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Gossypiboma, Mimic Imaging of Malignant Tumor: Report of Two Cases

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Abstract

Introduction: Gossypiboma is a rare tumor caused by gauze fibers retained during surgery. This medico-legal problem is associated with an increase in patients' morbidity and mortality. The aim of this study is to report two cases of gossypiboma mimicking the imaging of a malignant tumor.

Case Presentation: We report two patients (the first patient was 50 years old, with a history of an appendectomy three years ago in another city; the second patient was 52 years old, with a history of a cesarean section 25 years ago in another hospital) who were admitted to the oncology department of Ghaem Hospital, Mashhad University of Medical Sciences in 2014. The initial manifestations were signs and symptoms of malignant ovarian tumors, and abdominal ultrasounds and CT scans also indicated malignant tumors. Both patients had a history of a previous laparotomy. Surgical evaluation confirmed gossypiboma as a definite diagnosis.

Conclusions: In patients with abdominal or pelvic masses and a history of previous abdominal surgery, the possibility of gossypiboma should be kept in mind.

Keywords: Gossypiboma, Retained Foreign Body, Malignant Tumor, Imaging

1. Introduction

Gossypiboma refers to a mass resulting from retained cotton or gauze in the body after the operation. Gossypiboma is a rare event, with a reported incidence that varies between 1/1,000 to 1/10,000 intra-abdominal operations and 1 out of 300 - 1,000 of all operations (1). Despite increased attention given to the problem by surgeons, retention of foreign bodies after intra-abdominal or pelvic surgery still occurs. Gossypiboma might occur in every form of surgery, ranging from general surgery (52%) to gynecology (22%), to urology and vascular surgery (10%), and to ophthalmology and spinal surgery (6%) (2). The clinical presentation of gossypiboma is variable and depends on the location of the site and the size of the foreign body, but definite diagnosis is obtained after operation (3). According to a recent review by Wan et al. about retained sponges, gossypibomas were most commonly found in the abdomen (56%) and the pelvis (18%) (4). Gynecologic surgery accounted for about 75% of reported gossypibomas. Management of these lesions includes the removal of the mass, which often requires another surgery (5, 6). It is uncommon that gossypiboma is misdiagnosed as a malignant tumor. The aim of this study is to report two cases of gossypiboma mimicking the imaging of a malignant tumor.

2. Case Presentation

The first case was a 50-year-old postmenopausal woman admitted to the oncology department of Ghaem hospital, Mashhad University of Medical Sciences in 2014. Her initial clinical manifestation, which appeared one month before admittance, was abdominal pain. Physical examination detected tenderness in the lower abdominal area and a mobile solid mass palpable in the right lower quadrant; also, a scar was seen in this region (from an appendectomy that took place three years ago, in another city). Biochemical analysis revealed that a peripheral blood test was within normal limits. Ultrasonography showed a round, heterogeneous mass (size 60 $\times$ 49 mm) with calcified foci at the top of the bladder, suggesting urachal carcinoma, gastrointestinal stromal tumor (GIST) or ovarian tumor. Tumor markers CA-125 and CEA were reported within normal limits. A CT scan of the abdominopelvic region showed a solid mass lesion (6.5 $\times$ 5 cm) with a hyper-dense linear shadow inside the mass. The above-mentioned findings suggested a gastrointestinal stromal tumor (GIST) or a dermoid cyst. In an exploratory laparotomy, we found a large irregular mass in the abdominal cavity that extended to surrounding inflammatory tissue. An encapsulated gauze sponge with adherence to neighboring tissues was seen. Her symptoms improved

in the postoperative period, and after 4 days, she was discharged from the hospital in favorable condition (Figure 1).

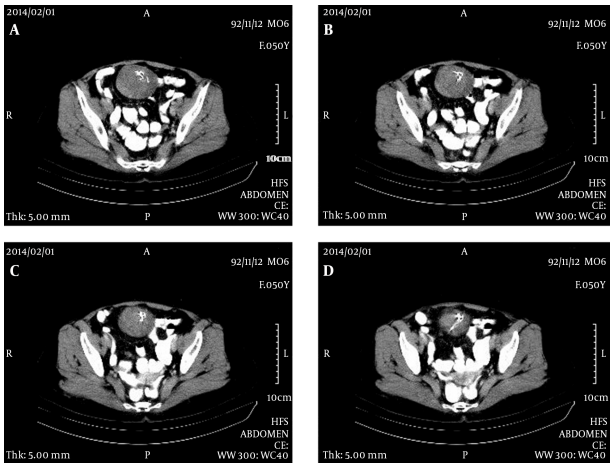

Figure 1. CT Scan of Abdominopelvic Region Showing an Extent of Mass (Solid Lesion With Hyper-Dense Linear Shadow Inside the Mass)

The second case was a 52-year-old postmenopausal woman with four term pregnancies and four live children. She was referred to the oncology department of Ghaem hospital, Mashhad University of Medical Sciences in 2014. She had lower abdominal discomfort, and ultrasonography showed a heterogeneous ill-defined mass (10 × 13 cm), suggesting an ovarian tumor. The titers of the CA-125 and CEA tumor markers were normal. A vertical midline scar (from a cesarean section 25 years ago, in another hospital) was seen in abdominal examination. Laparotomy showed that there was a retained surgical sponge with calcium deposition around the adhesion. The sponge was removed, adhesiolysis was performed, and the patient was discharged after three days (Figure 2).

Written informed consent was obtained from both patients, and identifying characteristics about the cases were removed.

3. Discussion

The appearance of gossypibomas may mimic that of malignant tumors; therefore, they can lead to unnecessary invasive procedures. Gossypiboma is a legal problem, and because of underreporting due to this, as well as cases in which the lesions are misdiagnosed, estimating the real incidence of gossypibomas may be difficult. The reported incidence of retained foreign bodies like sponges, needles, rubber tubing or parts of instruments following surgery

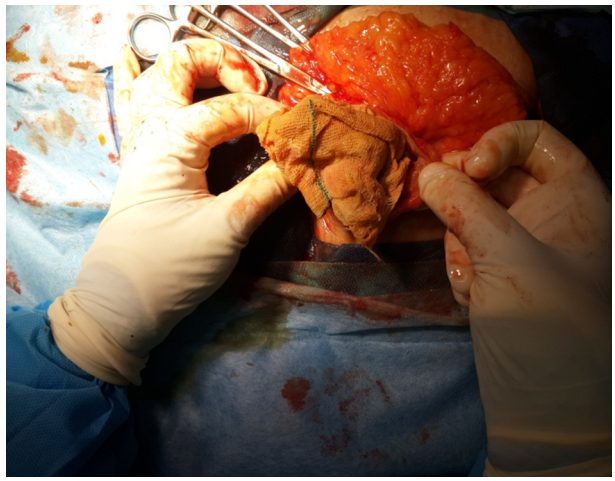

Figure 2. Laparotomy Showed a Retained Surgical Sponge With Adhesion to Surrounding Tissue

ranges from 0.01% to 0.001%, of which gossypibomas comprise up to 80% of cases (7). Obesity, emergency conditions, number of surgeons and change of surgical teams, and massive hemorrhage are risk factors of this complication. Obese patients have a huge intraperitoneal space where sponges may be lost, and obesity may increase the technical difficulty of the operation (8). The BMI of both of our patients was upper-limit normal. Both reported being obese since adolescence. Other risk factors include unexpected changes in operation condition and the failure to properly count sponges and instruments. Gawande et al. (9) identified several risk factors for gossypiboma (Table 1) and found that it was nine times more common during emergency surgeries and four times more common when an operation required an unanticipated change during surgery. Clinical manifestations of this complication, such as infection and sepsis or a palpable mass that mimics a benign or malignant tumor in the abdomen and pelvis, may occur immediately during the postoperative period. However, it may instead remain asymptomatic for a long time. One of our patients was symptomatic after four years, and in the other case, her symptom appeared after 25 years (10). Therefore, the diagnosis of gossypiboma may be difficult unless it is specifically kept in mind, especially with patients who have a history of surgery. The histopathology of gossypiboma consisted of fibers of sponge in the central portion and an inflammation reaction in the peripheral wall surrounded by fibrosis (11).

The most common radiological detection methods include plain X-ray, ultrasound imaging and CT scans. On a plain radiograph, gossypiboma may present as banded radio-opaque lines. However, the retained sponge might

Table 1. Risk Factors for Retention of a Foreign Body After Surgery in 54 Patients

Characteristics	Risk Ratio	Range
Operation performed on an emergency basis	8.8	2.4 - 31.9
Unexpected change in operation	4.1	1.4 - 12.4
> 1 Surgical team involved	3.4	0.8 - 14.1
Change in nursing staff during procedure	1.9	0.7 - 5.4
Body mass index (Per 1 unit increment)	1.1	1.0 - 1.2
Volume of blood lost (per 100ml increment)	1.0	1.0 - 1.10
Counts of sponges and instrument performed	0.6	0.03 - 13.9
Female Sex	0.4	0.1 - 1.3

not be identifiable with conventional radiologic study. In sonographs, gossypiboma presents as a well-defined hyperechoic mass with central echogenic calcification inside the mass. In CT scans, gossypiboma may present as a well-defined mass with soft tissue attenuation and peripheral calcification. Management of gossypiboma includes the removal of all retained masses, with extreme caution taken regarding the surrounding tissue; due to dense adhesions, this may be very difficult (12). We were successful in removing all foreign bodies from our two patients.

Gossypiboma should be considered in the differential diagnosis of an atypical lesion, especially in patients with a history of previous surgery. Gossypiboma is an iatrogenic complication and can be problematic, but it may be avoidable. To prevent gossypiboma, sponges should be counted by hand before and after surgeries. Four separate counts are recommended: the first when the instruments and sponges are first unpackaged and set up; a second before the beginning of the surgical procedure; a third as closure begins; and a final count during the final skin closure (13). Also, new techniques, such as an electronic system that uses barcode-tagged surgical sponges, will hopefully help to decrease the incidence of retained gauze. Although human errors cannot be completely avoided, continuous medical training and strict adherence to the rules of the operation room may reduce the incidence of gossypiboma to a minimum rate. Gossypiboma should be considered in the differential diagnosis of any postoperative patient who presents with pain, infection, or a palpable mass in the abdomen. Moreover, gossypiboma may be misdiagnosed as a malignant tumor and lead to unnecessary invasive diagnostic procedures. With more careful attention, especially when it comes to counting sponges and other items that may go missing, surgical teams should be able to prevent this avoidable complication.

Footnote

Authors' Contribution: Zohreh Yousefi, designing and writing the article; Elham Hoseini, collecting data; Parvaneh Layegh, evaluating the cases and reporting data; Elnaz Hoseini Najjarkolaee, editing data.

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