Gossypiboma complicating conservative treatment of post-operative fistula and a proposed classification system

ABSTRACT

Introduction: Gossypiboma denotes surgically retained cotton or sponge following intra-abdominal procedures. The incidence of gossypiboma as a cause of small bowel obstruction still remains very low, probably due to under reporting.

Presentation of Case: A case report of a 45yr old female with mechanical small bowel obstruction from gossypibioma. She had exploratory laparotomy with extraction of three pieces of rolled up gauzes.

Discussion: The theory for intraluminal gossypiboma, is the suppurative inflammation and necrosis with transmigration of the retained intra-abdominal gauze through a spontaneous enteric fistulation. We propose a possible alternative theory; the migration of sponge into bowel lumen through an iatrogenic fistulous tract following conservative treatment of enterocutaneous fistula and a possible classification of gossypiboma into (intra-operative and post-operative) base on timing of occurrence.

Conclusion: In recognition of post-operative gossypiboma, management of enterocutaneous fistulas should be considered an extended continuation of intraabdominal procedures.

Keywords- gossypibioma, small bowel obstruction, post-operative fistula

INTRODUCTION

Retained intra-abdominal cotton or sponge following open abdominal procedures referred to as gossypiboma is underreported with an estimated incidence of 1 per 1000 to 3000 surgical

procedures.[1] Gossypiboma is more common after emergent and difficult abdominal surgeries. Its manifestation is protean, ranging from vague abdominal pain to more severe complications such as intra-abdominal abscess collection, bowel obstruction and perforations.[2]

The retained gauze might remain in the free peritoneal cavity as an extraluminal foreign body, and it may migrate intraluminal thus obstructing a hollow viscus, commonly the intestine. The proposed theory for intraluminal gossypiboma, is the suppurative inflammation with transmigration of the retained intra-abdominal gauze through a spontaneous enteric fistulation.[3,4] We propose a possible alternative theory in this report: the migration of sponge into the lumen through an iatrogenic fistulous tract rather than through a spontaneous fistula formation.

CASE PRESENTATION

A 45year old female presented to our facility with recurring colicky central abdominal pain, bilious vomiting, and constipation of 2 months duration. Past history revealed that she had total abdominal hysterectomy for symptomatic uterine fibroid at a peripheral hospital five months prior. The post-operative period of the abdominal hysterectomy was complicated by wound dehiscence and bilious discharge from the wound which was managed with dressing until complete wound epithelialization after about six weeks duration. She has had two previous admissions in the two months interval between the onset of colicky abdominal pain and the index presentation to our facility. She was treated with suck and drip on these two admissions at the referral hospital. She had no known co-morbidities. When she presented in our facility, she was dehydrated but hemodynamically stable. The abdominal examination showed a distended abdomen with a hypertrophic midline scar. There was no tenderness and no organomegally. The percussion note was resonant and there was no demonstrable free peritoneal fluid. Bowel sound

was hyperactive. Sonographic examination showed dilated small bowel loops. Based on the clinical and radiologic findings, a diagnosis of postoperative adhesive small bowel obstruction was made.

TREATMENT AND FOLLOW-UP

Since the index presentation was the third episode in a short two months period, we offered an emergent exploratory laparotomy. We found small bowel loops adherent to the peritoneal surface of the previous scar. There was a narrowed segment, transitional zone, (TZ) in the adherent part of the bowel about 40cm from the ileocaecal junction. Proximal to the TZ was a firm oval-shaped intraluminal mass (figure A) which could not be milked past this narrowed segment. A longitudinal enterotomy was made to extract the mass (figure B). The enterotomy was closed transversely in 2 layers using Vicryl 2/0. The extracted mass was well layered and rolled three pieces of gauze, laden with faeces (figure C). The abdominal cavity was lavaged with warm saline and abdomen closed in layers.

She was discharged on the 6th post-operative day after oral intake and bowel function normalized. Bowel function remained normal at the follow-up clinic visit months after our intervention.

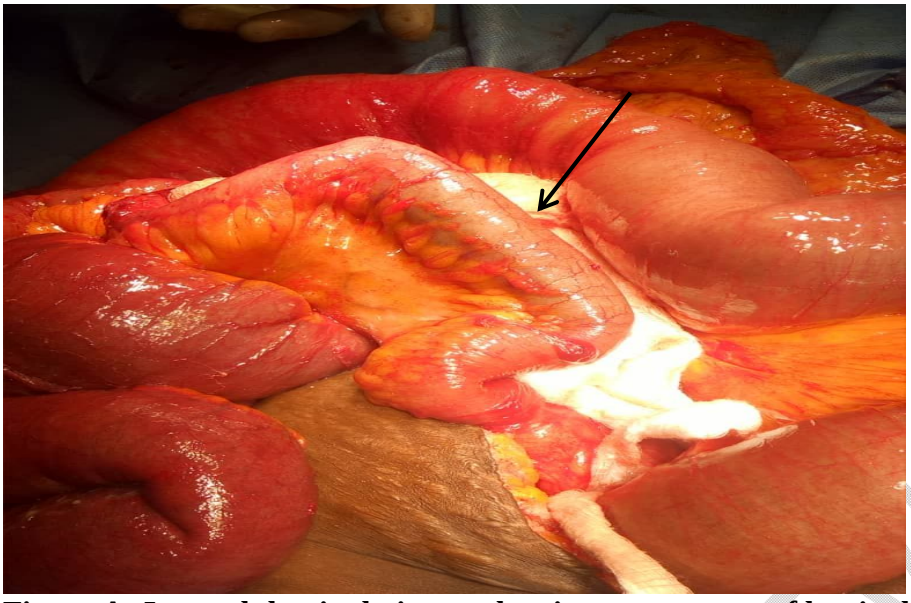

Figure A: Intra-abdominal picture showing appearance of luminal mass before enterotomy

Figure B: rolled up mass of gauze before disentangling three pieces of gauze

Figure C: Disentangled

DISCUSSION

The previously state theory for intraluminal or intracavitary gossipyboma is intense inflammation with suppuration around the retained gauze, liquefaction of an adjacent bowel wall with spontaneous fistulation of the bowel wall and migration of the gauze via the fistula into the bowel lumen. Luminal migration of the gossypiboma down-regulates the inflammatory response at the site, and the fistulous tract heals by fibrosis, with or without proof of bowel wall defect or perforation.[3,4] This article reports a case of intra-luminal gossibyboma following the management of postoperative enterocutaneous fistula and proposes an alternative theory which is the transmigration of gauze through an iatrogenic fistula and subsequent healing of the fistulous tract by fibrosis. The gauze found in this case is unlikely to have been left behind during the previous hysterectomy because abdominal packs rather than small pieces of gauze are used during laparotomies. Additionally, layering of gauze is the usual practice during wound dressing rather than use of abdominal packs especially in poor resource country like Nigeria.

Once intraluminal, peristalsis propels the gauze pack onwards. Small pieces might be expelled in faeces spontaneosusly.[5] Otherwise they might arrest at narrow points with accumulation of undigested food residues and provoke episodes of partial intestinal obstruction before becoming complete,[4,6] It is often challenging to clinically distinguish between adhesive and foreign body obstructions in post-operative patients as occurred in this case.

Transmigration of sponge into the intestinal lumen is a less common outcome as reported here, the majority of sponge lead to suppuration in the peritoneal cavity, with encapsulation of the sponge in a mass, adhesions with extraluminal obstruction and sometimes persistent fistulation. Risk factors leading to gossypiboma are said to include a higher mean body-mass index, female gender, emergency surgery, difficult operative procedure, long operating time, surgeon's fatigue,

change in nursing and surgical teams, an unplanned change in the operation and unaccountable human error.[7,8] Use of small sponges both intra-operatively and for post-operative dressing of fistulous abdominal wound should be considered risk factor for intestinal gossypiboma.

Sequel to our experience, we propose classification for gossypiboma based on time of occurrence into:

Intraoperative Gossypiboma (during surgery) and

Postoperative Gossypiboma (after surgery)

Guidelines for intraoperative management of gauze are well defined to prevent retention of gauze and other surgical instruments such as, excluding use of small sponges in peritoneal cavity, counting and tying of sponges, tagging of sponge with artery forceps, impregnating sponges with radio-opaque markers, multi-level checks, automated counting systems using bar-codes and counters, radiofrequency beacon and reader with base station and the radiofrequency identification system which focus mainly on detection remain the new trend in prevention of retained surgical sponge.[9]

In attempts to prevent post-operative gossypiboma, similar steps and protocols and most especially excluding use of small sponges in peritoneal cavity should be extended into the management of enterocutaneous fistula especially enteroatmospheric fistula, which might be considered an extended continuation of the open abdominal procedure until complete epithelialization.

CONCLUSION

Gossypiboma remains an untoward event in surgical practice up till date, with its attendant morbidity and mortality to patients. In recognition of post-operative gossypiboma, management

of enterocutaneous fistulas should be considered an extended continuation of a peritoneal procedure.

ETHICAL APPROVAL: Gotten

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