Gossypiboma (textiloma) after caesarian operation

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Abstract

Gossypiboma or textiloma is used to describe a retained surgical swab in the body after an operation that often requires another surgery. This increases morbidity and mortality of the patient, cost of treatment, and medico-legal problems. We are reporting case of a 30-year-old woman who was referred from periphery with acute pain in abdomen. The patient had a surgical history of caesarian section 12 months before, performed at another hospital. On clinical examination and investigation, retained surgical product was suspected on plain x-ray and ultrasound that was confirmed by abdominal computerized tomography (CT). During laparotomy, the cyst wall was opened incidentally which lead to the drainage of a large amount of pus. The cyst was located in front of the uterus on the left side. Inside the cyst, there was found retained surgical gauze embedded in pus that confirmed the diagnosis of gossypiboma. The author reviews the literature on diagnosis and management of this preventable condition.

Key words: caesarian section, gossypiboma, retained towel, textiloma

Introduction

A surgical sponge is the most common type of retained foreign body (RFB). Gossypiboma is a term used to describe a mass within the body that comprises a cotton matrix surrounded by a foreign body reaction. Another term, “textiloma” which originated from the “textilis”. It refers both to a fabric body involuntarily left in the patient during surgery and the reactions secondary to its presence in the body. Surgical mop retained in the abdominal cavity following surgery is a serious, but avoidable complication [1].

Gossypibomas are most frequently diagnosed in the intraabdominal cavity. However, they can be also found in the chest, extremities, CNS, and breast. They have been reported to occur after surgical procedures such as abdominal, cardiovascular, orthopedic, and even neuro-surgical operations [2-7].

Retained surgical gauze fibers can cause visceral perforation, fistula formation, and it can migrate into the ileum, stomach or colon without any apparent opening in the wall of these luminal organs, causing complete or incomplete intestinal obstruction [8].

Gossypibomas may present a serious diagnostic and therapeutic problem as they have inconsistent radiological features and may present with the entire spectrum ranging from being asymptomatic to producing life threatening illness. The importance of imaging findings awareness in case of gossypibomas is highly recommended as it could be misdiagnosed as benign or malignant tumor and subject the patient to unnecessary interventional procedures [9].

The author reports a case of gossypiboma in a patient presenting with mass and pain after one year of caesarian section. He also reviews the literature on diagnosis and management of this preventable condition.

Case report

A 30-year-old female patient referred to the emergency unit of the department with complains of acute pain and distention of the abdomen. She had history of caesarian section and right ovarian cystectomy 12 month ago. General examinations and laboratory parameters were within normal limits. On abdominal examination, a vertical midline scar was present; a large cystic mass was felt nearly 30 × 30 cm size with restricted mobility. Abdominopelvic X-ray revealed the radiological marker of the retained mob. Abdominal ultrasonography showed a round mass of 20 cm size with fluid echogenicity in the left lower abdominal quadrant. In the abdominal-pelvic computerized tomography (CT) scan, a well circumscribed heterogeneous cystic soft tissue mass of 20 cm size was found in the left lower quadrant of abdomen with the radiological marker seen and smudged related fat planes with presence of intratumoral gas. The CT was done using the Siemens multi-slice CT device without contrast and one cm slice thickness (Fig. 1).
The patient was planned for exploratory laparotomy under general anesthesia with confirmed diagnosis of retained surgical towel abdominally. Abdomen was opened with low midline incision. The mass was intra-peritoneal, lying between loops of the small intestine. All the precautions were taken to prevent rupture of the cyst. But, because of multiple adhesions, it ruptured with expulsion of yellow, thick pus in which a sponge was found. Pus samples were sent in a sterile container for culture and sensitivity. The sponge was removed and peritoneal lavage was done. The abdomen was closed with all precautions and counts of sponges and instruments. The culture and sensitivity of pus was sterile. Postoperative period was uneventful and the patient recovered well. After eight days, the patient was discharged and advised to follow-up.

Discussion

This case is to revisit the gossypiboma/retained postoperative foreign body (RFP). Data concerning the actual incidence is difficult to estimate because of a low reporting rate due to medicolegal implication. It varies between 1 out of 1,000-1,500 intra-abdominal operations and 1 out of 300-1,000 of all operations [9]. It is difficult to recognize a gossypiboma by using radiological screening if the sponge does not have any radiological marker on itself, because the cotton can simulate hematoma, granulomatous process, abscess formation, cystic masses or neoplasm. The possibility of a retained foreign body should be in the differential diagnosis of any postoperative patient who presents with pain, infection, or palpable mass. The low index of suspicion is due to rarity of the condition and latency in the manifestation. If the diagnosis is made early, laparoscopic retrieval may be feasible. Average discovery time equaled 6.9 years with a median (quartiles) of 2.2 years (0.3-8.4 years) [10]. Szarf et al. Reported a case of forty-year-old intrathoracic gossypiboma after cardiac valve surgery. This is the longest time found in the literature for foreign body [11].

The possible causes of sponge retention are emergency surgery, unexpected change in the surgical procedure, disorganization (e.g. poor communication), hurried sponge counts, long operations, unstable patient condition, inexperienced staff, inadequate staff numbers, and obesity. Most cases occurred when the sponge count was falsely pronounced correct at the end of surgery [12]. Because the symptoms of gossypiboma are usually nonspecific and may appear years after surgery, the diagnosis of gossypiboma usually comes from imaging studies and a high index of suspicion.
The clinical presentation of gossypiboma is variable and depends on the location of the sponge and the type of reaction. There are two types of foreign body reactions in pathology: an exudates reaction leading to abscess formation like our case and chronic internal or external fistula formation. Another is an aseptic fibrinous reaction resulting in adhesion, encapsulation, and eventual formation of granuloma. The latter usually presents much later than exudates reaction sequelae. They usually remain asymptomatic or present with pseudotumor syndrome. Common symptoms and signs of gossypiboma are abdominal distension, ileus, tenesmus, pain, palpable mass, diarrhea, abscess, and fistula formation, nausea, vomiting, anorexia, and weight loss resulting from obstruction or a malabsorption type syndrome caused by the multiple intestinal fistulas or intraluminal bacterial overgrowth. Retained surgical sponges can cause serious consequences, such as bowel or visceral perforation, obstruction or fistula formation, sepsis or even death [13]. Intra-abdominal gossypibomas can migrate into the ileum, stomach, colon or bladder without any apparent opening in the wall of these luminal organs.

Many characteristic radiologic findings are used to diagnose gossypiboma. A hyper reflective lesion with a hypoechoic rim and a strong posterior shadow on ultrasound and a whorl like spongiform hypodense mass with a thick peripheral rim on CT are the most common findings. Radiographs are the most commonly used method to detect retained sponges. If the sponge contains a radiopaque marker, the diagnosis can be made easily by conventional radiography. Radiolucent material such as sponges can cause diagnostic problems. Radiographs can also suggest the diagnosis when a characteristic whorl like pattern is present. Radiographs of the abdomen can reveal a fine opacity and some mottled small air densities superimposed on this area. In cases complicated by fistula formation, administration of radiographic contrast material may help define the anatomy and extent of the abnormality. Intrathoracic gossypibomas appear as masses that mimic intrapulmonary abscesses, aspergillomas, or tumors. Gossypiboma involving the thigh can show a periosteal reaction on radiography. Thus, a periosteal reaction and neovascularity are not necessarily indicative of a neoplastic process. The radiologic identification of gossypiboma in breast is difficult because of its variable appearance. A gossypiboma can have a whorl like appearance on mammography [12, 14-19].

Ultrasound is useful in the diagnosis of abdominal retained gauze. Ultrasound features are usually a well-delineated mass containing a wavy internal echo with a hypoechoic ring and strong posterior acoustic shadowing. Ultrasound images can be classified into two groups, a cystic type and a solid type. The former presents as a cystic lesion with a zigzag echogenic bundle. The latter can appear as a complex mass containing hyper- and hypoechoic regions. Acoustic shadowing on ultrasound is usually caused by the retained material itself, calcified regions in the gossypiboma, or pockets of air [14, 15, 19].

CT is the technique of choice for detecting gossypibomas and possible complications. Many authors consider a gossypiboma to be specifically indicated by a CT finding of a low-density heterogeneous mass with an external high-density wall that is further highlighted on contrast-enhanced imaging and that has a spongiform pattern containing air bubbles. The radiopaque marker strip is seen as a thin metallic density in the mass. Calcification of the mass wall may be observed on CT. The spongiform pattern with gas bubbles is the most characteristic CT sign for gossypibomas. The mass may contain wavy striped high-density areas that represent the sponge itself. CT images in a case of a neck gossypiboma showed a hypodense mass between the jugulocarotid vessels and the sternocleidomastoid muscle. The mass did not contain any trapped gas bubbles and was surrounded by an enhanced peripheral capsule [16, 20-22].

On MRI, the signal intensity may vary according to histologic composition, stage, and fluid content of the tumor. A retained sponge is typically seen as a soft tissue density mass with a thick well-defined capsule; it is seen as a whorled internal configuration on T2-weighted imaging. In general, most lesions caused by foreign bodies are hypointense on T1-weighted images and hyperintense on T2-weighted images. Retained absorbable hemostatic sponges can be seen as intermediate T1 and high or complex mixed (similar to the whorled appearance of other retained surgical sponges) T2 signal intensity [14, 16].

This article discusses the clinical manifestations, pathophysiologic aspects, and complications related to gossypibomas; presents the classic imaging features of gossypibomas using a multitechnique approach. After the diagnosis of gossypiboma is confirmed, removal of the retained sponge surgically, endoscopically or laparoscopically is accomplished in order to prevent severe morbidity or mortality may lead to death [23]. Differential diagnosis include the following: CT findings of gossypiboma may be indistinguishable from those of an intra-abdominal abscess [24, 25]. It should be
considered in the differential diagnosis of acute mechanical intestinal obstruction in patients who previously underwent laparotomy [26]. In the differential diagnosis of a mass arising after prior intracranial surgery, the possibility of gossypiboma should be included along with recurrent tumor, radiation necrosis, and abscess [27]. Radiologic findings of Bronchiectasis, hydatid cysts, mycetomas, hematomas, abscesses, or neoplasms may be confused with intrathoracic gossypibomas [28-30]. Gossypiboma should be included in the differential diagnosis of an atypical chest mass in any patient who has undergone previous surgery. It may mimic posttraumatic osteosarcoma, periosteal osteosarcoma, and malignant fibrous histiocytoma [31].

The leading point in the treatment of gossypibomas is the surgical policy and prevention. The universal guidelines as stated by the American College of Surgery [32] in October 2005 should be strictly followed. Only radio-opaque sponges should be used, with accurate sponge counts performed before the procedure and after the procedure. Although human errors cannot be completely avoided [33], several adjunct technologies are under development for supporting surgical teams in performing counts and reducing instances of lost or retained sponges. These include the barcode system, which accounts for sponges based on affixed two-dimensional matrix [34]. Two additional technologies embed electronic chips within sponges: the electronic article surveillance (EAS) system, which uses magneto mechanical technology [35]; and radiofrequency identification (RFID) microchips, which receives signals sent by a wand like handheld scanner and respond with unique identification code [36]. This newer technologies coupled with continuous medical training and strict adherence to rules of the operation room should reduce the incidence of gossypiboma [37, 38].

Conclusion

Present case is an important pearl that one must be aware of the risk factors that could lead to a gossypiboma and take measures to prevent it. Gossypibomas are uncommon, mostly asymptomatic, and hard to diagnose. Particularly, chronic cases do not show specific clinical and radiological signs for differential diagnosis. RFB should be considered in the differential diagnosis of any postoperative patient who presents with pain, infection, or palpable mass. Identifying a sponge on an intraoperative radiograph is difficult. The best diagnostic modality to rule out a RFB should be a CT scan only if the retained foreign products contained a radioopaque marker, otherwise the MRI is the reliable modality for tissue differentiation and specification.

Gossypiboma can be diagnosed early postoperative stage providing that using materials having radiopaque markers. However, materials having radiopaque markers are not used in the most of health service in our country. In order to prevent these types of complications, we have to control all of the surgical materials before and after surgery, which is the main principle in all procedures.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Competing interests

The author declares that they have no competing interests.

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References

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