measures. In addition, to highlight the possibility of fungal infection (*Candida spp.*), the agent involved in this patient's death.

## Case Report

A 64-year-old female patient sought medical care, one month after a right partial nephrectomy due to renal tumor, referring lumbar pain non-responsive to common analgesics, fever, wandering difficulty, nausea and vomits. A computed tomography of the abdomen showed a heterogeneous tumor with small air bubbles inside in the right kidney location, compressing and dislocating anteriorly the stomach and the duodenum, suggesting gossypiboma (Figure 1). An upper digestive endoscopy evidenced partial foreign body intrusion into duodenum lumen (Figure 2). The patient was admitted due to obstructive acute abdomen and urgently submitted to a laparotomy. During the procedure, a friable inflammatory process was seen in the retroperitoneum

Correspondence: Carlos Augusto Gomes, Rua Senador Salgado Filho 510/1002, Bairro Bom Pastor, Minas Gerais, Brazil. CEP: 36021-660. Tel.: 055.21.32.3218.3188. E-mail: caxiaogomes@terra.com.br

Key words: Foreign body; gossypiboma; post-operative complications.

Conflict of interest: the authors declare no conflict of interest.

Received for publication: 10 August 2017.

Revision received: 24 September 2017.

Accepted for publication: 17 October 2017.

©Copyright C.A. Gomes *et al.*, 2017

Licensee PAGEPress, Italy

Journal of Peritoneum (and other serosal surfaces) 2017; 2:70

doi:10.4081/joper.2017.70

This article is distributed under the terms of the Creative Commons Attribution Noncommercial License (by-nc 4.0) which permits any non-commercial use, distribution, and reproduction in any medium, provided the original author(s) and source are credited.

encompassing the right kidney, stomach wall, duodenum and omentum. It was also diagnosed the migration of the gossypiboma to proximal jejunum segment. Thus, the patient underwent an enterotomy with removal of the foreign body, followed by enterorrhaphy (Figure 3). Besides all the efforts, the patient died in the 17<sup>th</sup> postoperative day due to persistent sepsis caused by *Candida glabrata*.

## Discussion and Conclusions

An important aspect of the presence of gossypiboma in serous cavities is linked to the kind of inflammatory-triggered reaction: aseptic or pyogenic. In pyogenic reactions, granulomas and pus appear as a response to contaminated material left in the abdomen. It manifests precocious, leading to severe symptoms, with subsequent stercoral or internal fistulae, intestinal obstruction (obturation), and peritonitis.<sup>6</sup> The inflammatory process is intense enough to cause ischemia and necrosis of the surrounding tissue and textile material intrusion/extrusion. Its elimination mainly occurs through the abdominal wall or the digestive tract.<sup>5,6</sup>

Clinical findings include: surgical scars; a history of prolonged post-operative course, especially the presence of fever and prolonged adynamic ileus; palpable mass with or without peritoneal reaction; episodes of intestinal semi-occlusion; and spontaneous abdominal abscesses and fistulae.<sup>6</sup> Contrast enhanced computed tomography represents the main diagnostic tool. The findings are typical, and gas in textile material may suggest communication with the digestive system or infection by anaerobic bacteria.<sup>6,7</sup>

A gossypiboma should be considered a surgical site infection involving organs and/or spaces (Figure 1). The septic material left inside abdominal cavity has similar pathophysiology from intra-abdominal abscess, however, worse clinical course, prognosis and needs operative removal. It has been also described high surgical morbidity and mortality rate varying from 18% to 62% and 11%-35% respectively.<sup>8</sup> It could migrate completely into the small intes-

tine loops with discrete perivisceritis signs (Figure 2). Thus, may manifests with intestinal obstruction, since a textile material will most probably not go through the ileocecal papilla.<sup>6</sup>

The case reports this unusual situation (obturation), in which the foreign body has migrated from retroperitoneum to jejunum lumen (Figure 3). The post-operative course was not satisfactory, because the patient evolved with prolonged adynamic ileum, persistent septic state, respiratory failure and mechanical ventilation, despite the surveillance of any potentially sources of infection such as: surgical site, lungs and venous central line access. Moreover, two postoperative abdominal tomographic scans did not show any signs of complications, with no justification at first for a relapar-



Figure 2. Gastroduodenoscopy showing textile material (gossypiboma) into the lumen of the duodenum. Its endoscopic removal is not viable.

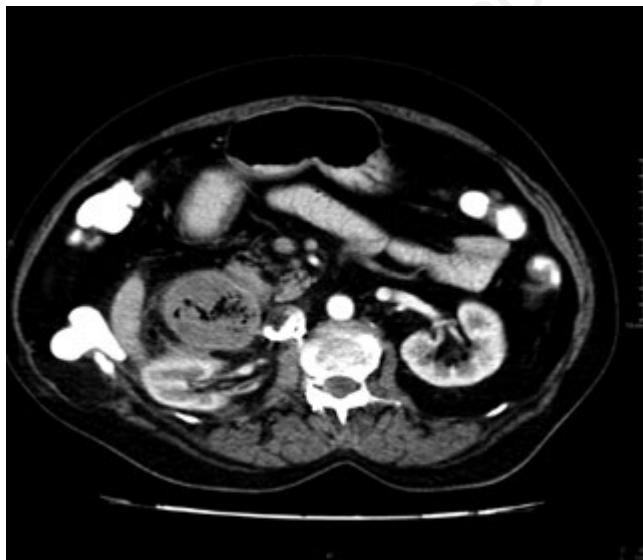


Figure 1. Tomography of the abdomen showing tumor heterogeneity, which is located between residual segment of the right kidney and the duodenum, after right partial nephrectomy. In addition, signs of air within and erosion of the duodenum wall are observed.



Figure 3. Intraoperative view of the gossypiboma that caused jejunal obturation, and its surgical removal by enterotomy and enterorrhaphy.

tomic approach. The antimicrobial coverage against gram positive and negative bacteria and further expanded to *MRSA Staphylococcus* and yeast (echinocandins) is worth of note and was according to current recommendations.<sup>9</sup>

However, a retrospective review allows us to assume two possibilities: the first one, the presence of retroperitoneal soft tissue infection source, which was not diagnosed during primary procedure, neither by the post-operative image. In this situation, the source could have been responsible for persistent sepsis and the patient should be treated by operative debridement. Still, despite two tomographies have failed to demonstrate floating areas (abscess) or other complications, the surgical exploration of retroperitoneum should have been expedited. The second one was the late diagnosis of fungal infection (*C. glabrata*) and late prescription of specific antifungal agents, because its microbiological diagnosis is still time consuming. So, its presence and pathogenicity should be always taken in mind as a presumptive diagnosis. As we known, *C. glabrata* is the second leading cause of invasive candidiasis, but its pathogenicity and host adaptability is yet to be studied.<sup>10</sup>

The patient had many risk factors to fungal infection to support a precocious therapy (female, age, acute care unit stay, upper intestinal tract perforation, prolonged broad spectrum antibacterial therapy, parenteral nutrition and central venous catheter placement). Other risk factors that should be remembered include: recurrent abdominal surgery, gastrointestinal anastomosis leakage, multifocal colonization by *Candida spp.*, and additional associated disease such as acute renal failure and immunosuppression.<sup>10,11</sup>

Therefore, the septic gossypiboma is a severe disease; the most important method to control this surgical site complication is prevention with systematic checking of surgical compresses. We did not find any other publication documenting all the steps illustrated here that were involved in this serious problem, which may lead to litigation. In addition, the existing fungi, *Candida spp.*, should not be neglected as it was the agent involved in the patient's death.

## References

1. Akbulut S, Sevinc MM, Basak F, et al. Transmural migration of a surgical compress into the stomach after splenectomy: a case report. *Cases J* 2009;2:7975.
2. Alayo E, Attar B, Go B. Image of the month. A case of recurrent abdominal pain due to a gossypiboma with spontaneous resolution. *Clin Gastroenterol Hepatol* 2010;8:e13-4.
3. Sharma D, Pratap A, Tandon A, et al. Unconsidered cause of bowel obstruction-gossypiboma. *Can J Surg* 2008;51:E34-5.
4. Dakubo J, Clegg-Lamprey JN, Hodasi WM, et al. An intra abdominal gossypiboma. *Ghana Med J* 2009;43:43-5.
5. Iglesias AC, Salomão RM. Gossypiboma abdominal - Análise de 15 casos. *Rev Colégio Brasil Cirurg* 2007;34:106-13.
6. Atay M, Ahmad IC, Bilgin M, et al. Gossypiboma/textiloma mimicking as tumour recurrence. *J Pak Med Assoc* 2014;64:708-10.
7. Maynard J, Shah N, Groom K, et al. Gossypiboma: a hidden passenger. *BMJ Case Rep* 2015;2015.
8. Manzella A, Filho PB, Albuquerque E, et al. Imaging of gossypibomas: pictorial review. *AJR Am J Roentgenol* 2009;193:S94-101.
9. Rajput A, Loud PA, Gibbs JF, et al. Diagnostic challenges in patients with tumors: case 1. Gossypiboma (foreign body) manifesting 30 years after laparotomy. *J Clin Oncol* 2003;21:3700-1.
10. Sartelli M, Weber DG, Ruppé E, et al. Antimicrobials: a global alliance for optimizing their rational use in intra-abdominal infections (AGORA). *World J Emerg Surg* 2016;11:33.
11. Bassetti M, Marchetti M, Chakrabarti A, et al. A research agenda on the management of intra-abdominal candidiasis: results from a consensus of multinational experts. *Intens Care Med* 2013;39:2092-106.