

Gossypiboma, an Overlooked Cause of Bowel Obstruction: A Case Report and Literature Review.

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Gossypiboma or Retained Surgical Sponge (RSS) is not an ordinarily encountered occurrence. It is most often reported less for fear of its medico-legal implications and possible unfavorable exposure. Here we report the first ever published case in Ethiopia of a transmural migration of a RSS causing small intestinal obstruction. The 38 year old patient presented with signs and symptoms of intestinal obstruction nine months following a Caesarian Section. Confirmation of a RSS as the cause of the obstruction was made only at surgery. Right hemi-colectomy with ileotransverse anastomosis was done as the distal ileum containing the RSS was gangrenous. The patient had an uneventful stay in the hospital and was discharged in a stable condition.

Keywords: Gossypiboma, retained surgical sponge, transmural migration, intestinal obstruction.

Introduction

Gossypiboma, Textiloma, Gauzoma and Muslinoma are among the terms used to describe RSS post-operatively¹. This iatrogenic but avoidable misfortune is often underreported and is seen to have damaging effect to the health of the patient, and entails an embarrassment as well as medico-legal consequences to the surgeon^{1,2}. Diagnosis is usually difficult since clinical symptoms are vague and imaging characteristics are diverse³.

Gossypibomas can be discovered in the early post-operative period or may remain silent for years^{2,4}. Various types of foreign bodies can be retained following a surgical procedure. Among the list are included; surgical sponges, towels, haemostatic forceps, retractors, pieces of drainage tubes etc^{2,5}. The most commonly found among these is a surgical sponge. This can be due to its small size, common usage and ill-defined shape.⁵ Transmural migration of a RSS is a rare event. It occurs as a result of the RSS abutting against the wall of the intestine and causing an inflammation that eventually evolves into necrosis^{1,6}.

In a systematic review covering the period 1960-2007, Zantvoord *et al.* found 64 cases of transmural migration of RSS⁶. Migration of RSS has been reported to occur into any organ like the stomach, duodenum, ileum, colon, urinary bladder and the diaphragm.^{2,3,6}. However the most commonly involved is the ileum^{3,6}. We report a case of RSS that underwent a complete transmural migration and subsequently causing small intestinal obstruction.

Case Report

A 38 year old lady presented to our hospital with complaints of severe crampy abdominal pain and vomiting of two weeks duration. The vomiting was feculent and she also had failure to pass faeces and flatus for one week. She had caesarian section done 9 months back at a private hospital. Soon after the 2nd post-operative day, she began to experience abdominal pain and occasional vomiting. She was discharged on the 3rd post-operative day despite the presence of the symptoms. On the 7th post-operative day she went back to her doctor for a checkup, but was told that all is going well. Two months passed without improvement in the symptoms. She spent most of her time in bed as the abdominal pain would force her to bend forward when trying to walk. But one day she felt sudden onset of shortness of breathing and chest pain associated with left leg swelling. She was hospitalized in a medical intensive care unit for twenty one days for the treatment of pulmonary thromboembolism and deep venous thrombosis. Then she went abroad to South-East Asia to seek better medical care. Even though sophisticated investigative modalities like CT angiography of the chest were used, the focus was solely on pulmonary thromboembolism and deep venous thrombosis management, thus was no solution to the abdominal complaints.

Upon her presentation to us, the pertinent physical examination findings were; BP- 110/90 mmHg, P.R. - 100/min, R.R. - 24/min, sunken eyeballs, dry tongue, distended abdomen, which was tender on left lower quadrant and hyperactive bowel sounds. Routine laboratory investigation results were WBC- 10,300/mm³, Hgb- 14.5 g/dl, liver and renal function tests and serum electrolytes (Na⁺, k⁺, Cl⁻) were all in the normal ranges. Plain abdominal film showed centrally located distended bowel loops with multiple air-fluid levels. Ultrasound examination was normal.



Figure 1. Retrieved RSS after laparotomy

With the impression of mechanical small bowel obstruction, she was admitted, resuscitated and explored. Intra-operative finding was distended loops of the whole length of ileum and jejunum. The most distal end of ileum was found to be purplish in colour and a firm but compressible ill-defined mass was felt inside it. Ileotomy was done to reveal the content and to our astonishment a surgical sponge sized 25 cm x 25 cm was surely recovered. The ileum was given adequate time for the ischemia to improve but it showed no sign of recovery. Right hemicolectomy with ileo-transverse anastomosis was performed. Inadvertent perforations that resulted while trying to release adhesions between proximal loops of ileum were closed. Patient was discharged well on the 11th post-operative day.

Discussion

Gossypiboma denotes a mass of cotton matrix that is retained inside the body following surgery.⁴ 'Gossypium' means cotton in Latin and 'boma' means a place of concealment in Swahili.⁴ Although it is a preventable gross error, it continues to be reported worldwide since the first case was described by Wilson in 1884^{4,7}. The incidence is estimated to be 1 in 100-3000 surgeries and 1 in 1000-1500 laparotomies^{7,8}. Abdomen takes the biggest share (56%), followed by the pelvis (18%) and the thorax (11%)¹.

The manifestations of RSS can be acute or chronic depending on the type of reaction it induces in the surrounding tissues; the first type is an aseptic fibrinous response characterized by granuloma and scar tissue formation that encapsulates the retained foreign body^{1,4,5,7,8}. The second type is an exudative reaction which may result in wound infection, abscess, fistula formation or sepsis^{1,4,5,7,8}. Although it is rare, transmural migration of RSS can occur as a result of necrosis of bowel wall due to inflammation^{1,7,8}. The sponge is then driven by peristaltic waves to be expelled per rectum^{5,9}. But in most cases the sponge is stuck at the terminal ileum causing intestinal obstruction^{1,9}. In majority of the previously reported cases, no sign of intestinal wall opening or fistula were observed at the time of surgical exploration^{5,7}. This could be contrary to our finding since the site of adhesion between proximal loops of ileum was most likely the point of entry.

Although the diagnosis of RSS can be made by taking a detailed history, a comprehensive physical examination and using different radiographic modalities, still some are diagnosed at the time of explorative laparotomy⁵. It should be stressed that the physician should always have a high index of suspicion in a patient giving a previous history of surgery and presenting with persistent abdominal pain, signs of infection or a palpable mass^{1,10}.

Our patient had been to three different hospitals in search of a solution but got none as a critical fact of her history was unmistakably overlooked. And the fact that she developed deep venous thrombosis and pulmonary thrombo-embolism eventually shifted the attention of the responsible physicians away from the abdominal complaints. Sticking to the golden rule, i.e., a comprehensive physical examination of all systems be done regardless of the complaints the patient may present with, saves one from missing such rare incidents.

The diagnostic modalities that can be used to show RSS are; plain radiographs (35%), ultrasound (34%), CT (6%)^{1,4}. Since almost all centers in Ethiopia are using surgical sponges without radio-opaque markers, plain x-rays will have limitations in aiding to make the diagnosis. The radio-opaque markers even if present undergo disintegration with the passage of time adding to the diagnostic difficulty^{4,5,11}.

Gossypibomas can have calcifications and 'whorl-like pattern' on plain x-ray^{7,12}. Ultrasonography allows the identification of gossypibomas including the radiolucent ones, the common finding being a poorly echogenic or cystic mass with hyperechoic center of wavy structures and a strong posterior acoustic shadow^{4,5,7,12}. A combination of clinical and ultrasonographic evidences assists the diagnosis of RSS to be made successfully in more than 65% of cases¹³.

Both plain abdominal x-ray and ultrasound examination failed to give a hint as to the presence of RSS in our patient. This could be due to lack of radio-opaque marker on the surgical sponge and since the RSS was present completely within the lumen of small bowel⁵. Moreover, no one had in mind the suspicion of a case of RSS when performing the investigations.

CT excels plain radiographs in detecting RSS¹⁴. The most characteristic appearance is a low density heterogeneous mass with a spongiform pattern that contains gas bubbles^{1,14}. Even though the abdominal complaint was persistent, abdominal CT was not done for our patient as the presence of RSS was not suspected. The most usual mode of intervention in patients diagnosed to have RSS is re-operation, which may also help to solve the resulted complications such as bowel obstruction and fistulae⁴. Laparoscopic removal is also a possibility for those who are diagnosed early^{4,7}.

The most common factors associated with RSS are emergency operations, unplanned changes in the surgical procedures and high body mass index³. Other reasons include; lengthy procedures, change in nursing staff during procedures and failure to count surgical instruments and sponges³. Since the overall burden incurred by the patient is too heavy, all health workers should give emphasis to the preventive measures that should be taken to tackle this dreadful experience. Crucial to the implementation of this step is strict adherence to the operating room guidelines under all circumstances. The most important being meticulous count of all surgical materials. This should be done at the setting of instruments, just before incision, at the start of closure of body cavities and at skin closure^{1,10}. The surgeon should also do thorough exploration of the surgical site at the conclusion of the procedure^{1,10}. And routine use of surgical textile materials impregnated with a radio-opaque marker should be encouraged^{1,10}.

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