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Special Communication

GOSSYPIBOMA – THE FORGOTTEN SWAB

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The medical profession has coined a word for a left-behind surgical sponge which is known as Gossypiboma. It is taken from the Latin word gossypium for cotton and the Swahili boma for place of concealment. Although this terminology is not new but many healthcare professionals are not familiar with it. A synonym for this word is textiloma, which combines the word textile (until recently most surgical sponges were made of cloth) and the suffix -oma, meaning a tumor or growth.

In a study that appeared in the January 16, 2003 issue of the New England Journal of Medicine "Risk Factors for Retained Instruments and Sponges after Surgery," it was noted that the most common risk factors associated with "retained foreign bodies" are:

1. emergency operations,
2. unplanned changes in operating procedure, and
3. when operating on patients with "higher body-mass index" (excessive amounts of fat).

Gossypiboma are rarely documented, owing to medical, legal, and other reasons.[1] Literature search shows that reported foreign bodies retained in the abdominal cavity include sponges, towels, artery forceps, pieces of broken instruments or irrigation sets, rubber tubes, etc.[2,3] Among retained foreign bodies, a surgical sponge constitutes the most frequently encountered object because of its common usage, small size, and amorphous structure.[4] Around 50% of retained gauze pieces are discovered after at least five years of the surgery. Even in one case report of 66-year-old man, a gossypiboma was found after 24 years of gastrectomy.[5] In another case report a pericardial gossypiboma was found in a woman who had thoracotomy three weeks prior to replacement of mitral valve prosthesis.[6]

The presentation may be acute or relatively delayed. Acute presentations generally follow a septic course with abscess and/or granuloma formation. Delayed presentations may follow months or years after original surgery, with adhesion formation and encapsulation. Eventually, it may produce various complications leading to its discovery. Among the complications reported are obstruction[7], peritonitis[8], adhesions[9], fistulas, abscess formation[7], erosion into gastrointestinal tract, or extrusion of the laprotomy pad via the rectum.[9-11] Transmural migration of the retained sponge is a rare phenomenon. A laprotomy sponge may extrude into the bowel lumen and migrate along the intestinal tract, or it may partially penetrate the bowel wall[7,8,10,12]. More unusual occurrences, such as the migration of a sponge into the urinary bladder following inguinal herniorrhaphy have also been reported[13].

The imaging features of retained intra-abdominal gauze piece are variable.

Plain radiographs:

Plain radiographs can diagnose such

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accidental retention of surgical sponges provided a radio opaque marker has been incorporated into the gauze[14]. However a whirl like appearance may be seen even without radioopaque markers[15]. They may present as heterogeneous ill-defined masses with gas bubbles within a fibrotic capsule[16]. If the gauze is in contact with urinary or the gastrointestinal tract, a peripheral calcification may be seen[16].

Fistulogram

In cases where a discharging sinus/fistula develops in association with a retained swab, a sinogram/fistulogram with iodinated contrast delineate the communication with the intra abdominal structures and reveal the network of the gauze[16].

Ultrasound:

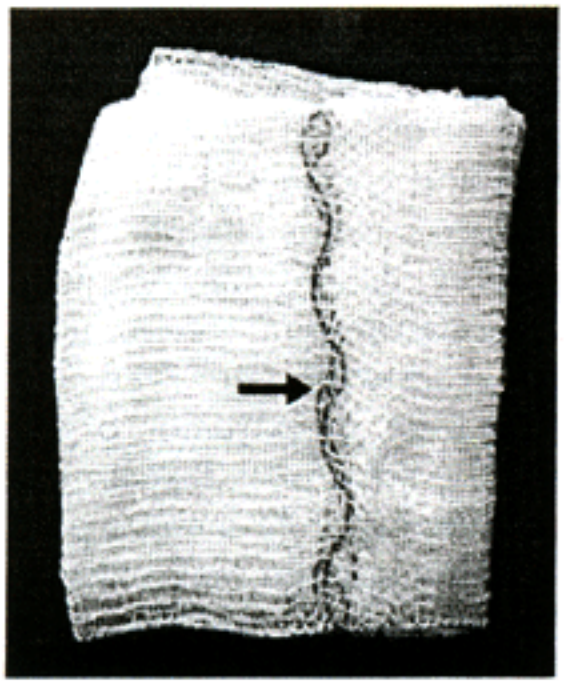
Ultrasound done on these patients revealed that the surgical sponges are echogenic and create an intense and sharply delineated acoustic shadow. This acoustic shadow can be present even in the absence of air and calcification[17]. Sometimes, a surgical sponge may appear like a cystic mass with highly irregular internal echoes, however a hypoechoic mass with complex echogenic foci can also be seen[17].

CT scan Findings:

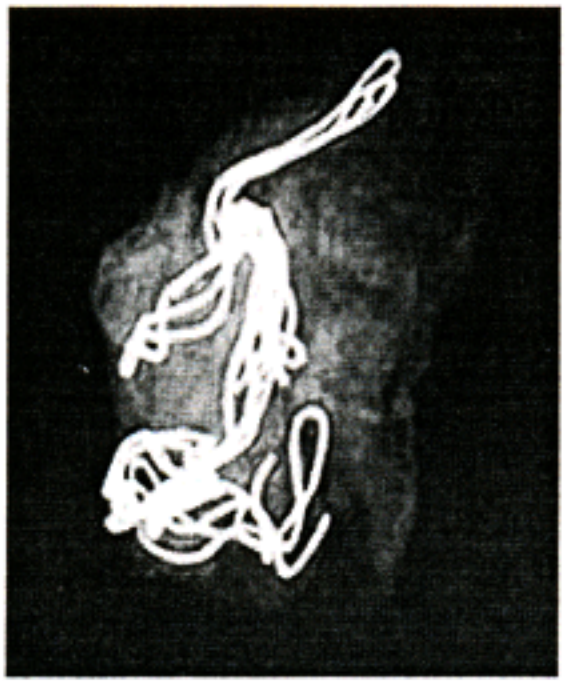
On CT scans the lesions are fairly well circumscribed with a densely enhancing wall. The center of the lesion shows a whirl-like pattern. This is due to the gas trapped in the fiber meshwork of the gauze. Air fluid levels and/or gas may be seen in cases of abscess formation[18]. The gauze piece shows a strong rim enhancement after intravenous contrast administration. This CT appearance is suggestive of retained surgical sponge in asymptomatic patients. The differential diagnosis to this appearance is a hematoma or an abdominal abscess[17]. With time, CT features do not change with the exception of calcification in the retained surgical sponge[17].

MRI Findings:

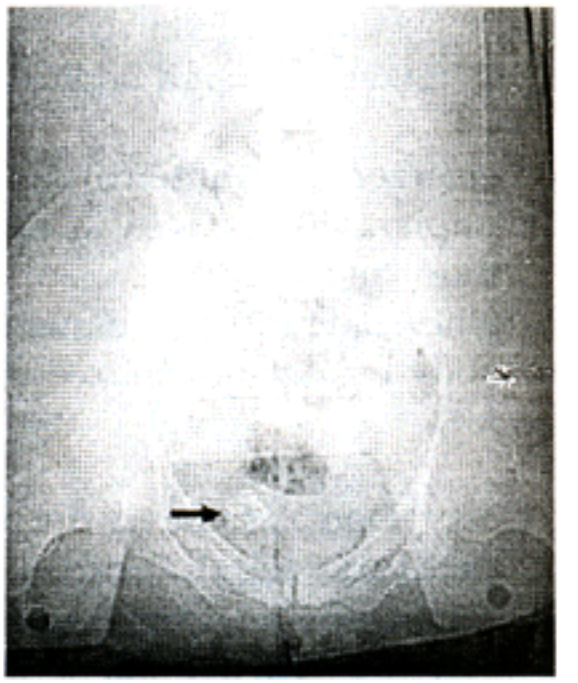
On magnetic resonance imaging (MRI),



(a)
Photograph of a 4 x 4 inch surgical sponge. The interwoven radio-opaque marker is visible (arrow).



(b)
In vitro radiograph of a 4 x 4 inch sponge. The body of the sponge is only faintly radio-opaque, but the marker is easily seen.



(c)
Intra-operative radiograph performed because of an incorrect sponge count in a 54 year old woman undergoing urethral suspension. The radio-opaque marker (arrow) of a 4 x 4 inch surgical sponge is visible in the pelvis. The sponge was identified and removed.

"It is kind of a euphemism," Dr. Gawande said. "It implies a certain lack of responsibility, or that the instrument did it itself. It is the technical term of art, undoubtedly developed in the malpractice context."

retained surgical gauze pieces are of low signal intensity on T1 weighted images and very high signal intensity on T2 weighted images. The gauze pieces have a wavy, striped and/or spotted appearance[19].

Prevention of gossypiboma is better than cure. Most reported cases of gossypiboma occur in the presence of a normal pack count[18]. This emphasizes the importance of guidelines for operative theatre record keeping. The Royal College of Surgeons of England had laid down some guidelines in 1990[20].

Some suggestions to prevent the occurrence of gossypiboma are:

1. Double counting of the gauze pieces before and after the closure of the abdominal wall.
2. Use of surgical gauze with radio-opaque markers, with this early detection and removal of the gauze is possible.
3. Prevention of hurried counts, which may occur in long procedures.
4. Additional counts are recommended when there are changes in theatre personnel.
5. Avoidance of pack usage during fascial closure.
6. Intra-operative radiology in specialist situations such as the multi-trauma case, should also be considered, particularly where multiple disciplines have been involved in patient management and where multiple procedures have been performed.
7. When the above imaging findings are noted in patients with previous history of surgery, the diagnosis of a retained surgical sponge should be considered.

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