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CASE REPORT

Intravesical gossypiboma: our experience and the need for stringent checklist and training!

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SUMMARY

We present our experience of two cases: one of a 28-year-old male patient who presented with recurrent episodes of urinary tract infection (UTI) with passage of pus flakes in urine and a history of open cystolithotomy about 10 months ago. The second patient was a 26-year-old woman who underwent bladder exploration for a retained Double-J stent about 10 months ago and presented with recurrent UTI. The first case was treated with open surgery and in the second case, the gauze piece was retrieved endoscopically.

BACKGROUND

Gossypiboma means a retained surgical sponge (RSS) or gauze piece, a nightmare for both, the surgeon and the patient. It is a rare but ubiquitous medical error. It presents only the tip of the iceberg as RSS is seldom reported due to medico-legal implications. Usually found in the abdomen and pelvic cavity, gossypiboma of the urinary bladder is a very uncommon clinical entity. Most of the cases pose a diagnostic dilemma to the clinician.

CASE PRESENTATION**Case 1**

A 28-year-old male patient presented to our surgical emergency with a history of pus discharge per urethra and recurrent episodes of urinary tract infection (UTI) for 1 year. The patient had a history of cystolithotomy done 1 year ago for which he was seeking treatment outside; the operation details were not available with the patient. There was no associated fever, hematuria, loss of appetite or constipation. The urine stream was normal. On examination, we found the patient was of average build and all the vitals were stable. Abdominal examination showed a horizontal scar in the lower abdomen at the previous cystolithotomy site and external genitalia were normal. Gross examination of urine showed turbid urine with pus flakes. The patient's blood parameters were within normal limits. On initial presentation, urine culture was done, yielding *Klebsiella spp.* for which appropriate antibiotics were started. The patient presented again after 2 weeks with same symptoms and was investigated for the cause of recurrent UTI. An ultrasonography of the urinary bladder was done in view of recurrent episodes of UTI, revealing an echogenic mass in the urinary bladder, 30.8 mm in size and suspected to be vesical calculus. However, an X-ray of the kidney and urinary bladder did not show any radiopaque shadow. A CT scan was done which showed a diffusely thickened

wall of the urinary bladder, predominantly the right lateral wall with multiple vesical calculi and the possibility of a foreign body in the bladder (figure 1). A cystoscopy was performed showing organised white colour sediments adhering to the anterior wall of the urinary bladder, possibly a retained gauze piece with organised pus flakes (figure 2). The mass was big and fragile and not amenable for cystoscopy removal. The patient underwent an exploration of the urinary bladder which revealed a gauze piece adhering to the anterior wall with organised pus flakes (figure 3). The rest of the bladder wall was found to be normal. The patient was discharged on the 4th day post-operation. The patient has been asymptomatic and healthy during 8 months of follow-up and free from recurrent UTI.

Case 2

A 26-year-old woman presented with recurrent episodes of UTI from 2 years. The patient had a history of right pyelolithotomy done 8 years ago with Double-J (DJ) stenting. Open surgery had been done outside 10 months earlier to retrieve the retained stent after multiple failed endoscopic attempts. The operating logs did not suggest any critical events. On examination, the patient was found to be of average build and all vitals were stable. Abdominal examination showed a scar in the right flank at the previous pyelolithotomy site and external genitalia were normal. Gross examination of urine showed turbidity with pus flakes. An ultrasonography of the kidney, ureter and urinary bladder was done in view of recurrent episodes of UTI, revealing an irregular right kidney with dilated pelvicalyceal separation (PCS). However, an X-ray of the kidney and urinary bladder was normal. A cystoscopy was performed; it showed elongated spongiform structure with organised pus, possibly retained gauze piece (figure 4). The gauze piece was removed using biopsy forceps along with a part of the retained DJ stent. The patient followed up for 6 months and is free from recurrent UTI.

INVESTIGATIONS**Case 1**

1. Urine culture: *Klebsiella spp.*
2. Blood parameters: normal.
3. Sexually transmitted disease: negative for gonorrhoea, chlamydia.
4. Ultrasound of the abdomen: echogenic mass in urinary bladder of 30.8 mm size. ?Vesical calculus.
5. X-ray of kidney, ureter and urinary bladder: within normal limits.



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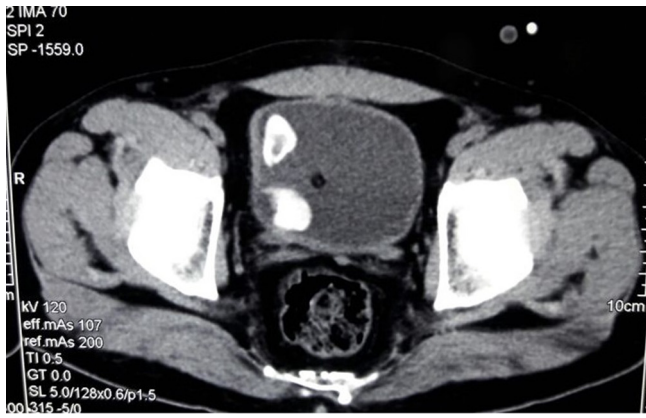


Figure 1 CT of urinary bladder.

6. CT scan: diffusely thick wall of urinary bladder, predominantly right lateral wall with multiple vesical calculi and possibility of foreign body in the bladder.
7. Cystoscopy: organised white colour sediments adhering to the anterior wall of the urinary bladder.

Case 2

1. Urine culture: no growth.
2. Blood parameters: normal.
3. Sexually transmitted disease: negative for gonorrhoea, chlamydia.
4. Ultrasound of the abdomen: irregular right kidney with dilated PCS.
5. X-ray of the kidney and urinary bladder: within normal limits.
6. Cystoscopy: showed elongated spongiform structure with organised pus, possibly retained gauze piece.

DIFFERENTIAL DIAGNOSIS

Case 1

UTI, sexually transmitted disease, urinary bladder stone, cystitis and retained foreign body.

Case 2

UTI, retained piece of stent, cystitis, recurrent bladder stones and foreign body.

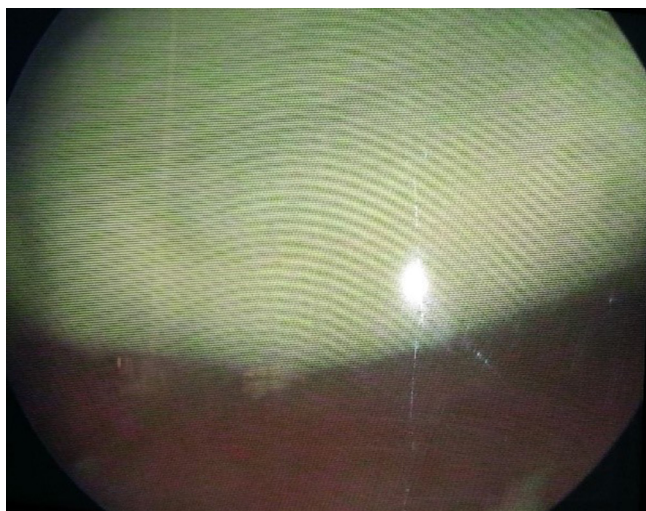


Figure 2 Cystoscopy appearance of gossypiboma.

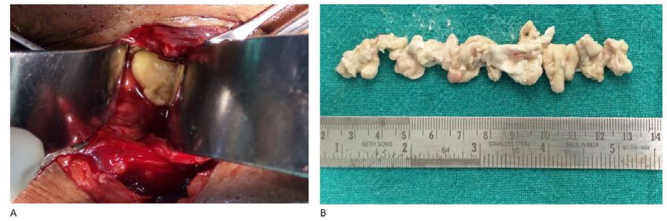


Figure 3 Intraoperative findings (A) and postoperative specimen (B).

TREATMENT

Case 1

Patient underwent exploration of the urinary bladder, which revealed a gauze piece adhering to the anterior wall with organised pus flakes.

Case 2

A cystoscopy was performed which showed elongated spongiform structure consistent with a gauze piece. The gauge piece was removed cystoscopically.

OUTCOME AND FOLLOW-UP

Both patients recovered well thereafter with no symptoms of UTI during follow-up.

DISCUSSION

Gossypiboma (from Latin *Gossypium*: cotton, Kiswahili *boma*: place of concealment) is defined as retained foreign material made of cotton in any part of the body.^{1,2} Since, surgical sponges are made from different materials nowadays, a new term *textiloma* or *RSS* may be more appropriate.

The incidence of gossypiboma is very difficult to assess as most of the cases are not reported due to fear of legal repercussions.³ According to reports, RSS occurs once in every 3000–5000 abdominal operations and is most commonly discovered in the abdomen.^{4,5} Incidence pertaining to retained foreign bodies after surgery has been reported to be between 0.01% to 0.001%, of which gossypibomas make up 80% of cases.^{4,6,7}

Gossypiboma of urinary bladder is relatively rare as very few isolated cases have been reported.¹ Various factors responsible for RSS are emergency surgeries, unplanned surgeries of longer duration, obesity, operations entailing more than one major procedure, more than one surgical team, failure of surgical or incorrect counts, unexpected intraoperative factors and high intraoperative blood loss.⁸ Presence of multiple nursing teams (more than two) in the theatre is also implicated for 80% of count discrepancies. Surgical procedures that are performed late (excluding procedures performed as emergency) or on weekends and holidays carrying a greater risk of gossypiboma.^{9–11}

As per a recent meta-analysis performed in India, the average patient-age presenting with gossypiboma was found to be 38.65 years. Average time of discovery was 3.35 years (3 days–35

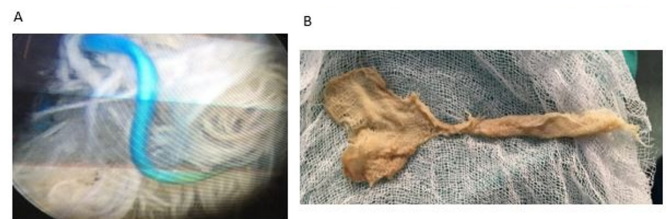


Figure 4 Cystoscopy appearance of gossypiboma.

years), with 49% of the cases being discovered within the 1 year. Most of the cases were women (77.77%). The most common presenting features were pain (73.8%), palpable mass (47.6%), vomiting (35%), abdominal distention and fever in decreasing order. The most common cause was found to be gynaecological surgery (41.2%), abdominal surgery (35.7%), urological surgery, orthopaedic surgery, neurosurgery, cardiothoracic and vascular surgeries and thyroid surgery. The most common location was found to be abdomen (51.5%), followed by pelvis (28.57%).⁹ Urinary bladder gossypiboma can manifest any time from the immediate postoperative period to late presentation ranging up to 6 years.⁸ Usual presentations include discharge per urethra, recurrent UTI, wound dehiscence and adhesions.² Cases have been reported mimicking UTI, calculus, sepsis, pelvic abscess, bladder mass, fistulation or as an invasive adnexal mass.^{8 12}

The diagnosis of gossypiboma can be very difficult, especially clinically and radiologically. Gossypibomas can mimic, clinically and radiologically, abscesses and tumours with different complications and symptoms, making the diagnosis difficult and with significant patient morbidity.³ On ultrasound, vesical gossypiboma may present as an echogenic area with intense posterior shadow or as a well-defined cystic mass with distinct internal hyperechoic striped structures or a non-specific pattern with a hypoechoic complex mass.¹³ CT scan generally shows a high attenuation central mass with a spongiform pattern of air bubbles and a hyper dense, well-enhancing rim. The presence of gas in the mesh of sponges gives the internal structure a whirl-like or spongiform appearance.¹⁴ In a few cases reported, it has also led to unnecessary biopsy of the patient on suspicion of malignancy.¹⁵ Cystoscopy can prove to be a good diagnostic as well as therapeutic modality in these cases and can give a fair idea of the nature of the mass. Judiciously selected cases can be dealt with cystoscopically; however, mass size, fragility and adhesion should be considered, else exploration of the urinary bladder is needed in these patients for removal of the foreign body.

In our series, both patients presented with recurrent UTI along with pus discharge per urethra. Both had a history of surgery related to urinary bladder. After investigations and workup, one was retrieved endoscopically and another required bladder exploration. Such cases provide insight into the need for increased communication among surgical teams in the operating room and developing standard protocols for operations with a high risk of error. This also highlights the need for consistent guidelines and count policies. Henceforth, institutions should amend their policy on sponge and count.¹⁶

Gossypiboma is an avoidable condition that unnecessarily increases the morbidity and mortality of the patient. This is often referred to as 'Res Ipsa Loquitur' meaning 'the thing speaks for itself,' and that the issue at hand would not have happened if there was no negligence on the part of the surgeon.⁹

There are various methods available to check the sponge count before abdominal closure and approved by the US Food and Drug Administration, namely, bar coded sponges, radiofrequency tagged sponges and passive radiofrequency identification tagged sponges.¹⁷ However, the cost of the equipment is a major hindrance to the application of these methods in third-world countries. In most countries, surgical sponges contain radiopaque material that can be readily identified in radiographic and CT images, facilitating detection.¹⁵ However, most of the small gauze pieces lack a radiopaque marker. In the USA, radiopaque threads impregnated into surgical gauzes were first introduced in 1929 and were in general use by the 1980s in Asian countries.¹⁸ Surgical safety protocol, such as the WHO checklist, is a simple and effective method which promotes communication among team members, can be a part of

the institutional policies to improve surgical safety and patient care, and prevent events like gossypibomas.¹⁹ Emphasis has been given by The Royal college of Surgeons of England and WHO on proper operating guidelines including recording of the pack count, especially at the time of closure and at the end of surgery.²⁰

A proper operating room guideline including counting of surgical sponge or gauze and instruments should be made a part of curriculum of surgical residency and training. We stress that a proper checklist for all surgical procedures should be followed in the operation theatre. Surgical residents should be refreshed about these guidelines from time to time. Counting of sponges may be cross-checked by another team member. It is the joint responsibility of the surgeon (primarily) and the nurse to ensure proper count before closure. Henceforth, open communication should happen freely among team members.

Patient's perspective

Case 1: (translated from hindi)

I was suffering from pain while passing urine 1 year ago. I was detected with stone in the urinary bladder for which I was operated in a private hospital. After that, I was suffering from recurrent episodes of burning sensation while passing urine. As I am a poster delivery boy working in a private firm I have a standing job. I had to repeatedly go to pass urine and my daily activities got hampered. I lost about 2 months of wages due to absence from work. I also had a very poor quality of life due to these symptoms. After the operation I am able to do my work in office comfortably without any public embarrassment.

Case 2: (translated from hindi)

I am a house maid. I started having pain in the right side of the abdomen 2 years ago. I was detected with a stone in the right kidney for which an operation was performed and a wire was placed in the kidney in a private hospital. They tried to remove the wire but it could not be removed after multiple events after which another operation was performed, but my burning sensation was not resolved. Due to repeated operations I lost 1 to 2 months of wages and had a very poor quality of life. I contacted this hospital and another operation was suggested after which I have been relieved of the symptoms for 6 months.

Author's perspective: in both cases the patient lost daily wages and faced social problems due to a surgical error which can be avoided by simply following strict operating room guidelines. By following operating room guidelines like the WHO guidelines, these errors can be avoided.

Learning points

- ▶ Gossypiboma can be a dreadful condition for the patient. Vesical gossypiboma may have various presentations and should be thought of in patients with recurrent urinary tract infections after a surgery.
- ▶ Doing the correct count at the end of the surgery is the gold standard safeguard against this mishap. Unfortunately, human errors continue to occur and it has been reported that a correct count has been declared at the end of the procedure in majority of gossypiboma cases.^{21 22}
- ▶ Emphasis should be laid on proper surgical training of young surgeons and operating nurses for counting of mops and gauze pieces. WHO guidelines should be followed universally.

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