

Retained Surgical Items in Inguinal Canal: A Case Report and Literature Review

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Abstract

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BACKGROUND: Retained surgical items (RSI) are rare medical challenges with serious complications and medicolegal implications. Knowledge and preventive measures for these rare events are currently not sufficient to limit their increasing incidence. Gauzes and sponges constitute most of RSI. Forceps, needles and pins may be found too. Diagnosis of these events is challenging and often missed due to nonspecific clinical findings.

PRESENTATION OF CASE: We present here a 49-year-old patient who presented to the clinic with a history of chronic scrotal sinus on the same side of a repeatedly repaired inguinal hernia 4 months before admission. He underwent exploration of the inguinal canal as elective surgery. Exploration of the inguinal canal revealed missed surgical gauze left during the previous hernia repair. The gauze was removed, and the inguinal canal was repaired. The postoperative period was uncomplicated.

CONCLUSION: Retained surgical items are completely preventable near-events. Although they are rare entities, clinicians must have a high index of suspicion for any postoperative, in patients presenting with pain, sinus or palpable masses.

Introduction

Retained surgical items (RSI) are a medical challenge, not only because of the severe complications and morbidity they can cause but also because of their serious medicolegal implications. RSI is grossly underreported by surgeons, although they are reportable events. This is because of a surgeon's fear of legal issues or unwillingness to denounce an error [1]. The average costs to repair and remove RSI can range anywhere from 60000\$ per hospital stay to millions of dollars after settle malpractice claims [2] [3]. It's estimated that the incidence of retained foreign bodies is 0.3 to 1 per 1000 abdominal operation, and 1 in 8000 to 18000 of all inpatient operations, that's one or more cases per year in a big hospital [4]. The commonest RSI are surgical sponges and gauzes (termed "Gossypiboma"), but also needles, scissors, forceps and other objects were reported in the literature [1], [5]. Retained instruments that are kept under aseptic conditions with minimal reaction can be

retained for years before they produce significant symptoms and reactions that lead to their discovery [6], [7]. There're principally 2 main types of reaction that cause complications in those patients; an aseptic fibrins response that results in adhesions, pseudotumor effect, intestinal obstruction and granulomas. Another type is an exudative response giving rise to an abscess formation that will result in peritonitis, fistula formation abdominal mass and gut perforation [1], [6] [8]. It's evident that to decrease the incidence of RSI, the focus should be directed towards 3 major issues, locating missing items after the incorrect count, improving team compliance and attentiveness, and reducing the risk of false-correct surgical counts [4].

In this prospective, single Centre, case report study, we present an interesting case of a retained surgical item in the inguinal canal. The case was managed in Al Bashir teaching hospital in Amman, Jordan in 2010. The patient was followed up in the same hospital.

Case Presentation

A 49-year old male patient presented to the ER with signs and symptoms of intestinal obstruction. The patient has a previous history of an open-heart surgery 4 years before admission, chronic renal failure on dialysis 2 years ago, and a right inguinal hernia that was repaired 13 years ago, recurred one year before the presentation and was repaired again. Six months after the last inguinal repair, an inguinal sinus discharge was noted on the right inguinal region.

Examination showed a stable patient with normal vital signs. Two sinuses in the right scrotum were noted, and a mesh-related sinus infection at the surgical site was suspected. Lab workout showed a normal WBC count ($6.3 \times 10^3/\text{mm}^3$), elevated serum creatinine ($718 \mu\text{mol/L}$), elevated BUN (14.6 mmol/L) and mild anaemia (11.2 g/DL). Other labs were within normal. CT scan with contrast wasn't performed due to elevated BUN and creatinine in this patient (Figure 1).

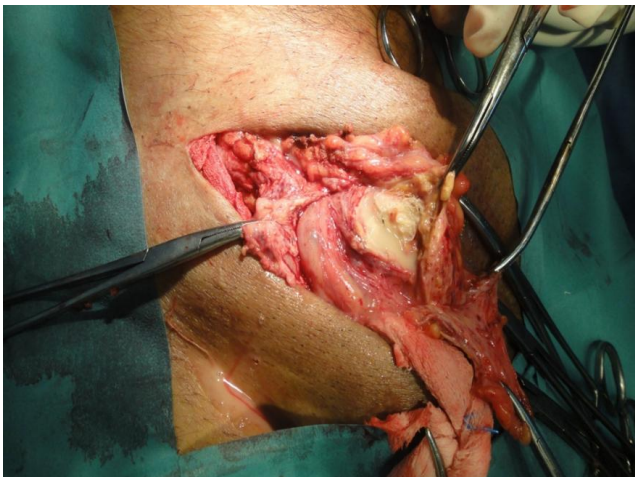


Figure 1: Open herniotomy reveals retained gauze with signs of inflammation and infection

Consent was obtained, and emergent exploration of the inguinal canal was done. Surgery confirmed the presence of a surgical gauze from a previous repair that was removed successfully (Figure 2). Postoperative period was smooth. The patient did well during follow up for one year.

Discussion

Retained surgical items -although highly underreported- is a dangerous medical error that carries significant morbidity and mortality, and therefore must be tackled seriously. Surgical gauze (Gossypiboma) constitutes most of the retained items due to its small size and amorphous structure, as in

our first case. When soaked with blood, gauzes lose their original shape and colour and become unrecognisable in the surgical field and hard to find. [10]. Most Gossypiboma incidents happened in abdominal and pelvic surgeries [2], as in our case, where deepness of the region and folds of viscus can hide blood-soaked gauzes and make them harder to find. Other cavities include the vagina and the thorax among other places [11]. Other retained items include artery forceps, irrigation sets, rubber tubes and pieces of broken instruments [12].



Figure 2: Removal of gauze during open herniotomy

Age and sex of the patient were not significantly related to the risk of retaining surgical items. Factors that appear to increase the risk of RSI significantly includes longer surgery durations, emergency surgeries, intraoperative complications and unexpected events [4], [11]. A recent meta-analysis study was done by Susan et al., (2014) [13] showed that additional surgical events increase the risk of RSI including incorrect/not performed the surgical count, intraoperative blood loss > 500 and more than one surgical team involved in the procedure. These events were found to increase the risk of miscommunication among different teams and error during safety checks of the patient. There were mixed opinions regarding the role of BMI of the patient [2], [11], [14], [15], [16]. However, the most recent meta-analysis studies concluded a significant direct relationship between the risk of RSI and BMI of patients. [3] In our case, we couldn't retrieve the history of the previous operations which were done in other hospitals. Moreover, our patient had normal BMI (below 30).

Presentation of retained surgical items can range from day of surgery to 28 years later, with a median date of detection at 21st day after surgery [11]. In our case, the patient presented after 1 year from the original operation. A study was done by Stawicki (2009) [6] revealed that the most common presenting complaints include abdominal pain (25.8%), abscess (21.2%), Nausea and vomiting (15.2%), wound

complication (15.2%) and masses (12.1%). In our case, the patient presented with persistent abdominal pain, intestinal obstruction, nausea and vomiting.

Diagnosis of RTI is difficult because of low clinical suspicion and since most surgical gauzes are radiolucent on imaging [10]. Previous literature emphasised the importance of using a CT scan with IV contrast for diagnosis of retained surgical items [7] [17]. This modality should be done routinely for patients with intestinal obstruction and surgeons must put RSI on their differential list in a patient with a history of previous operations. In our case, the patient didn't undergo CT scan with IV contrast due to his elevated BUN and creatinine. G Nasir (2008) [18] suggested the use of gauzes and packs that's marked by radiopaque lines to detect missing instruments. A similar study was done by Fabian (2004) [19] experimented the use of electronic tagging of surgical sponges to prevent their retention. The results showed 100% accuracy with no false positives at all. This implies the efficacy of alternative options to solve the problem of invisibility of surgical gauzes on radio imaging.

In conclusion, retained surgical items continue to be a significant challenge for surgeons due to the serious complications if they are discovered late. Those preventable mistakes place a big burden on the health system financially and logistically. However, with good teamwork and an accurate modern counting system, these can easily be prevented. Surgeons must have a high index of suspicion and retained surgical items should be in the differential diagnosis of any postoperative patient who presents with pain, infection, or palpable masses.

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