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Transmural Migration of Gossypiboma with Intraluminal Small-Bowel Obstruction: A Case Report

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Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
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Conflict of interest: None declared

Patient: Female, 26-year-old
Final Diagnosis: Gossypiboma
Symptoms: Abdominal pain
Medication: —
Clinical Procedure: —
Specialty: Surgery

Objective: Diagnostic/therapeutic accidents

Background: The term "gossypiboma" refers to a textile matrix surrounded by a foreign-body reaction. Gauze, surgical dressings, and sponges are the most frequently retained materials after abdominal surgeries. The incidence is variable and underreported, mostly due to the legal consequences of their discovery, but also because many patients remain asymptomatic. Retained material can penetrate the bowel or bladder, leading to malabsorption, partial or complete bowel obstruction, and gastrointestinal bleeding secondary to vessel erosion.

Case Report: A 26-year-old woman with a 10-month history of abdominal pain and distension presented with intraluminal small-bowel obstruction due to transmural migration of a gossypiboma. Prior to presentation at our service, she had undergone an exploratory laparotomy at another hospital due a locally advanced adenocarcinoma of the rectosigmoid junction.

Conclusions: Gossypibomas are rare causes of bowel obstruction, but must not be overlooked in the differential diagnosis of patients with a history of laparotomy. Continuous training of medical professionals and strict adherence to proper surgical technique are essential to avoid this problem.

MeSH Keywords: Foreign Bodies • Intestinal Obstruction • Postoperative Complications

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Background

The term "gossypiboma" is derived from the Latin *gossypium*, "cotton", and the Swahili *boma*, meaning "place of concealment" [1]. Also known as textilomas, originating from "textilis" (meaning weave in Latin) and "oma" (meaning disease, tumor, or swelling in Greek) [2], gossypibomas have been reported after abdominal, chest, cardiovascular, orthopedic, and neurosurgical procedures [3]. The term describes a textile matrix surrounded by a foreign-body reaction [2]. Gauze, surgical dressings, and sponges are the most frequently retained materials after abdominal surgeries [1].

The incidence of gossypibomas is variable and underreported, mostly due to the legal implications of their detection, but also because many patients remain asymptomatic. The incidence rate varies between 1 out of 1000 to 1 out of 1500 intra-abdominal operations and 1 out of 300 to 1 out of 1000 of all operations [2].

Clinical presentation also varies and depends on the location of the foreign body and on the kind of inflammatory reaction mounted by the host. Acute and chronic forms exist. The acute form tends to present with formation of abscesses and cutaneous fistulas, whereas the chronic form presents as an encapsulated mass (foreign body granuloma) with nonspecific symptoms [4–7].

The recommended management is excision, which can be performed endoscopically, laparoscopically, or via the open route, and aims to avoid the complications that lead to mortality rates of 11–35% [8–12].

In view of the importance of this topic as a clinical and medicolegal issue, we describe a rare case of a young woman who presented with intraluminal small-bowel obstruction due to transmural migration of a gossypiboma.

Case Report

A 26-year-old woman presented with a 10-month history of abdominal pain and distension. Pain was most severe after meals and was accompanied by bloody stools. She also reported a 20-kg weight loss since the onset of symptoms. The patient had undergone an exploratory laparotomy at another hospital 4 months prior to presentation at our service. The surgical report of this procedure described a locally advanced neoplasm of the rectosigmoid junction, treated with sigmoidectomy, hysterectomy, bilateral salpingo-oophorectomy, and Hartmann's colostomy. The patient had been referred for postoperative adjuvant therapy, which she had refused to undergo.

On physical examination, her respiratory rate was 22 breaths per minute, blood pressure was 110 x 60 mmHg, and heart rate was 98 beats per minute. She was underweight (BMI 14 kg/m^2) and had a palpable mass in the right iliac fossa. Laboratory tests revealed a white blood cell count of 6320/mm^3 and a red blood cell count of 2.92×10^6 mm^3. The hemoglobin level was 8.2 g/dL and the serum albumin level was 1.8 g/dL.

The histopathology report of her previous surgery described well-differentiated adenocarcinoma with serosal invasion and involvement of 2 of 12 sampled lymph nodes (TNM stage pT3pN1pMx), intestinal polyposis with moderate atypia, a cervical fibroid, chronic cervicitis, follicular cysts of the ovary, and chronic salpingitis.

Colonoscopy was performed and revealed pedunculated, sessile polyps distributed from near the pectineal line through to the rectal stump, as well as multiple other pedunculated, sessile polyps from the region of the stoma to the hepatic flexure, but the examination was interrupted due to technical difficulties. Thus, the ascending colon and the cecum could not be evaluated, which did not rule out the possibility of a tumor in these colonic segments.

An abdominal CT scan showed 2 hepatic lesions in Couinaud segment 7 (dimensions: 4×4 cm and 3.3×1.5 cm) and marked distention of small-bowel loops. However, the presence of a foreign body in the peritoneal cavity or inside the intestinal lumen was not evident or suggested. Results of a chest CT and upper-GI endoscopy were within normal limits.

We instituted nutritional therapy in preparation for later surgical intervention, but the patient developed acute abdomen with evidence of bowel obstruction and thus underwent emergency surgery.

On the day of the emergency surgery, the patient had a heart rate of 118 beats per minute, blood pressure of 90×60 mmHg, and respiratory rate of 28 breaths per minute. Laboratory tests revealed a white blood cell count of 11 400/mm^3 and the red blood cell count was 3.31×10^6/mm^3. The hemoglobin level was 9.8 g/dL and the serum albumin level was 2.3 g/dL. Plasma biochemical tests showed glycemia=125 mg/dL, Na=138 mmol/L, K=4.3 mmol/L, and creatinine=1.3 mg/dL. Immediately before surgery, an antimicrobial regimen with metronidazole and gentamicin was started.

Exploration of the abdominal cavity revealed 2 hepatic lesions suggestive of implants, and in the proximal jejunum, immediately after the Treitz ligament, there was a blockage caused by adherence of the great omentum without the presence of an abscess or collections, markedly dilated small-bowel loops, and a compressible, intraluminal mass in the terminal ileum

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Figure 1. Dilated and thickened ileal loop with the retained gauze sponge partially protruding from a transverse incision.

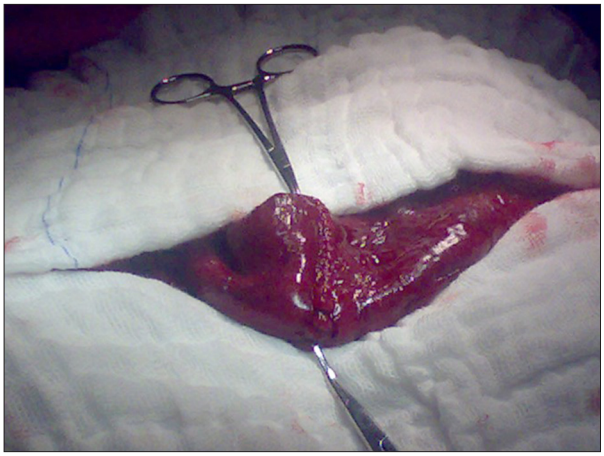

Figure 2. Closure of the transverse incision of the terminal ileum used to remove the retained sponge.

approximately 30 cm from the ileocecal junction. The intestinal loops were showing no signs of damage that suggested the need for resections. Transverse enterotomy revealed a retained surgical sponge obstructing the bowel (Figure 1). The sponge was removed and the transverse incision was closed with running 3-0 polypropylene sutures (Figure 2). In the immediate postoperative period, the patient was transferred to the Intensive Care Unit, still with orotracheal intubation and mechanical ventilation, with disseminated intravascular coagulation. The patient died on the 5th postoperative day.

Discussion

This case of gossypiboma is an important opportunity to review and draw attention to an old issue that remains clinically relevant, with medico-legal implications. We report a case of transmural migration without the formation of an abscess, which resulted in intestinal obstruction, whose postoperative evolution was unfavorable, resulting in the patient's death. This form of clinical presentation is extremely rare. In a few cases, spontaneous expulsion occurs [12].

Gossypibomas occur most commonly after abdominal and pelvic surgery [7]. Bowel obstruction can occur as the result of 2 types of host reaction: (1) development of a pseudotumor (foreign body granuloma) with adhesions and extrinsic compression or (2) intrinsic obstruction [13]. Transmural migration is rare [14–16]. Retained material can penetrate the bowel or bladder, leading to malabsorption, partial or complete bowel obstruction, and gastrointestinal bleeding secondary to vessel erosion. Bowel penetration is most common at the ileum or colon, but can occur at any site along the gastrointestinal tract [14].

Several hypotheses have been formulated to explain foreign-body migration. A foreign body can produce an inflammatory reaction with abscess formation, bowel perforation, and later migration [14]. The erosive process can occur over the course of several years and many patients become symptomatic, with abdominal pain, nausea and vomiting, anemia, abdominal mass, diarrhea, malnutrition, and weight loss [15].

Once within the gastrointestinal tract and depending on size, gossypibomas can be displaced by peristaltic movement and can thus produce obstruction at any level. The ileocecal valve is the most common site of obstruction. Smaller gossypibomas can reach the colon and be eliminated in the stool [14]. Symptoms include abdominal pain, palpable mass, nausea and vomiting, rectal bleeding, diarrhea, and systemic symptoms such as fever and weight loss.

When there is an exudative inflammatory response, patients may develop abscesses and internal fistulas (gastric, intestinal, vesical, colonic, or vaginal) or external fistulas (draining through the abdominal wall) [4–7]. Abdominal CT scanning provides detailed information on the lesion in most cases. The appearance may be that of a cystic lesion with spongiform contents, hyperdense capsule, concentric layering, or mural calcifications [13,18,19]. The presence of gas is indicative of bowel perforation, inflammatory reaction, or abscess formation [19].

When CT findings are inconclusive, MRI is the next step in assessment. Signal intensity varies according to the histology of the mass, its stage, and presence of fluid contents. On MRI, gossypiboma is typically seen as a mass lesion with a thick, well-defined capsule and low signal intensity on T1- and T2-weighted imaging [20].

The treatment of choice is surgical removal. Erosion of intraperitoneal foreign bodies into the gastrointestinal tract followed

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by gastroscopy- or colonoscopy-aided removal has been reported [8–11,21]. Mortality rates of 11–35% have been reported. When removal occurs in the immediate postoperative period, morbidity and mortality rates are low; however, if the material has been retained for a long time since the initial procedure, removal may necessitate extensive surgery, which is associated with high rates of complications and mortality [15].

The most important measure is prevention, which can include exploration of the abdominal cavity at the end of the procedure, utilization of textiles with radiopaque markers woven into the fabric, and careful accounting of surgical materials. Exploration of all 4 quadrants of the abdomen should be performed at the end of every abdominal surgical procedure, even after the sponge count has been performed [15,17].

Conclusions

Gossypibomas are rare causes of bowel obstruction but must not be overlooked in the differential diagnosis of patients with a history of laparotomy. Continuous training of medical professionals and strict adherence to surgical technique are essential to avoid this problem.

Conflicts of interest

None.

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