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# GOSSYPIBOMA NECK RARE MIMICKER OF TUMOUR RECURRENCE

**Radiodiagnosis**

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## ABSTRACT

Retained foreign bodies (RFB) are rare causes of lump.1 Presentation several years after surgery is rarer. Presentation of the patient after session of I131 scan and ablation with complaint of swelling on left side of neck since 2mths, discharge from drain site since 1mths and pain during deglutition since 1mths., Discovery of such a case providentially at an early stage, during investigation of such a lump is exceptional. We report such a singular case.

## KEYWORDS

Gossypiboma, Textiloma, Retained foreign body, Colonic malignancy/tumor, Concomitant/coexistent pathology, Res Ipsa Loquitur

## INTRODUCTION

Textiloma and gossypiboma are terms used to describe a mass of cotton matrix that is left behind in a body cavity during an operation. A gossypiboma literally means retained surgical sponge and is derived from the Latin word "gossypium," which means "cotton," and "boma" in Kiswahili, which means "place of concealment." (1) This is an uncommon surgical complication. Gossypibomas are most frequently discovered in the abdomen. Such foreign bodies can often mimic tumors or abscesses clinically or radiologically; however, they are rarely reported because of the medicolegal implications. The manifestations and complications of gossypibomas are so variable that diagnosis is difficult and patient morbidity is significant. It is difficult to diagnose a gossypiboma in the neck because of its rarity, various symptoms, and non-specific radiologic findings. Furthermore, it can be misinterpreted as malignancy and finally diagnosed from a histopathological examination of the surgical specimen after unwarranted radical surgery. The medico-legal consequences of gossypiboma are significant. Patients may be inadvertently informed that masses might be malignant and may undergo unnecessarily invasive investigations such as angiography and unnecessarily radical extirpative surgery.

We present a case of a gossypiboma presenting neck mass mimicking an isolated neck recurrence with a patient who had underwent thyroidectomy with a neck dissection for papillary thyroid carcinoma at a onco-surgical centre.

### Case Illustration

26 yrs old female presented with complaint of gradually progressive swelling in front of neck, painless, move with deglutition for 6 months. Clinical examination had shown a 3 x 2cm nodular swelling front of left side of neck and multiple discrete lymph nodes. USG Neck and CECT neck had shown malignant lesion left lobe of thyroid and multiple conglomerate Lymph nodes (level – II, III & IV) bilaterally. Patient underwent total Thyroidectomy + B/L SND (II-IV) and level VI clearance on 21 Jul 2016 at an onco surgical unit. Drain was placed on left side of neck. Post OP recovery was uneventful and drain was removed on 5$^{th}$ post op day. Histopath (26 Jul 2016) – Papillary carcinoma, left lobe thyroid, Lymph node +ve for metastasis. Patient was advised $I^{131}$ scan and radio ablation of residual thyroid tissue.

Patient presented to this centre on Sept 17 after session of $I^{131}$ scan and ablation with complaint of swelling on left side of neck since 2mths, discharge from drain site since 1mths and pain during deglutition since 1mths. On clinical examination hard lump type swelling noted on left side of neck along SCM extending from hyoid bone till the level of thyroid along the surgical scar, discharging sinus on the superior aspect of the swelling, tenderness and no swelling was noted on front aspect. On scrutiny of previous treatment documents - Post op USG neck was suggestive of calcified lymph nodal mass on left side of neck. Provisional diagnosis of lymph nodal mass & recurrence of tumour was considered.

Patient underwent radiograph of cervical spine and USG of neck. Radiograph Cervical spine revealed cervical lordosis maintained, post op status noted with multiple surgical clips, linear radio opaque shadow folded upon itself noted extending from lower end of C2 vertebrae till the C5 vertebra, visualized bones appear normal. Diag -? Retained surgical sponge. USG neck revealed hyper-echoic lesion with intense posterior acoustic shadowing extending from the level of hyoid bone till thyroid gland region measuring 2.8 x 4.0cm (TR x CC) in size. Sinus tract could be identified in its superior aspect. No vascularity was noted within the lesion. Rest of the neck USG appeared unremarkable except for post total thyroidectomy status.

**Diagnosis: - Gossypiboma Neck**

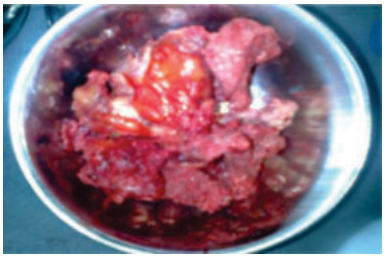

**Fig. 1: Pieces Of Removed Gauge Sponge**

Patient was operated upon and the retained surgical sponge was removed. Post op recovery uneventful, the previously present sinus healed normally.

## DISCUSSION

Textiloma and Gossypiboma are terms used to describe a mass of cotton matrix that is left behind in a body cavity during an operation. An uncommon surgical complication, these are frequently discovered in the abdomen. These can often mimic tumours or abscesses clinically or radio logically. Retention of surgical sponges or swabs in the abdomen or pelvis has been reported to occur with a frequency of one in 100–5,000 for all surgical interventions. Gossypibomas are most frequently diagnosed in the intra-abdominal cavity. However, they can also be found in the chest, extremities, CNS and breast. Risk factors are patients with obesity, during emergency operations and after laparoscopic interventions. Gossypibomas can become clinically apparent anytime, from immediately postoperative to several decades after initial surgery. Items such as cotton or gauze pads, when mistakenly left behind during surgery, can cause foreign body reactions. Gossypibomas cause two types of responses in the body: exudative and aseptic fibrous. Adhesive form can have adhesions, encapsulation, and granuloma formation. Exudative forms generally present early in the postoperative period and may involve secondary bacterial contamination, which results in various fistulas. Body encapsulates and fibroses them. Symptoms of gossypiboma usually are nonspecific and may appear years after surgery. A broad spectrum of clinical symptoms may occur, ranging from none (incidental. finding on a postoperative radiograph) to fatal, depending on the site and type of complication resulting from the retained foreign body[5].

The diagnosis of gossypiboma may be difficult because it may mimic a benign or malignant soft tissue tumour [6]. This could lead to erroneous biopsy attempts and unnecessary manipulations.

The occurrence of a retained object, such as a surgical sponge, following completion of an operation is the classic example of medical negligence in which an expert opinion to establish the standard of care is not required.

According to the theory of loss-of-chance, the damage of plaintiff is the loss of the chance of survival or recovery; and there would be compensation for this loss. The preexisting condition and the effect of the doctor's tortuous conduct attach within a relatively short time, the burden of providing the extent to which the preexisting condition influenced the health of the patient should be shifted to the doctor. [13]

In such cases, the diagnosis of gossypiboma and the second surgical operation needed for removal of medical problem can lead to start of legal problem between the patient and the surgeon at fault. In this situation, even if a medical doctor is reluctant for diagnose gossypiboma and report a colleague to judicial authorities, the reporting of criminal acts to judicial authorities was defined a responsibility in the penal code. It is clear in most recent publications that the rate described is grossly underestimated; reasons for this are related to the possible medico-legal implications, the fear of litigation which could end up in heavy expenses for compensations and adverse publicity for institutions and surgeons; in fact, it is clear that the responsibility of the surgeon and members of the team in the Operation Theatre could be called in case of litigation.

**Risk Factors —** Multiple studies have attempted to identify factors associated with retained surgical items [5]. The results have not been entirely consistent. Factors that have been implicated as important include the following:

- Emergency surgical procedures
- Unexpected change in the course of the surgical procedure
- Patient obesity
- Damage control surgery
- Involvement of two or more surgical teams
- Procedures involving one or more open body cavitiesProlonged surgical procedures, and the use of an unusually large number of instruments

**Radiology Findings**

Many characteristic radiologic findings are used to diagnose gossypiboma. Radiographs are the most commonly used method to detect retained sponges[7]. If the sponge contains a radiopaque marker, the diagnosis can be made easily on conventional radiography. Radiolucent material such as sponges can cause diagnostic problems.

Ultrasound features are usually ,"A hyperreflective lesion containing a wavy internal echo with a hypoechoic rim and a strong posterior acoustic shadow on ultrasound and a whorl like spongiform hypodense mass with a thick peripheral rim" [8]. Ultrasound images can be classified into two groups, a cystic type and a solid type([8]). 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.

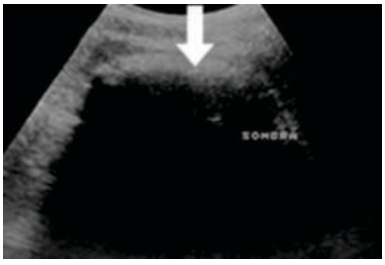

**Figure 2: Gossypiboma :USG View**

CT is the technique of choice for detecting gossypibomas and possible complications. Gossypiboma is specifically indicated by 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[9]. The radiopaque marker strip is seen as a thin metallic density in the mass[9]. Calcification of the mass wall may be observed on CT.

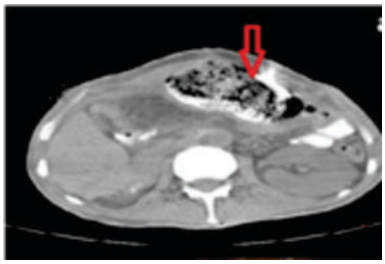

**Figure 3: Gossypiboma :CT View**

On MRI, the signal intensity may vary according to histologic composition, stage, and fluid content. It is seen as a whorled internal configuration on T2-weighted imaging. 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.

On PET, Gossypiboma showed a circular rim-shaped FDG uptake indicating the fibrous encapsulation and a central nidus without FDG uptake representing the cavity packed with blood clots and the retained sponge.

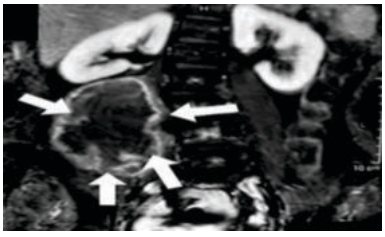

**Figure 4: Gossypiboma : MRI View**

**Medico-legal Aspect**

Medico-legal problems between the patient and the doctor may arise because of retained surgical sponge. No doubt, Retained Foreign Body (RFB) is stressful for patient but it causes equal mental suffering and embarrassment to surgeon. Nothing can compensate for the loss of reputation. Medical sciences as well as human body are too difficult to be easily understood. There is unexplained risk in all surgical procedures. A private complaint may not be considered unless the complainant produces prima facie evidence. Doctor liable for damages where foreign object left in body after surgery—In a case of medical negligence where a gastroenterologist performed explorative laparotomy and left a surgical mop (gossypiboma) in the body that resulted in complications necessitating a second surgery, the National Commission held that this constituted medical negligence. The complainant was awarded `3.5 lakhs as compensation for medical expenditure, mental agony and trauma.

**Medical Negligence**

- Medical negligence is the breach of duty owed by a doctor to his patients to exercise reasonable care and / or skill, resulting into some bodily, mental injury and in turn cause financial disability
- Error of judgment is different from medical negligence, as medicine is not an exact science.
- Reasonably degree of proficiency and application of that proficiency with sufficient, degree of diligence are the key words .
- Section 337 (causing hurt to any person by doing any rash or negligent act as would endanger human life) or Section 338 of the IPC (causing grievous hurt to any person by doing any rash or negligent act so as to endanger human life).

**Res Ipsa Loquitur**

The Supreme Court in Pushpabhai Purshottam Udeshi & Ors v/s. M/s Ranjit Ginning & Pressing Co. (P) Ltd. & Anr [10] has explained the doctrine of Res Ipsa Loquitor in the following words:

The general purport of the word's res ipsa loquitur is that the accident "speaks for itself" or tells its own story. The nature of the injury is such that it does not occur in the normal course of events. This principle can be applied in cases where the patient is unable to identify the exact nature of

negligent act on the part of the doctor which caused the injury and the doctor has been unable to explain the technical reason for its occurrence. If the doctor can explain the same then the plea of Res Ipsa Loquitor may be dropped as the damage becomes one of risks inherent to the case.

**Medicolegal Aspects—Gossypiboma**

- The medico legal consequences of gossypiboma are significant. Patients may be inadvertently informed that masses might be malignant and may undergo unnecessarily invasive investigations, procedures or operations.
- "Retained surgical swab" obviously leads to an allegation of medical negligence. The patient can sue the surgeon for civil negligence.

The situation is often quoted as the ideal example of "Res Ipsa Loquitur" meaning "the thing speaks for itself," "the mishap would not have occurred but for negligence on the part of the surgeon."

**How to Prevent?**

To prevent gossypiboma, sponges are counted by hand before and after surgeries. This method was codified into recommended guidelines in the 1970s by the Association of Peri-Operative Registered Nurses (AORN). [11]

Four Separate Counts Are Recommended

(a) The first when instruments and sponges are first unpackaged and set up
(b) A second before the beginning of the surgical procedure
(c) A third as closure begins, and
(d) A final count during final skin closure.

All these counts are written on the board in operation theatre by the floor nurse. Other guidelines have been promoted by the American College of Surgeons and the Joint Commission. [12] ewer technologies for detection include two-dimensional bar code, radiofrequency detector, and radiofrequency identification

Tagged surgical sponges can be used so that an electronic article surveillance system can do counting before wound closure. Bar coded sponges can be counted with the help of a bar code scanner. Recently, use of radiofrequency devices is used to identify the sponges to avoid possibility of retained sponge. Hand held radiofrequency identification device has been found to have 100% accuracy when performed correctly. Radio opaque swabs have a blue line that can be detected on x ray.

**Fig 5: Radio Opaque Gauze**

As soon the peritoneum is opened, all the single sponges and swabs are removed and are replaced by a pack of five sponges. The tail ends of five sponges are tied together and used to absorb the blood or other secretions in the peritoneal cavity. Once all the five sponges are saturated, the nurse replaces the "pack of five" or pantch ki mala. The technique is simple, inexpensive and quick to use in all operation theatres. It eliminates the human error involved in counting the sponges, as the "pack of five sponges" is so big that it is physically impossible to leave inside the abdomen. (15)

**Fig 4: Pack of Five**

**Recommendations**

**1. Counting:** Sponges should be separated, audibly counted, and concurrently viewed during the count procedure by two individuals, typically the scrub nurse and circulating nurse. If a discrepancy in any of the counts is identified, the entire surgical team is responsible for carrying out appropriate steps to locate the missing item. The staff should speak up when a discrepancy arises.

The surgeon and the first assistant should be aware of all sponges used in the surgery and communicate the placement to the team. Separate counts to be done

(a) Before the procedure to establish a baseline
(b) Before closure of cavity
(c) When wound closure begins
(d) At skin closure

**2. Counting Devices —** Counting devices are an approach to materials management that involves tagging items used in cavitary surgery.

3. The two-dimensional bar code system was the first technological approach. It incorporates a specific code to each sponge, which prevents double count. Bar codes or data-matrix-coded sponges are used primarily to assist with counting.

**4. Implementation of the WHO Surgical Safety Checklist:** Before the patient leaves the operating room, the nurse verbally confirms the procedure and confirms completion of the procedure. The senior nurse checks with the scrub nurse and surgeon.

**5. Detection Devices —** Another approach uses sponges embedded with a radiofrequency tag or microchip that can be detected inside the patient with a handheld wand or mat that contains the detection system [16]. This system does not count the sponges. At the completion of the procedure but prior to closure, a handheld radio wand connected to a detection console is passed over the patient, and, if the chip on a tagged item is detected during the radio query, a digital or audio alarm is triggered.

**6. Dual Counting and Detection Systems —** Radiofrequency identification (RFID), which includes a unique radiofrequency identification chip sewn into each sponge, and a separate computer console, is a hybrid of the counting and radiofrequency detection systems discussed above. The surgical sponge is incorporated with radiopaque markers (density equivalent to 0.1 g/cm sup $BaSO_4$) in between layers or strips or outside fibres, magnetomechanical tag, electronic tags, coloured fibres. They can be identified intraoperatively with help of X-ray films, magnets, and specific colours.

Unopened packages of sponges are placed on a front panel of the console to be electronically counted, and after they are used, sponges are placed into a scanning bucket. If there is a missing sponge, it is detected using a wand.

**Fig 5: (RFID) Chip**

**CONCLUSION**

Retained surgical sponge can lead to significant medical and legal problems between the patient and the doctor. It may be incorrectly diagnosed preoperatively, which can lead to unnecessary invasive diagnostic procedures and operations. [17] Patient clinician and clinician-radiologist interactions and compliance enhance the possibility of accurate diagnosis. [18] In spite of the diagnostic and therapeutic difficulties, the presence of a foreign body inside the patient can be easily proved and the patient may litigate the responsible surgeon because this is an avoidable problem [19] and the surgeon will face charges of negligence.

The National Quality Forum of the USA and the patient safety guidelines issued by the Health Department of the United Kingdom have declared that the presence of a retained surgical sponge to be a "never event" However, when it happens, it can cause significant morbidity for the patient. It causes additional costs and has serious medico-legal implications. Shaming the surgeon alone is not an acceptable solution. It is the collective responsibility of the surgical

team, the anesthetic team, the nursing team, and the operating room technicians to ensure the safety of any patient who is brought in to the operating room. (20).

RFB should be considered in the differential diagnosis of any postoperative patient who presents with pain, infection, or palpable mass in abdomen.

The best diagnostic modality to rule out a RFB should be a CT scan. One possible complication during surgical removal of RFB is missed perforation of adherent bowels. Gossypiboma has got medico-legal repercussions. The surgeon should always remain watchful and careful, as the harm to reputation once, is done forever.

However, the following argument can be put forward:
The swab was intentionally left behind to control bleeding which could not be controlled by any other means and it was planned to be taken out at a later date (Damage control surgery). This can be an acceptable plea if supported by expert opinion.

Shifting the onus on nursing staff has not been accepted by the courts as the operating surgeon is the team leader. However, if the circumstances were such that the operating surgeon could not verify the count without endangering the patient, then he is justified in relying fully upon the nurse's count.

Since a layman's knowledge and not expert technical opinion is applied, the court has to be careful in not equating a mishap with negligence.

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