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 gossypiboma. 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 intra-abdominal procedures.

Keywords- gossypiboma, 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.[2-4]

The retained gauze might remain in the free peritoneal cavity as an extraluminal foreign body, and it may migrate intraluminally 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.[5,6] 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 has 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 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 the abdomen was 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 visits months after our intervention.

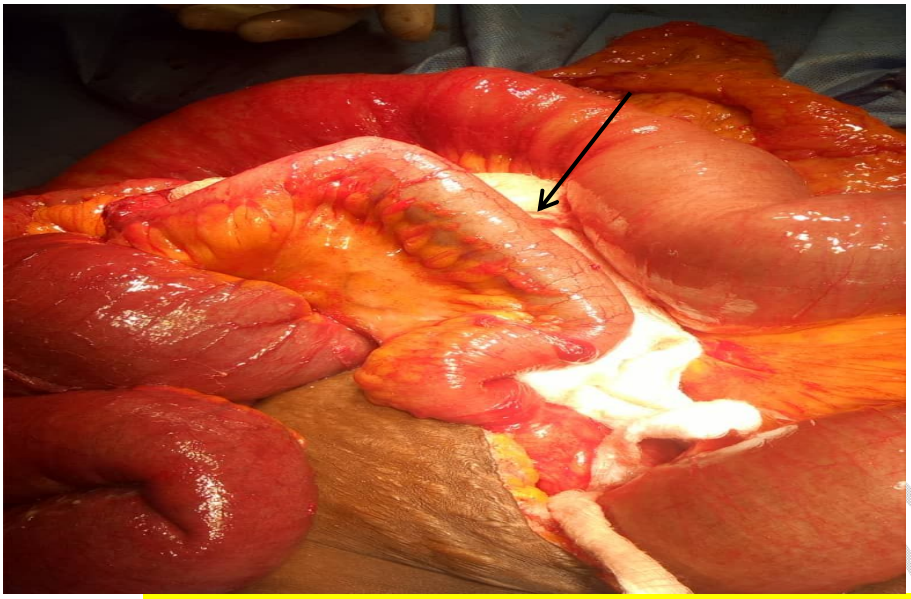

Figure A: picture showing the intra-abdominal appearance of the luminal mass before enterotomy

Figure B: rolled up mass of gauze before disentangling

Figure C: Disentangled three pieces of gauze

DISCUSSION

The previously stated theory for intraluminal or intracavitary gossypiboma 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.[5,6] This article reports a case of intra-luminal gossypiboma 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 the use of abdominal packs especially in a resource poor country like Nigeria.

Once intraluminal, peristalsis propels the gauze pack onwards. Small pieces might be expelled in faeces spontaneously.[7] Otherwise they might arrest at narrow points with accumulation of undigested food residues and provoke episodes of partial intestinal obstruction before becoming complete.[6,8,9] 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 as reported here is a less common outcome. The majority of sponges lead to suppuration in the peritoneal cavity, with encapsulation of the sponge in a mass, formation of adhesions causing extraluminal obstruction and sometimes persistent fistulation. Risk factors leading to gossypiboma 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.[10- 12] The use of small sponges intra-operatively and for post-operative dressing of fistulous abdominal wounds should be considered a risk factor for intestinal gossypiboma.

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

Intraoperative Gossypiboma (during surgery) and

Postoperative Gossypiboma (after surgery)

Guidelines for intraoperative management of gauze and other surgical instruments are well-defined. They include: excluding use of small sponges in the peritoneal cavity, pre and post-operative counting of sponges with automated counting systems using bar-codes and counters, impregnating sponges with radio-opaque markers, multi-level checks, as well as radiofrequency beacon and reader with base station which focuses mainly on detection remains the new trend in the prevention of retained surgical sponge.[13-15]

In attempts to prevent post-operative gossypiboma, similar steps and protocols and notably, excluding use of small sponges in peritoneal cavity should be extended into the management of enterocutaneous fistula, most 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:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Consent: Patient consent for publication obtained

Conflict of Interest: Authors declared no conflict of interest

Funding: None

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