

Intra-abdominal gossypiboma with faecal fistula, laparotomy, removal and drainage

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ABSTRACT

Retained surgical sponge (gossypiboma) is a rare complication of abdominal surgery, however, it is the most common surgical item that is found to be retained. Whenever a gossypiboma occurs in the abdominal cavity following abdominal surgery, it is associated with severe morbidity and mortality, as well as medicolegal consequences. Risk factors for this problem include both patient care processes and working environment issues. The discovery may take months or years after the surgery was performed, and the complications at presentation also vary. This case followed an emergency caesarean section with the delivery of a live male infant, and the diagnosis was made 1 year after surgery. She presented with a 1-year history of intermittent abdominal pain, which became excruciating with accompanying discharge of pus from the abdomen shortly before presentation. She had exploratory laparotomy and developed a faecal fistula on the fourth day following the extraction of the retained abdominal pack, which was conservatively managed. She was discharged on the 19th postoperative day to the outpatient clinic for further care.

Key words: Abdominal sponge; faecal fistula; gossypiboma; intra-abdominal.

Introduction

The term retained surgical item (RSI) refers to any surgical sponge, instrument, tool or device that is unintentionally left in the patient at the completion of the operation after closure of the wound. RSI is the preferred term (rather than retained foreign body) to distinguish it from other items that may be found or left in a patient, such as a shrapnel.^[1] Surgical sponges may become a nidus for infection, and are often grounds for malpractice lawsuits. RSIs are rare medical errors that have the potential to cause significant harm to the patient and carry profound professional and medicolegal consequences to physicians and hospitals. Risk factors for RSIs include patient care processes and working environment issues.^[2] The most commonly retained surgical item is a woven cotton surgical sponge, which includes both laparotomy packs and smaller sponges (Ray-tec).^[3,4]

Sponges are easily retained because of their ubiquitous use, relatively small size, and because, when soaked in blood, sponges conform to and can be difficult to distinguish from surrounding tissues.

Prevention strategies to avoid this type of error include improvement in care processes, standardized count protocols, deliberate wound exploration by the surgeon before closure and resolving count discrepancies. Others are using radiographic screening, technological adjuncts where available, such as counting, detection devices, as well as multiple counting (4 times). The pathology of gossypiboma is that, once there is a delay in the detection of a sponge, it

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can lead to serious sequelae, including infection, re-operation for removal, bowel perforation, fistula or obstruction or even death.^[5,6] A sterile foreign body granuloma may form if the material is not contaminated. The granuloma has a thick wall and has a protracted course compared with the pyogenic type. The foreign material gradually 'eats' its way into a hollow viscus. The thick walled cavity gradually collapses over the foreign material as the latter migrates into the lumen of the organ. The defect in the bowel wall is sealed off by the wall of the granuloma following complete extrusion of the material, which prevents discharge of intestinal content into the cavity, which otherwise results in an abscess formation.^[7-9]

Investigations are required once there is a suspicion of a gossypiboma and include plain abdominal X-ray (for radiopaque swabs). Ultrasound (with Doppler examination), magnetic resonance imaging, computerized tomographic scan, and endoscopic studies can also be performed.^[10]

This case is, hereby, reported to highlight the problem of gossypiboma so that preventive measures can be adopted at all times in all units.

Case Report

A 29-year-old seamstress, Para 1⁺, who was divorced, presented to the clinic with a 1-year history of recurrent abdominal pain, amenorrhoea of 10 weeks and a 1-month history of a "boil" beside the umbilicus.

She had had emergency caesarean delivery of a live male infant in the preceding year for cephalopelvic disproportion in a private hospital in Ibadan. She had presented to the same facility several times without resolution of the pain. She decided to report to a different hospital because of the excruciating pain and the discharge of pus from the abdomen.

On examination, she was chronically ill-looking, febrile (temperature was 38.5°C). There was mild pallor, no jaundice, dehydration or pedal oedema. Abdominal examination revealed mild dehiscence of the Pfannenstiel scar and a swelling to the right of the umbilicus with a central discharging sinus. There was severe abdominal tenderness and guarding.

A working diagnosis of abdominopelvic abscess with a discharging sinus near the umbilicus was made. She was admitted into the ward with blood sample taken for full blood count, blood film for malaria parasites, random blood sugar, electrolytes, urea and creatinine, and a wound swab was taken for microscopy, culture and sensitivity. Urine pregnancy test was negative. A request for abdominopelvic ultrasound was made and she was started on intravenous

antibiotics, Ceftriaxone 1 g daily and Metronidazole 500 mg every 8 hours. Intramuscular Paracetamol 600 mg stat and Tetanus toxoid 0.5 ml were also administered. The wound was dressed.

The full blood count, electrolytes, urea and creatinine results were within normal limits and malaria parasites were absent. Her packed cell volume (PCV) was 27% (Haemoglobin: 9 g/dL). Abdominopelvic ultrasound showed essentially normal viscera except for PCOS appearance of both ovaries and a central ill-defined abdominal mass 100 × 80 mm of uncertain depth. There was probe tenderness but no ascites.

On the second day of wound dressing, a strange object (towel-like) was found to be visible in the wound which necessitated an exploratory laparotomy under general anaesthesia through a right paramedian incision to remove the gossypiboma, and a tube drain was left *in situ*. There was a large abdominal pack (towel) protruding from the paraumbilical region with copious pus, leaving a large abscess cavity after removal, however, this was walled-off by omentum [Figures 1 and 2].

She had a stormy postoperative recovery with the patient developing enterocutaneous fistula on the 4th postoperative day. Approximately 300 ml of faeculent material was drained into the bag. Postoperatively, she continued moving her bowels and was tolerating oral feeds. She was reviewed by the general surgeon who found that the vital signs were stable, her PCV was 30% and he made a diagnosis of low-output fistula, which was managed conservatively with a high protein diet and oral antibiotics, while the main abdominal wound was being dressed twice daily with Eusol and honey.

The wound swab culture yielded a moderate growth of *Klebsiella* species which was sensitive to ofloxacin (Tarivid).



Figure 1: Before removal



Figure 2: After removal

Therefore, she was placed on oral ofloxacin 400 mg twice daily for 10 days.

The abdominal drain was no longer active by the 13th postoperative day, and 24 hours later, the drain was removed.

The drain site had healed by the 19th postoperative day. The patient was allowed to go home and was advised to continue daily dressing of the main wound on outpatient basis. The wound finally healed 3 weeks later.

Discussion

It has been reported that mistakes in tool and sponge counts occurred in 12.5% of surgeries.^[6] In another study in India, the frequency of gossypiboma was quoted to be 1:1000–1500 for all abdominal operations.^[11] It is difficult to obtain reliable rates in our community due to under-reporting. According to the study by Gawande *et al.*, three factors that contribute to this error are emergency surgery, high body mass index and unplanned change in operation. Others are high-volume blood loss and multiple surgical teams performing major surgical procedures simultaneously, although these latter factors did not reach statistical significance in the study.^[6] The fact that the preceding operation in this case was an emergency caesarean section presumably at the second stage of labour, the attendant severe haemorrhage may have been contributory factors. The recommended investigations are plain abdominal X-ray (for radiopaque swabs), ultrasound (with Doppler examination), magnetic resonance imaging and computerized tomographic scan.

Retained sponges and instruments tend to result in serious sequelae, including infection, re-operation for removal, bowel perforation, fistula or obstruction or even death.^[11] Our

patient suffered most of these complications but survived them.

The management of the case involved immediate blood and microbiological investigations, parenteral antibiotics, immediate laparotomy once the diagnosis was obvious and conservative management of the fistula. The problem in this case was that the previous health facility did not suspect that the patient's abdominal pain could have been due to a retained swab (abdominal pack), and hence no further investigations were employed. The abdominopelvic ultrasound could not detect the nature of the mass probably because of the long interval and the attendant inflammatory reaction around it. This is not surprising because a case of gossypiboma can be subtle and may not be discovered until months or even years after the surgery have been performed.

Prevention strategies to avoid this type of error include improvement in care processes, standardized count protocols, deliberate wound exploration by the surgeon before closure and resolving count discrepancies. Others are using radiographic screening, technological adjuncts where available, such as counting and detection devices, as well as dual counting. In our environment and in other developing countries like Nigeria, manual counting is the widely available procedure and should continue to be employed meticulously with the use of tagged abdominal packs and Ray-tec sponges, and a white erasable board should be utilized for documentation purposes. Some of these measures may be suspended as required in life-threatening situations.^[6] While careful counting (4 times) could prevent some mistakes, in emergencies the patient may need to be worked on immediately, leaving no time to count instruments and sponges beforehand. Also counting after the procedure leaves the patient under anaesthesia for a longer time. Lastly, human error may mean counts are erroneously regarded as correct. However, even when procedures are being followed, the priority is the patient and not the procedures.^[6]

The World Health Organization's guidelines for safe surgery recommended that counts should be made and recorded at the beginning and end of each eligible procedure with the names and positions of personnel performing the counts, along with a clear statement of whether the final tally was correct. This should be clearly communicated to the surgeon.^[11] Hariharan and Lobo have suggested the use of an algorithm to fine tune these processes.^[12] Some authorities have also suggested the use of validated, automatic sponge counting systems, such as barcoded or radiolabeled sponges whenever available.^[11,13,14]

The medicolegal implications of a gossypiboma are rather straight forward. In general, the legal doctrine *res ipsa loquitur* (i.e., thing speaks for itself) holds that a retained foreign object is de facto due to someone's negligence. One exception involves surgical emergencies, in which reliable counts may not always be done because of a compelling need to close the patient; any retained instruments are removed later.^[15,16] According to the Association of periOperative Registered Nurses, "The 'captain of the ship' doctrine is no longer assumed to be true, and members of the entire surgical team can be held liable in litigation for retained foreign bodies."^[17]

Conclusion

In conclusion, it is much better to prevent the error of leaving a swab (or any surgical item) inside the patient's abdominal cavity after wound closure than to try and treat the complications. All operating room (theatre) personnel should be aware of the threat a retained item poses to patient safety. Prevention requires practice change, knowledge, constant communication and shared information between all perioperative personnel.

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Conflicts of interest

There are no conflicts of interest.

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