Gossypiboma Mimicking an Ovarian Tumor in a Young Woman With a History of Ovarian Teratoma

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A foreign body retained in the peritoneal cavity is a rare but extremely troublesome condition that remains a nightmare for surgeons. Such accidents have been reported even by skilled surgeons. Commonly retained foreign bodies are surgical sponges, pads, needles, forceps, rubber tubes, and pieces of broken instruments. These may remain asymptomatic or produce complications requiring surgical interventions that may be undertaken weeks or years after the original operation [1–3]. We report an unusual case of a surgically retained, encapsulated sponge presenting as ovarian tumors in a young women who had previously had a partial oophorectomy for ovarian teratoma.

A 21-year-old female originally presented to our hospital with persistent left lower quadrant pain of 2 months' duration. Her past surgical history was significant for laparoscopic partial left oophorectomy for ovarian teratoma 1 year previously. During the initial evaluation, pelvic ultrasonography revealed a heterogeneous mass measuring 5 × 6 cm in the left adnexal region, which was confirmed on a computed tomography (CT) scan. The cancer antigen 125 titer was 432 U/mL, and all other laboratory parameters were within normal limits. Exploratory laparotomy confirmed a recurrent teratoma in the left ovary for which left complete oophorectomy was performed. The patient was discharged home with an uncomplicated postoperative course.

At the 6-month follow-up, the patient was doing well without complaints, and her physical exam was normal. A routine pelvic ultrasound, however, revealed two echogenic masses in the right ovary. A subsequent pelvic CT confirmed two well-demarcated, homogeneous lesions located at the anterior and posterior aspect of the right ovary suspicious of recurrent disease (Figure 1). The anterior mass was 8 cm in size with central calcifications, and the posterior mass was 6 cm in size without calcifications. A repeat cancer antigen 125 titer was within normal limits. A provisional diagnosis of ovarian tumors suspicious of recurrent disease was given. Given her past surgical history and the size of the lesions, it was recommended that the patient undergo a repeat exploratory laparotomy to establish definitive tissue diagnosis.

At exploratory laparotomy, a well-circumscribed firm mass was found anterior to the right ovary, with extensive adhesions to a loop of the small bowel posteriorly. Numerous adhesions were released, and the pelvic mass was excised from the adherent small bowel and its mesentery. No bowel resection was required.

Figure 1. Pelvic computed tomography demonstrating two well-demarcated, homogeneous lesions located at the anterior and posterior aspect of the right ovary.

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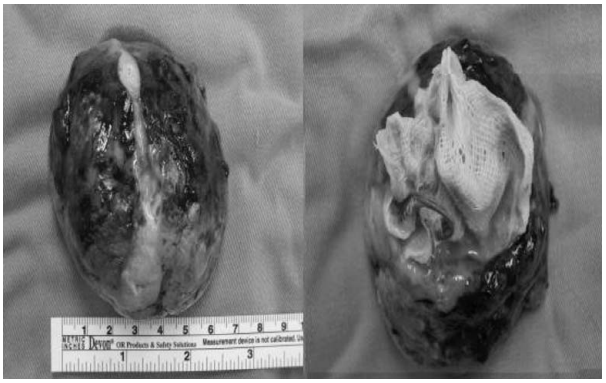

Figure 2. Pathologic examination reveals a 6 cm fibrotic mass (left). The cut surface demonstrates a 4 × 8 cm surgical sponge embedded within the fibrotic tissue (right).

The right ovary was intact on gross examination. Complete pathologic evaluation revealed no evidence of malignancy, with the contents of the pelvic mass reported to be a 4 × 8 cm surgical sponge with surrounding inflammation and fibrosis (Figure 2). The patient had an uneventful postoperative course and was discharged home on the seventh postoperative day.

Gossypiboma presents a unique clinical challenge to surgeons of all fields. The highly variable manifestations of gossypiboma, both clinically and radiographically, often prevent clinicians from making the correct diagnosis. Given this patient's prior surgical history, the presumptive diagnosis was a right ovarian tumor. In surgical oncology, failure to make the correct diagnosis preoperatively can have serious consequences. Misinterpreting a gossypiboma for a tumor with malignant potential provokes unnecessary anxiety in the patient. Additionally, overly aggressive surgeries have been used in settings of uncertain diagnoses to ensure oncologic efficacy [4], thereby putting these patients at a greater risk for surgical complications.

Several clinical scenarios may predispose a patient to retained surgical sponge (RSS) during an operation. In a case-control study of 54 patients with retained foreign bodies, the investigators identified emergency operations, unexpected change in procedures, and high body mass index as significant risk factors for RSS [2]. Additionally, other factors such as hemorrhagic procedures leading to poor visibility in the operating field, long duration of surgery, and personnel changes during sponge count have all been implicated as well [5]. The type of surgery also plays a significant role in the development of gossypiboma. Gastrointestinal tract-related surgeries and gynecologic procedures are most commonly associated with RSS [4,6,7]. In a retrospective cohort study of 11 patients with RSS, Bani-Hani et al [8] reported that 36% and 27% of their patients underwent hysterectomy and appendectomy/cholecystectomy, respectively. Similar observations have also been reported by Lauwers and Van Hee [9]; these investigators noted a strikingly high incidence of gossypiboma in patients who were treated with lower pelvis operations such as hysterectomy, salpingectomy or ovariectomy. The high incidence of gossypiboma following pelvic surgeries can be explained by the difficulty in visualizing this deep anatomic region, which facilitates the disappearance of a blood-soaked sponge [4].

Although biochemically inert, cotton laparotomy sponges can lead to two foreign body reactions when left behind in the human body [10]. The first type is a septic reaction with an exudative response. The human body attempts to extrude the foreign material either externally or into a hollow viscus creating a fistula or abscess [9]. Patients with this type of reaction are usually symptomatic in the early postoperative phase and require immediate surgical interventions. The second type is an aseptic fibrinous reaction resulting in adhesions, encapsulation and, ultimately, foreign body granuloma formation [10]. This type of reaction is usually clinically silent and may remain quiescent as long as 25–30 years after the initial surgery [11,12]. RSS may be found incidentally on imaging as a pseudotumor or may present with nonspecific complaints mimicking an obstructive mass, such as abdominal pain, nausea and vomiting [3,4].

RSS may produce serious complications. The most commonly reported complications associated with RSS include intestinal obstruction, abscess formation, erosion of the gastrointestinal or genitourinary tract, leading to fistulas, sepsis and death [4,7]. The mortality rate from RSS is strikingly high; it has been estimated as many as 35% of patients with RSS will die from a related complication [9]. Early recognition of RSS followed by immediate surgical retrieval usually results in excellent prognosis. In the setting of delayed diagnosis, the morbidity and mortality increase substantially as major operations are often required in these situations [9].

Radiographic evaluations are indispensible for making the diagnosis of RSS. Early diagnosis can be easily made with conventional abdominal radiographs if the laparotomy sponges are coated with radioopaque markers. After a long period of time, however, radioopaque markers may disintegrate, or may be misinterpreted as tissue calcifications or surgical clips resulting in reassuring plain films. Ultrasonography may be a useful modality to detect abdominal RSS. Characteristic findings include a well-defined echogenic mass with a dense, acoustic shadowing [7,13]. On CT scans, RSS has been classically described in the literature as a well-defined soft tissue mass with a whorled texture or a spongiform pattern with trapped gas bubbles [13,14]. Although

gas bubbles are considered a characteristic feature of RSS on CT scans, they are only present in a minority of cases [14]. Calcifications of the wall surrounding the mass may be observed as well. Recently, Kim et al [15] described the characteristic findings of abdominal and pelvic gossypiboma on magnetic resonance imaging. Gossypiboma manifests as a well-defined mass with a peripheral wall that exhibits low signal intensity on T1- and T2-weighted imaging but a strong enhancement on contrast-enhanced T1-weighted imaging [15]. The gauze fibers within the gossypiboma are characteristically seen as low intensity whorled stripes on T2-weighted magnetic resonance imaging [15,16]. These investigators suggested that magnetic resonance imaging may be a useful modality for diagnosing RSS in patients with a prior history of laparotomy.

The best treatment for gossypiboma is not surgical interventions but prevention. Proper handling of surgical instruments and textiles are imperative during every surgery. Sponge counting must be conducted at the beginning of an operation, during closure of the peritoneum, and after wound dressing. Laparotomy sponges should never be cut during an operation, as small sponges are best avoided. Prior to closing the peritoneum, the surgeon needs to explore and inspect the abdominal cavity carefully to ensure that all surgical sponges are removed. While a correct sponge count at the end of a procedure may offer some reassurance, it is worthwhile to note that RSS almost always occurs in a case with a reportedly correct sponge count [17]. Such a finding emphasizes the need to practice meticulous sponge counting in the operating room. When counts are incorrect, a comprehensive search for the missing items must be performed, including a plain radiograph to confirm the absence of surgical sponges in the abdominal cavity. Routine intraoperative radiographic screening is currently not recommended and should only be reserved for selected high-risk operations such as trauma surgeries [2].

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