

# Asymptomatic Intra-abdominal Gossypiboma Mimicking Recurrent Ovarian Tumor

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## ABSTRACT

**Background:** A variety of presentations may be manifested by retained sponge, including intestinal obstruction, intestinal fistula, malabsorption syndrome and chronic pain from adhesions; in some cases, it may have an asymptomatic clinical course.

**Case report:** In a 41-year-old female, gravida 4 para 4, with a history of laparotomy performed for an ovarian adenocarcinoma three years prior to her referral, a gossypiboma was incidentally detected on follow up imaging. The gossypiboma was safely excised by a midline laparotomy.

**Conclusion:** Asymptomatic gossypiboma should be considered in patients presenting with a mass, who have undergone laparotomy in the past.

**Keywords:** Asymptomatic, Gossypiboma, Ovarian neoplasm



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## Introduction

Introduction of surgery as a therapeutic modality, was simultaneous with the emergence, in the medical literature, of an entity called 'retained surgical item'. Irrespective of advancement of medical practice, surgical item retention still occurs globally and all types of surgical procedures have the potential for this complication. The first case of retained surgical sponge (RSS) was described in 1884 by Wilson. Different synonyms have been stated for the condition, including: "gossypiboma", "textiloma", "gauzoma", and "muslinoma" (1).

Gossypiboma, considered to be a surgical never event, is a sponge (or gauze) left un-intentionally in a

surgical field, which is converted to a foreign body mass as a result of surrounding foreign-body reaction (1). The word 'Gossypiboma' is combination of the Latin gossypium (cotton wool, cotton) and the suffix -oma, meaning a tumor or growth, and is used to describe a cotton/sponge mass surrounded by foreign body granuloma, located in patient's body (2). The condition has a variety of presentations, but a subset of patients may remain asymptomatic (3). The accurate incidence of the condition is unknown.

Here we describe a case of gossypiboma in an asymptomatic female, who had history of an abdominal

surgery performed three years ago for treatment of her ovarian cancer.

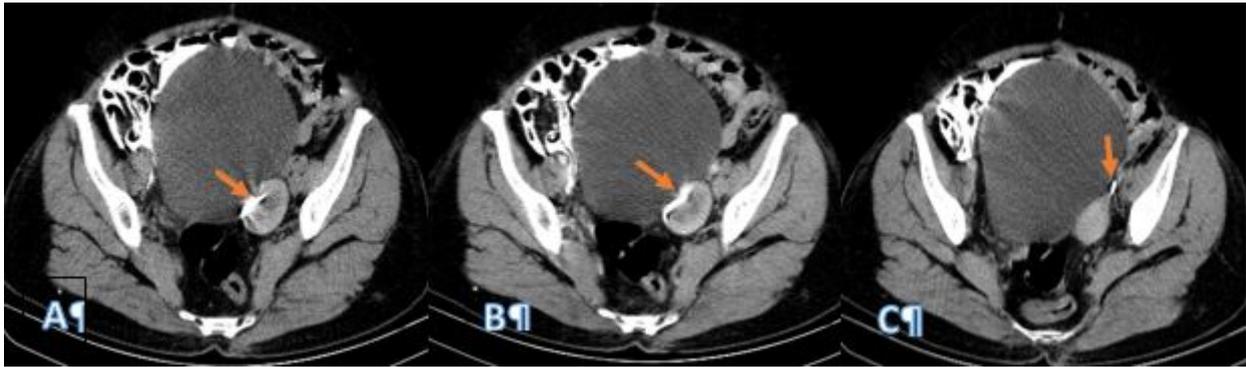
### Case Presentation

A 37-year-old woman, gravida 4 para 4, presented to our gynecology clinic in Jan 2017 with a complaint of abdominal and back pain, ongoing for 4 months. Her ultrasound report indicated a left ovarian solid cystic mass measuring 52\*79 mm, with vascular flow on color doppler; right ovary was surrounded by isoechoic soft tissue mass, that continued to the cul-de-sac, suggesting peritoneal seeding. Free fluid was noted around both ovaries and in cul-de-sac. CA125 was elevated (538 U/mL), but other tumor markers such as CA19-9, CEA, AFP were in the normal ranges. Patient underwent laparotomy with midline incision. In abdominal exploration, the involvement of the ovaries and omentum was observed. There was also ascites. On intraoperative pathologic consultation, diagnosis of cystadenocarcinoma (probably mucinous) was reported, as a result of which, total hysterectomy, bilateral salpingo-oophorectomy, omentectomy, lymph node dissection and appendectomy were performed.

After four days, the patient was discharged from the hospital, uneventfully. Final pathological report revealed papillary serous adenocarcinoma with involvement of both ovaries, omentum, pelvic and para-aortic lymph nodes as well as right and left pelvic peritoneum. She received eight courses of chemotherapy with Paclitaxel and Carboplatin regimen. After completion of treatment, on follow up, her sonography and CA125 level were normal. She was asymptomatic, without any concerning findings in history and physical examinations. Abdominopelvic computed tomography (CT) performed 3 years later, incidentally showed a 48×39 mm mixed density mass in left side of the pelvis, probably recurrent ovarian tumor. The case was presented in multidisciplinary committee and the CT scan, complemented by abdominal sonography, was reviewed by experienced radiologists. A mass containing linear structure suggesting presence of a foreign body was diagnosed ([Figure 1, 2](#)) and the patient was scheduled for its surgical removal. Laparotomy was performed by low midline incision; an organized collection of surgical sponge was found adherent to colon and to pelvic floor on the left side of pelvis. Gentle dissection and resection of the mass was completed successfully.



**Figure 1:** Positive (A) and negative (B) scout view of the abdomen: linear opaque structure in left pelvic cavity is present



**Figure 2:** Axial CT scan pre (A) and post (B) contrast images: iso to hyper dense well-circumscribed non enhancing lesion in left pelvic side wall at the anatomical site of the ovary containing linear hyper dense structure with metal artifact extended to the pelvic cavity(C) compatible with linear marker of surgical gauze.

## Discussion

Given its medicolegal implications, gossypiboma is expected to be under-reported, resulting in difficulty predicting its actual incidence. However, currently 1.32 retained surgical item events are estimated per 10000 surgical procedures, with 0.3 to 1% of abdominal operations reported to encounter this complication (4). The commonest retained surgical item (RSI) is gossypiboma (70% of RSIs) (5) with the most common sites for RSI being abdomen (56%), pelvis (18%) and thorax (11%) (4). Gynecological and gastrointestinal tract operations, constitute 75% of the intra-abdominal surgeries, with cesarean section and abdominal hysterectomy being two of the commonest procedures performed (6, 7); in our case also, gossypiboma occurred in the setting of an abdominopelvic surgery for resection of an ovarian tumor.

Between the causative operation and presentation with retained surgical sponge, a timeframe ranging from 1 day to 40 years has been reported, the peak of the presentations occurring in the first two months post-surgery (5, 6, 8, 9). In a study of 4,547 retained foreign body cases by Birolini *et al.* (2016), 78% of the foreign bodies were discovered in the first year. It took 1-5 years to discover another 14% of the cases, while 8% were diagnosed more than five years after the initial surgery (6). In the present case, the diagnosis of retained foreign body occurred three years after the primary surgery.

The immunological foreign body reaction type and presence of bacterial colonization determine the clinical manifestations of the condition. The clinical presentation may also be affected by the sponge size (1). Depending on the retained material, different responses are expected in the early and late periods. Issues such as infections and abscesses are expected in early periods, while fibrinous response occurs late, as a consequence of foreign body encapsulation within scar tissue,

resulting in development of further complications such as intestinal obstruction, intestinal fistula, malabsorption syndrome and chronic pain resulting from adhesions. In a systematic literature review, Patial *et al.* (2017), reported pain (73.8%), palpable mass (47.6%), vomiting (35%), abdominal distention (26%), and fever (12.6%) to be the most common clinical features in patients with gossypiboma (10). Gossypiboma can mimic benign or malignant growths, may not result in any symptoms and thus occasionally gets diagnosed incidentally (3, 11). Table 1 depicts the asymptomatic intra-abdominal gossypiboma cases reported in literature. Birolini *et al.* (2016), reported 12% of foreign body retention cases in their study to remain asymptomatic at diagnosis (6). In the present case, despite being immunosuppressed due to underlying malignancy and receiving chemotherapy, our patient remained asymptomatic and her gossypiboma was discovered incidentally on follow-up imaging. Another case of asymptomatic gossypiboma, following ovarian cancer surgery is presented in Table 1.

Factors influencing the imaging findings of a gossypiboma include: time interval post-surgery, presence of infection, presence of communication between gossypiboma and a hollow viscus or external skin wound, and the radiological investigation modality used. The most commonly used radiological test for detection of gossypibomas is the plain radiography. On this modality, the retained surgical gauze is revealed by the presence of fine linear radio-opacity and associated mottled radio-lucencies from air or mass effect or density over adjacent soft tissues. The radiopaque marker thread may slip off, get twisted, distorted or, over time, disintegrated; thus, its absence on plain radiography cannot completely rule out gossypiboma. However, diagnosis of the condition can be challenging on the basis of plain radiographs only.

**Table 1.** Eight asymptomatic intra-abdominal gossypiboma reported in the literature

Author	Age	Previous surgery	Interval	Mode of diagnose	Diagnostic Imaging	Treatment
Arab <i>et al.</i> , 2020	41	TAH+BSO+Staging	3 years	Incidentally discovered with imaging	Contrast-enhanced CT	Exploratory laparotomy, resection
Sankpal <i>et al.</i> , 2020 (15)	40	Caesarean section	5 years	Incidentally discovered during laparoscopic cholecystectomy	Not identified before surgery	Excised by laparoscopic technique
Singhal <i>et al.</i> , 2019 (16)	45	TAH+BSO+Staging	2 years	Incidentally discovered with imaging	Contrast-enhanced CT	Exploratory laparotomy, Resection and anastomosis of the involved ileal segment
Aydoğan <i>et al.</i> , 2018 (17)	38	Open nephrolithotomy	10 years	Intraoperative for malignant appearance renal mass	Not identified before surgery	Robotic laparoscopic surgery
Ambore VA <i>et al.</i> , 2017 (18)	26	Open cholecystectomy	2.5 months	Incidentally discovered with imaging	CT Scan	Exploratory laparotomy, complete resection
Ratnani <i>et al.</i> , 2016 (19)	28	Tubectomy	4 years	During exploratory laparotomy for ovarian mass	Ovarian mass diagnosed by sonography	Exploratory laparotomy, complete resection
Sözütek <i>et al.</i> , 2010 (20)	64	Right surrenalectomy and cholecystectomy	12 years	During exploratory laparotomy for liver mass	As a hydatid cyst by CXR and ultrasound	Exploratory laparotomy, complete resection
Yamamura <i>et al.</i> , 2008 (21)	78	Distal gastrectomy and cholecystectomy	15 years	Incidentally during an intra-abdominal mass evaluation	As a tumoral lesion in the gastric remnant by CT Scan	Exploratory laparotomy, complete resection

If plain radiography fails to detect the foreign body, computed tomography (CT) is the next modality of choice, with high sensitivity for detection of gossypiboma/RSI. The CT reveals the spongiform pattern of the objects as well as the radio dense linear structure; the characteristic finding of gossypiboma being the presence of a peripheral calcification ring surrounding a reticular mass. Over time the resorption of gas is expected. In our patient, CT scan revealed a well-circumscribed non enhancing lesion containing linear hyper dense structure in left pelvic wall at the anatomical site of the ovary.

Three types of sonographic appearance is described for retained sponge/gauze: 1) strong posterior acoustic shadow in a poorly defined echogenic area 2) a well-circumscribed cystic mass containing hyperechoic mottled structures within a well-circumscribed cystic mass and 3) nonspecific pattern resembling a complex mass; in this type, because of the presence of combination of gauze material, air foci, and calcified regions, posterior acoustic pattern is consistently seen (7, 12, 13).

Using surgical checklists and safety protocols can assist in reduction of never events' risk. WHO surgical safety checklist is a simple and effective tool, the use of

which can contribute to improvement of surgical safety and patient care (14). However, these mistakes still occur and remain to be a concerning matter for surgical teams, despite improvements in patient safety protocols (1).

Surgery, usually by laparotomy and foreign body removal is the definitive treatment of intra-abdominal gossypiboma. Although in selected cases, alternate approaches of removal (i.e. Percutaneous, endoscopic and laparoscopic) may be attempted, generally the use of such approaches is precluded due to the presence of dense adhesions and foreign body reaction (7). In the present case, during surgery we found an organized collection of surgical sponge, adherent to colon and pelvic floor on the left side of pelvis; it was completely removed.

## Conclusion

Plain radiography may fail to detect RSIs, due to their varied and nonspecific radiological manifestations, as well as from low index of suspicion in asymptomatic cases. Attention to clinical findings, combined with high doubt for this diagnosis in any

patient after surgery, is essential for detecting this condition.

Gossypiboma should be considered as one of the differential diagnosis when evaluating soft tissue masses or abdominal pain in patients with a history of any previous surgery.

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## Conflict of Interest

The authors have no conflicts of interest relevant to this article.

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