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CASE REPORT

Intestinal Obstruction Secondary to an Intra-Abdominal Foreign Body

J. Yorke[1, 2], E. Agbeko[2], G. Amoah[2] and F.A. Abantanga[1,2]

[1]Department of Surgery, School of Medical Sciences, College of Health Sciences, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana; [2]Directorate of Surgery, Komfo Anokye Teaching Hospital (KATH), Kumasi, Ghana.

According to literature, the incidence of intestinal obstruction caused by internal abdominal hernia is very rare and has an occurrence rate of about 0.2-0.9%. Internal hernias are caused by defects that occur congenitally or as a result of surgery or trauma. It is still rarer for surgical instruments inadvertently left in the abdominal cavity after laparotomy to be the cause of internal herniation resulting in intestinal obstruction. A case of intestinal obstruction caused by an artery forceps left in the abdominal cavity after surgery is presented.
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Keywords*:* Internal hernia, foreign body, artery forceps, adhesions, intestinal obstruction

INTRODUCTION

From literature, it is known that intestinal obstruction caused by internal abdominal hernias is rare, with incidence rates of 0.2 – 0.9% at autopsy (Ghahremani, 1984) out of which about 0.5 – 5.8% are due to internal herniation (Pershad *et al.*, 1998). Internal abdominal hernias arise as a result of congenital defects due to anomalies of mesenteric fixation and intestinal rotation during foetal development or as a result of surgery or trauma (Yagmik *et al.*, 2009; Mathieu and Lucian, 2004). It is uncommon to have foreign bodies (e.g. surgical instruments) left behind in the abdominal cavity following laparotomy causing herniation and intestinal obstruction (Pershad *et al.*, 1998). Foreign materials, including surgical instruments and sponges left in the peritoneal cavity after laparotomy, are potentially dangerous medical errors (Lincourt, 2007). Retention of surgical instruments and materials in the abdominal cavity is uncommon because it is underreported and can carry serious medico-legal consequences (Karahasanoglu *et al.*, 2004; Berkowitz *et al.*, 2007; Ugochukwu and Edeh, 2011). Foreign bodies inadvertently retained in the abdominal cavity range from small gauzes and sponges (referred to as gossypiboma) to artery and tissue forceps, scissors, retractors, needles, spatulas and others (AORN, 2006; Wan *et al.*, 2009; Gibbs, 2011). Adhesions forming around these foreign bodies (gauzes and sponges) usually lead to intestinal obstruction (Lauwers and Hee, 2000). In the case of instruments, they are usually inert and can only cause intestinal obstruction if they compress a section of the bowel or the bowel is caught in the jaws of the instrument (Ugochukwu and Edeh, 2011). A case of intestinal obstruction as an outcome of an artery forceps being inadvertently left in the peritoneal cavity thus resulting in intestinal obstruction due to herniation of the small intestine through the handle/finger loop of the artery forceps is reported in this study.

Correspondence: *Dr. Joseph Yorke, Department of Surgery, Komfo Anokye Teaching Hospital, P. O. Box 1934, Kumasi, Ghana; Email address: yorkejoseph@gmail.com*

CASE REPORT

A 39-year-old woman presented with abdominal pain of 3 days and constipation of 2 days duration. The pain was aching in nature, constant, centrally located and so severe she had to stop all activity. There were no relieving or aggravating factors. This was followed by absolute constipation, anorexia, vomiting and fever.

She had surgery done in one of the hospitals in the Kumasi Metropolis three and a half months prior to presentation on account of a ruptured ectopic gestation. She was haemo-transfused during and after the surgery and was discharged a week later. Eight weeks after discharge she reported to her doctors with intermittent colicky pains, vomiting and constipation. She was seen on several occasions with the same complaints and was always given analgesics and sent back home. When the pains became constant, associated with vomiting and constipation she decided to report to Komfo Anokye Teaching Hospital (KATH) for further management.

Physical examination revealed a middle-aged woman with vital signs (including temperature, blood pressure and pulse rate) being normal. The abdomen appeared full with the presence of a Pfannenstiel incisional scar from the previous surgery and tender on palpation with guarding. The hernia orifices were intact and no bowel sounds were heard on auscultation. Digital rectal examination yielded normal findings. Her white blood cell count was 14.3 x 10^9/L and the renal function tests were normal. A chest radiograph showed no air under the diaphragm but a plain erect abdominal radiograph showed air-fluid levels with the outline of a metal instrument that looked like an artery forceps (Figure1). A diagnosis of intestinal obstruction secondary to an intra-abdominal foreign body (artery forceps) was made and the patient prepared for laparotomy.

At laparotomy, a loop of small bowel was found to have herniated through one handle/finger loop of the artery forceps at a distance of about 24cm from the ileo-caecal junction (Figure 2). This loop of bowel, measuring about 40 cm in length, was totally gangrenous (Figure 3). The artery forceps was otherwise lying freely in the peritoneal cavity without any adhesions. There were also no adhesions between the bowel loops. The gangrenous small bowel was resected en-bloc with the artery forceps and an end-to-end anastomosis done to restore bowel continuity. The post-operative period was uneventful and the patient was discharged to go home on the 5th post-operative day in a satisfactory condition. She was subsequently reviewed on two occasions after discharge and had no complaints on both occasions.

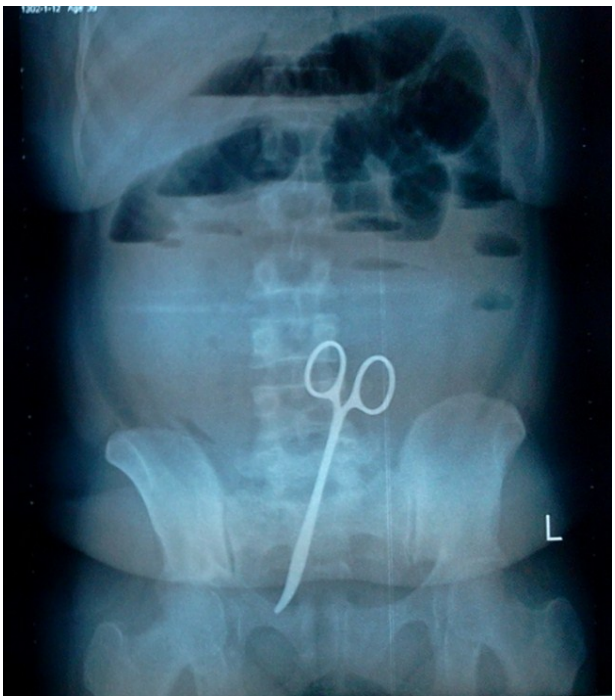

Figure 1: Plain erect abdominal radiograph showing an artery forceps in the peritoneal cavity. Also seen are air-fluid levels.

Figure 2: Artery forceps with the bowel herniating through one of the handle/finger loops

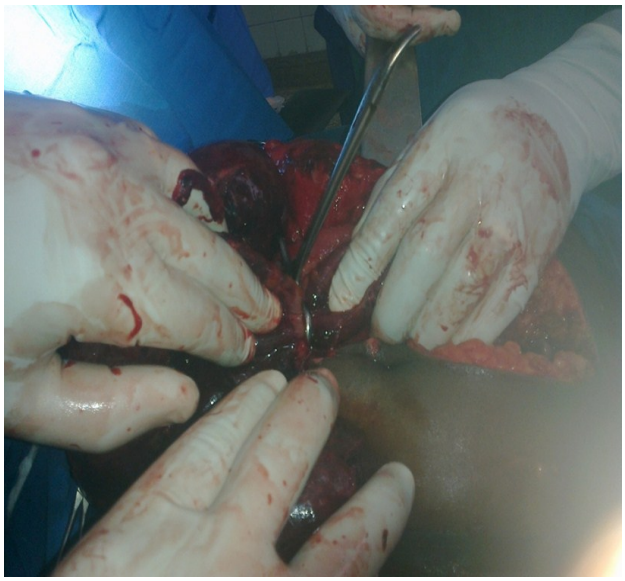

Figure 3: Herniation of loop of bowel through the handle loop, another view.

DISCUSSION

Even though there is paucity of data on retained surgical instruments and material in the sub-region, the problem is real and must be tackled holistically. The surgical team (surgeon, anaesthetist, scrub nurse, nurse runners and anyone involved in the operation) must be conversant with the risk factors associated with retention of surgical items during operating procedures.

Inadvertently retained surgical instruments or materials in the abdominal cavity are an uncommon but dangerous surgical error usually occurring during laparotomy (Gawande *et al.*, 2003). It is a serious and embarrassing occurrence in surgical practice and as such is under-reported and under-estimated (Asuquo *et al.*, 2006) probably due to medico-legal implications, the unwillingness of surgeons to publicize sucherrors and/or the complacency of colleagues in exposing the occurrence for fear of jeopardizing a professional life (Uguchukwu and Edeh, 2011). These retained materials and instruments in the peritoneal cavity can go undetected for years if they cause no problems and are usually found accidentally when the patient is being investigated for a different condition altogether (Nasir, 2009). The presence of foreign bodies in the abdominal cavity can lead to the formation of adhesions which are a common cause of small bowel obstruction in post-operative patients (Lauwers and Hee, 2000). Such materials or instruments can cause infection of the peritoneal cavity and perforations of hollow viscera and may result in severe morbidity or even mortality if measures are not taken to diagnose and remove the offending instrument or material (Lauwers and Hee, 2000; Kalovidouris *et al.*, 1999).

Foreign bodies unintentionally retained in the abdominal cavity include towels, artery forceps, pieces of broken instruments or irrigation sets and rubber tubes (Garg and Agarwal, 2010). The most common of foreign bodies left in the abdomen are small surgical sponges and towels, usually referred to as gossypibomas or textilomas (Rapaport and Haynes, 1990; Yildririm *et al.*, 2006). Several studies have been conducted to identify the risk factors for surgical material retention in patients after surgery and the symptoms caused by these materials. The three main risk factors for retention of a foreign body in the abdominal cavity after multivariate analysis of many factors include: emergency surgeries, unplanned changes in surgical procedure, and a higher body mass index (Gawande *et al.*, 2003). Patients with high BMI are likely to have large greater omentum hence the likelihood of a foreign body hiding underneath without being noticed. This patient had emergency surgery for a ruptured ectopic pregnancy and was obese (BMI of 35.2 kg m^2). She therefore had two out of the three identified risk factors for the retention of surgical instruments or material in the abdomen after laparotomy.

Other risk factors considered in literature which can lead to retention of surgical material after laparotomy include: lengthy surgical procedures, change in nursing staff during the procedure, poor communication among the operating team, operations performed late at night, more than one surgical team being involved in the operation, inexperienced and inadequate staff, staff fatigue, performance of a major procedure, unstable patient condition, the necessity to arrest massive intra-abdominal bleeding using multiple instruments and

packs of gauze, improper lighting in the theatre, hurried or non-meticulous sponge and instrument count, as well as absence of the surgeon at the time of wound closure (Murad and Basi, 2003; Wang *et al*., 2009; Dakubo *et al*., 2009). Knowledge of such risk factors is important to forestall unintentional leaving of surgical material and instruments after abdominal surgery. It is imperative that extreme care is taken during the performance of simple but vital tasks, such as counting of instruments and gauze to prevent them being left behind resulting in complications to the patient and cost to clinical practice in terms of law suits, morbidity and even mortality of patients.

To date, the only two documented reports of surgical material being left in the abdominal cavity from literature in Ghana are from the Korle-Bu Teaching Hospital in Accra (Dakubo *et al*., 2009; Adu-Aryee *et al*., 2005). But for anecdotal accounts by surgeons to colleagues, there is no confirmation of any reports of retained surgical instruments or material in the abdominal cavity from Komfo Anokye Teaching Hospital, Kumasi, Ghana as such making this case report; the first to be reported from KATH. On the backdrop of evidence from available literature, surgeons need to have a high index of suspicion and consider retained surgical instruments or material, if after surgery; a patient has vague, non-specific abdominal signs and symptoms.

The symptomatology of retained foreign material, in the abdominal cavity gleaned from the world scientific literature reflects paucity of clinical signs and symptoms. The symptoms are usually non-specific and varied during the post-operative period until an emergency condition such as intestinal obstruction occurs as a result of adhesions caused by the retained surgical item. Wan et al., (2009) reported such signs and symptoms to include: vague abdominal pains or irritation, palpable mass, anorexia, weight loss, fatigue, fever, nausea, vomiting, rectal bleeding and so forth which are non-specific. This patient had abdominal pains and so was seen and treated with analgesics for several weeks before she decided to seek medical care at KATH when she developed vomiting and constipation in addition.

CONCLUSION

It is highly imperative that the surgical team sticks strictly to theatre etiquette of counting surgical material several times: once before starting the procedure, during the procedure, before the abdominal cavity is closed and at the end of the procedure as recommended by AORN, (2006). Furthermore, for cases identified as high risk, additional preventive measures should be considered as this will go a long way in minimizing retention of surgical items in the abdominal cavity, if not eliminating it altogether. However, for diagnosis of a retained surgical item to be made in a patient there should be a high index of suspicion from the part of the surgeon and not an over-reliance on any specific symptoms.

COMPETING INTERESTS

The authors declare that they have no competing interests.

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