



Case Report & Series

Outcome of retained intra-abdominal foreign body managed in a general surgical service in Ibadan: a case series.

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Abstract

Retained intra-abdominal foreign bodies are rare and most occur following abdominal or gynaecological surgery. Sponges are the most retained foreign body. The foreign bodies range from surgical instruments, including abdominal pads and gauze to artery forceps; to a pen cap. Retained objects can also be self-inserted.

The authors report a case series on the outcome of retained foreign bodies in the intra-abdominal cavity managed in the general surgery service of the University College Hospital, Ibadan over 12-years.

Keywords: Foreign Body; Retained; Intraabdominal.

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Introduction

Retained Foreign Bodies (RFB), although a rare occurrence, have been reported in the literature as far back as the mid-19th century. An item is 'retained' if the patient is no longer in the operating room when an object is found inside the patient and a new operation is required to remove it¹. Retained foreign bodies may be non-metallic or metallic. Sponges are more commonly retained compared to metallic foreign bodies like instruments; the latter accounted for 31% of retained foreign bodies in a case-control study conducted by Gawande et al (2). Of all retained foreign bodies in that study, 54% were in the abdomen and pelvis, 22% were in the vagina, 7% in the thorax and 17% were in various other locations².

The RFB remains inert and if metallic, like clamps, can induce their effects through mechanical means and give rise to pressure on adjoining viscus leading to bowel perforation or erosion into vessels. The consequence could be peritonitis or intra-abdominal haemorrhage. The patient who has an RFB may present within days or a few weeks of the initial operation with symptoms; including increasing abdominal pain, abdominal mass, discharging sinus, intra-abdominal abscesses, acute or subacute intestinal obstruction^{3,4} or rarely, intestinal strangulation⁵. In a subset of patients, these pressure effects may not be dramatic and may go unnoticed for years or decades. Many of the patients may have chronic abdominal symptoms such as abdominal pain or discomfort⁶.

In high-income countries, there has been technological advancement, which has helped to reduce the occurrence and early detection of RFBs. Although low-income countries, such as Nigeria, have made advances in surgical techniques and have better anaesthesia care, all leading to an increase in the volume of surgeries performed, they have not met up with these technological methods employed by high-income countries in reducing the incidence of RFBs. The use of the World Health Organization's Surgical Safety Checklist is one of the ways that could be employed to reduce the incidence in low-income countries. Highlighting the management of patients with RFBs can also help surgeons learn lessons to avoid the mishap.

We present a case series on the outcome of retained intraabdominal foreign bodies managed over a 12-year period (December 2009–November 2021) in the General Surgery service of the University College Hospital, Ibadan, Oyo State, Nigeria.

Case Series

The first case was that of a 70-year-old woman who presented to the emergency room in 2020 with a day history of colicky abdominal pain, and a left lower abdominal swelling. The abdominal swelling had increased in size progressively over the preceding nine years and had been reducible. She gave a history of four previous abdominal surgical operations, the last two had been for a bladder pathology and a re-exploration for a complication of the initial surgery, done nine years earlier, and those preceded the onset of symptoms. She had been using an abdominal truss to contain the swelling over the period.

Physical examination revealed a 20cm midline scar with a reducible bulge in the left lower abdominal quadrant overlying a 16cm x 10cm fascial defect (Figure 1). A clinical diagnosis of a symptomatic incisional hernia was made. A plain abdominal radiograph revealed artery forceps in the right lower quadrant (Figure 2). The full blood count and serum electrolytes, blood urea, and creatinine values were normal. A diagnosis of retained intra-abdominal artery forceps with a concomitant incisional hernia was made.

She underwent an exploratory laparotomy. Intraoperative findings included a 16cm left-sided abdominal fascial defect with fibrotic and dense adhesions between the abdominal wall and small and large intestine.

The caecum, ascending colon, uterus, and both adnexa organs were absent; and a No 1 artery forceps with the rings in the lumen of the proximal jejunum; the shanks piercing through a dense coil of loops of jejunum and ileum, and the transverse colon; and the tip lodged between the gall bladder and liver was found (Figure 3). Due to the extent of bowel adhesions and involvement with the forceps, she had the entire ileum along with the transverse colon resected (Figure 4) and a jejunocolic anastomosis was performed. The patency of the distal colon could not be ascertained, thus necessitating a sigmoid colostomy.

Postoperatively, she had nothing by mouth and was placed on total parenteral nutrition, and intravenous fluids to maintain hydration and normal electrolyte levels. She also had parenteral antibiotics, blood transfusions as well as octreotide and other anti-motility drugs. Initial post-operative care was at the intensive care unit for 48 hours after which she was transferred to the ward. She was commenced on oral intake on the 7th post-operative day and sustained her clinical improvement. She was discharged home on the 18th postoperative day.



Figure 1: Clinical photograph of the abdomen showing the incisional hernia



Figure 2: Plain abdominal radiograph showing the retained artery forceps



Figure 3: Intraoperative photograph showing the retained artery forceps piercing through loops of bowel



Figure 4: Resected bowel with the retained artery forceps still in place

The second case was that of a 38-year-old woman who presented in 2017 with a 2-month history of purulent discharge from a laparotomy wound. She had undergone a myomectomy at a private facility three months earlier. The discharge was noticed two weeks after surgery; it was initially copious, but the volume had reduced in the three weeks preceding presentation. She had been on oral antibiotics – Co-Amoxiclav and Metronidazole over this period. On review of her past medical history, it was noted that she had two previous myomectomies 11 and 7 years before presentation.

Physical examination revealed a midline scar with purulent discharge from the midpoint of the wound. The uterus was 16 weeks in size, and a left adnexal mass was palpated per vaginam. A pelvic ultrasonography scan showed a speckled non-tubular collection (1x1x4cm) in the left adnexa communicating with a 58mm track in the anterior abdominal wall (Figure 5).



Figure 5 (A, B): Ultrasonography scan showing the speckled tubular collection communicating with an anterior abdominal abscess track

A diagnosis of a possible intra-abdominal gossypiboma was made. She had exploratory laparotomy with intra-operative findings of a fistulous tract from an abscess in the left adnexa containing an abdominal pad to the anterior abdominal wall. The post-operative period was complicated by enterocutaneous fistula, which was managed non-operatively, and she was discharged home on the 19th postoperative day.

The third patient was a 38-year-old woman who presented in 2016 with a 6-month history of a retained foreign body in the uterus. She had been managed to acquire gynaetresia for over five years; had multiple corrective surgeries including staged vaginoplasties and cervical dilatation and was on self-vaginal dilatation. She had attempted to do this with a pen cap, which then inadvertently got dislodged into the uterus.

She subsequently had an exploratory laparotomy, and the foreign object was retrieved from the lower segment of the uterus. The postoperative period was uneventful, and she was discharged home after a week.

The fourth case was a 26-year-old woman who presented in 2021 with a 5-month history of right lower abdominal pain and swelling. The pain was a dull ache and non-radiating. The swelling had remained the same size since it was noticed. The symptoms were noticed three months after a caesarean section at a private hospital.

Physical examination revealed a firm, non-tender mass in the right iliac fossa. An abdominal ultrasound scan suggested a foreign body in the right iliac fossa. She had an exploratory laparotomy that revealed a laparotomy pad lodged in the right lower abdomen, which was removed. The post-operative period was uneventful.

The fifth case was of a 41-year-old woman who presented in 2009 with recurrent abdominal pains, vomiting, and weight loss of seven months duration. The abdominal pain was periumbilical, insidious in onset, colicky, and radiated to the right lower abdomen. Vomitus was bilious and postprandial. She had been managed conservatively twice at the emergency department. Eight months earlier, she had undergone laparotomy and right salpingectomy for an ectopic pregnancy in a private hospital. Myomectomy and appendectomy were performed at the same time.

Significant findings on physical examination at the index presentation were a midline infra-umbilical scar and a mobile, non-tender 10cm by 6cm mass in the right iliac fossa. A diagnosis of a complex adhesive mass to rule out a caecal pole tumour was made. An abdominal ultrasound scan revealed widespread dilated bowel loops with an area of narrowing, non-visible peristaltic activity in the right iliac fossa, and an ill-defined mass measuring 15cm by 9cm in the right iliac fossa extending to the right adnexa (Figure 6). Plain abdominal radiograph showed centrally dilated bowel loops and relative gaslessness in the right iliac fossa and pelvis (Figure 7). Barium enema showed free flow of barium from the rectum to the caecal pole with reflux into the terminal ileum. Large bowel loops appeared normal, however, there was an extrinsic impression on the proximal third of the rectum (Figure 8).

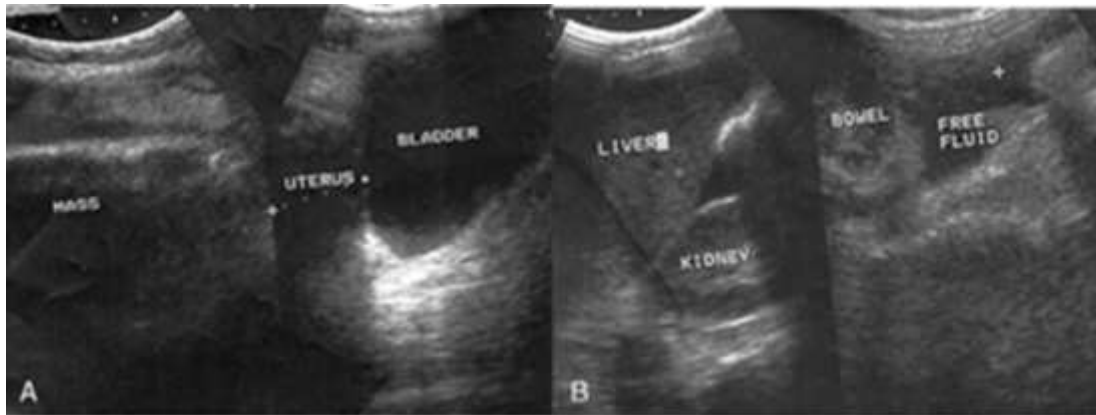


Figure 6 (A,B): Ultrasonographic pictures of intra-abdominal mass and viscera.



Figure 7: Plain abdominal radiograph showing proximal gaseous distension and relative gaslessness distally

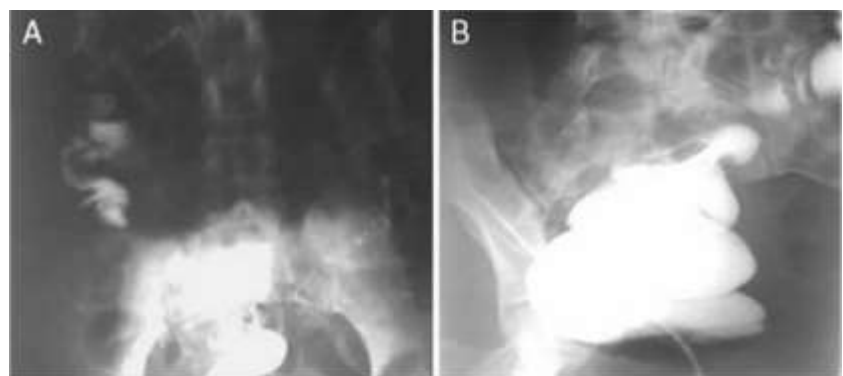


Figure 8 (A,B): Barium enema showing barium up to the caecum and an extrinsic compression of the proximal rectum

She had an exploratory laparotomy with intra-operative findings of a sausage-shaped mass in the ileum, 20cm from the ileocecal junction, and the mass was adherent to the dome of the bladder and right side of the pelvic wall, with proximal and distal bowel dilated and collapsed, respectively. There were also multiple enlarged mesenteric lymph nodes. The mass was dissected off adjoining structures and resected along with about 50cm of ileum incorporating the mass, with adequate proximal and distal margins. An incision on the antimesenteric border of the specimen revealed an intraluminal and intact surgical sponge approximately 30cm x 30cm in size (Figures 9 and 10). The postoperative period was uneventful, and she was discharged home six days after surgery.

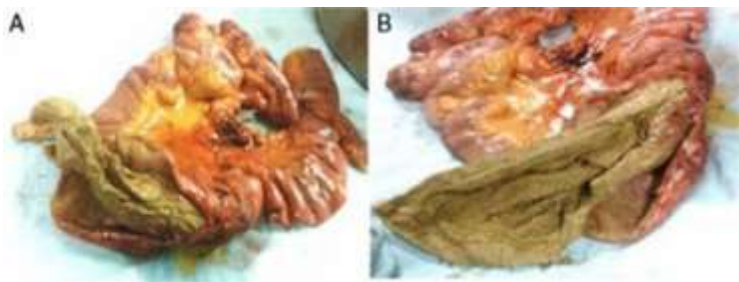


Figure 9 (A,B): Split ileum showing retained completely intramural surgical sponge



Figure 10: Full size of retained intramural surgical sponge

The sixth case was a 26-year-old female who presented via the emergency department in 2021 with a 2-month history of recurrent left flank pain and vomiting, which had worsened over the preceding few days prior to presentation. There was associated abdominal distension, but she had bowel motions. She had a caesarean section at a private hospital a year prior to the presentation. On examination, the abdomen was distended with tenderness in the left lower quadrant and hyperactive bowel sounds. The rectal examination was normal, and a diagnosis of adhesive intestinal obstruction was made. Abdominopelvic computerized tomography scan showed marked dilatation of the jejunum, with no wall thickening; distal to the dilated bowel loop was a heterogenous lesion with a “bowel in bowel” configuration and a target appearance on perpendicular plane suggestive of an ileo-ileal intussusceptions.

She had exploratory laparotomy with intraoperative findings of adhesions between loops of the jejunum and ileum (Figure 11) and a mass felt extending from the jejunum to the ileum. Enterotomy revealed an intraluminal gauze (Figure 12). She had adhesiolysis, removal of the gauze (Figure 13) with jejunal and ileal resection, jejuno-jejunal and ileo-ileal anastomoses.



Figure 11: Intraoperative photograph showing adhesions between the jejunum and ileum



Figure 12: Enterotomy performed revealed intraluminal gauze



Figure 13: Retained intraluminal gauze post removal

The seventh case was that of a 46-year-old lady who presented in 2021 with recurrent lower abdominal pain and a mass of 3 months duration following a myomectomy: she developed pyometrium necessitating a re-exploration 2 months after the initial surgery.

Follow-up outpatient visits revealed a left lower abdominal mass; ultrasound scan diagnosis of a post-operative left adnexal mass was made (Figures 14 and 15). She was subsequently referred to the general surgeons. On examination, the abdomen was full with hyperactive bowel sound and a palpable left lower abdominal mass, a clinical diagnosis of adhesive bowel obstruction was made.

She had an exploratory laparotomy with intraoperative findings of adhesions between loops of jejunum and ileum, an inflammatory phlegmon consisting of loops of jejunum, ileum, sigmoid colon, and fundus of the uterus with gauze fistulating incompletely into the lumen of a segment of ileum. She had resection of ileal segment and ileo-ileal anastomosis.

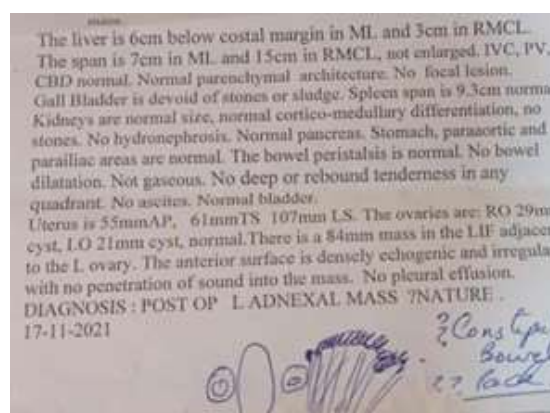


Figure 14: Ultrasound scan showing an adnexal mass

Figure 15: Ultrasound report and diagnosis.

Summary of case series

Case (Year)	Age (years)	Sex	Presenting complaint(s)	Previous surgery	Nature of the foreign body	Duration of foreign body	Location of foreign body
1 (2020)	70	Female	Abdominal pain	Exploratory laparotomy	Artery forceps	9 years	Fistulating between coils of bowel loops
2 (2017)	38	Female	Purulent discharge from abdominal wound	Myomectomy	Abdominal pad	3 months	Left adnexal region
3 (2016)	38	Female	Self-reported retained foreign body in the uterus	Nil	Pen cap	6 months	Intrauterine cavity
4 (2021)	26	Female	Abdominal pain	Caesarean section	Laparotomy pad	8 months	Peritoneal cavity
5 (2009)	41	Female	Recurrent abdominal pain, vomiting, and weight loss	Exploratory laparotomy and rig	Gauze	8 months	Within the lumen of the ileum

6 (2021)	26	Female	Recurrent abdominal pain and vomiting	Caesarean section	Gauze	1 year	Within the lumen of the jejunum and ileum
7 (2021)	46	Female	Recurrent left lower abdominal mass	Myomectomy and laparotomy	Gauze	3 months	Lumen of the ileum

Discussion

Retained foreign body is a rare occurrence⁵. The incidence locally is not known, which is likely due to under-reporting⁷. This under-reporting is suggested to be due to surgeons wanting to look out for each other; “scapegoatism” and ascribing spiritual undertones to happenings⁷. The fear of complicity in litigation could also be a factor. This was, however, not a major factor in the past when patients rarely sued health professionals in Nigeria. With increased awareness and enlightenment of citizens by legal practitioners on medical litigation, it is unknown how the reporting of RFB will fare.

In the literature, gossypibomas (retained sponges) have been more frequently reported. Cases had been reported as a palpable mass⁸, abdominal pain^{8,9}, intestinal obstruction¹⁰, faecal fistula¹¹, and transmural migration^{8,9,12,13}. This is like what was discovered in this case series. A few cases of artery forceps had been reported to be retained with patients presenting on account of strangulation⁵, intraluminal migration¹⁴, and intestinal obstruction^{3,4,6,15}. Some cases of RFB may be asymptomatic for years^{16,17}, as seen in the first case. While foreign bodies can be inserted into the uterine cavity medically like pessaries or as a form of contraception as in intrauterine contraceptive devices (IUCD), it may also be accidental and self-reported as seen in the third case¹⁸.

Transmural migration of surgical sponges, as seen in the fifth, sixth, and seventh cases, have been reported¹³. The most common site of impaction is the small intestine, especially the ileum, and rarely the stomach. Transmigration of the retained artery forceps through multiple viscera (jejunum, ileum, and transverse colon), as seen in the first case, has not been reported in the available literature. This migration can be explained by the length of time the artery forceps had been retained in the abdominal cavity, as the longer the retention time of foreign bodies within the abdomen, the higher the risk of fistulation internally or externally¹³, as each wave of peristalsis would have pushed the forceps further through the walls of adjacent viscera over time.

Abdominal sponges are commonly used to protect the bowel, especially in gynaecological surgery, as well as in securing haemostasis, and can be easily left behind as the surgical procedure proceeds, if it gets displaced within the abdominal cavity. The artery forceps is an invaluable instrument used in abdominal surgery to secure haemostasis and hold stay sutures, for example during bowel anastomosis. This makes them one of the few metallic objects that could be retained at surgery.

These events of RFB occur because of inadequacy of protocols in the operating room and poor communication among perioperative care personnel¹⁹. These inadequacies include sub-optimal or incomplete wound explorations, poorly performed sponge and instrument counts, and incomplete,

inadequate, or misread intraoperative radiographs, where personnel are changed during a procedure, and poor handover techniques and cross-informational reporting occur¹.

In 2003, Gawande et al. described the most common risk factors associated with retained foreign bodies as emergency procedures, unplanned changes in operative routines, and higher body mass index of patients². Lincourt et al., however, identified significant associations between surgery involving multiple major procedures and reported incorrect counts of sponges and instruments with subsequent RFB²⁰. The first case in the series had an incisional hernia, which suggests a complicated case (likely a deep incisional site infection); this was substantiated as the patient had a second laparotomy six months after the first following complication. The common factor noticed in this case series is that the surgical procedures were performed in private hospitals. While this may be purely coincidental, as RFB has been reported at a higher level of practice, it may also reflect the lack of or inadequate number of trained experts in those settings. This may impact the practice of ideal operating room protocols negatively.

Measures must be put in place to avoid the occurrence of these events, as patient safety should be paramount to the surgeon. These measures have matched up with technological advancements in high-income countries with the use of radiopaque tags on surgical sponges, electronic article surveillance, two-dimensional matrix labels (bar codes), and radiofrequency identification¹. In low-income countries, with the technological gap, the time-honoured practices and use of protocols and guidelines such as the World Health Organization's Surgical Safety Checklist need to be enforced. These include good communication among perioperative personnel, surgical item count and documentation before and after surgical procedures, as well as updates of these counts as required during the procedure. Actions should also be taken if discrepancies occur after completion of the procedure. Low-income countries, however, need to take more steps to meet up with the technological advancements used in the high-income countries.

Conclusion

Retained foreign bodies are avoidable errors in surgical practice, only if appropriate precautions are taken while performing surgical procedures. The surgeon, being the head of the surgical team should always have the safety of the patient in mind and aim to deliver safe care to all patients by adhering to safety protocols before, during, and after surgical operations. The number and quality of the expertise of the personnel at the sources of referral could have been responsible for more cases in this series. Low-income countries should also make efforts to meet up with the technologically advanced strategies employed by high-income countries in averting this avoidable morbidity. Continuing medical education targeted at private medical facilities on adherence to safety guidelines and protocols could help to mitigate this problem.

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