

CASE REPORT

Gossypiboma Masquerading as Cystic Stump Calculi: Malady of a Therapeutic Misadventure

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ABSTRACT

Background: Gossypiboma, though rare, is a serious post-operative complication that can present in a variety of ways, often mimicking other common pathologies such as cystic stump calculi.

Case: This case report highlights the diagnostic challenges posed by gossypiboma, demonstrating its potential to be misinterpreted even in advanced imaging studies. A high index of suspicion is necessary, especially in patients with a history of surgery presenting with unexplained symptoms, given the significant overlap in clinical and radiological findings with other conditions. Early recognition and intervention are crucial in preventing complications associated with gossypiboma, such as infection, abscess formation, and bowel obstruction, which can lead to significant morbidity.

Conclusion: This case underscores the importance of meticulous surgical techniques, including thorough counting of surgical sponges and instruments, to prevent the occurrence of gossypiboma. Ultimately, enhancing awareness among surgeons and radiologists about the potential for gossypiboma to masquerade as other conditions will aid in timely diagnosis and appropriate management, thereby improving patient outcomes and minimizing the risk of legal implications associated with retained surgical items.

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INTRODUCTION

In this era of laparoscopic cholecystectomy (LC), remnant long cystic duct or gall bladder (GB), either due to inadequate skeletonization of the cystic duct, acute cholecystitis, Mirizzi's syndrome, improper identification of the gall bladder—cystic duct junction, or because of the performance of subtotal cholecystectomy, can lead to post-operative complications. Remnant cystic duct stone, with an incidence of 0.02 to 4.19% after LC and laparoscopic subtotal cholecystectomy, respectively, is one of the biliary causes of post-cholecystectomy syndrome.¹ Post-cholecystectomy syndrome is seen in 7 to 15% of cholecystectomies, with cystic stump calculi as a cause in 16% of them,¹ but gossypiboma masquerading as a cystic stump stone leading to post-cholecystectomy syndrome has seldom been reported. Retained surgical items following surgery have an incidence of 0.01 to 0.001% with gossypiboma contributing to 80% of the cases, leading to public embarrassment, loss of job, and lawsuits.² Gossypiboma, although rare, represents a significant surgical complication due to variability in its clinic-radiological presentations, medicolegal implications,

and its potential to mimic other more common post-operative complications, leading to severe morbidity and even mortality.^{3,4}

Case Report

A 33-year-old female, with no comorbidities, presented with three months of mild intensity, non-radiating, on-and-off, colicky-type abdominal pain localized to the right hypochondrium. The patient does not give a history of associated fever, jaundice, weight loss, loss of appetite, hematemesis, or melena. The patient underwent a laparoscopic cholecystectomy for symptomatic gallstone disease three years ago at some other centre. The post-operative histopathological examination was suggestive of chronic cholecystitis with no evidence of atypia or mitosis. On examination, the patient was well-built, conscious, oriented, and hemodynamically stable. The examination of other systems was within normal limits. Abdominal examination revealed healthy, standard laparoscopic cholecystectomy port site scars, with no other significant findings. Ultrasonography of the abdomen showed an echogenic focus of size 21.5 mm with

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distal acoustic shadow at the gallbladder (GB) fossa region suggestive of stump calculus (Fig. 1). Magnetic resonance cholangiopancreatography (MRCP) revealed a T2 hyperintense lesion, approximate 22mm, in the GB fossa region suggestive of stump calculus (Fig. 2). The patient was planned for open-completion cholecystectomy; intraoperatively, a blind cystic stump was found adhered to the cystic plate with no stones. Upon meticulous dissection, a foreign body of size 4*4 cm, surrounded by pus flakes, was seen in the GB fossa region, which was confirmed to be a surgical gauze after removal (Fig. 3). Intraoperative cholangiogram revealed no filling defects (Fig. 4). The post-operative period was uneventful and the patient is symptom-free at six months follow-up.

DISCUSSION

Gossypiboma refers to a retained surgical sponge or textile material inadvertently left inside a patient's body post-surgery.⁴ Although rare, their incidence ranges from 1 in 100 to 5000 overall to 1 in 1000 to 1500 for abdominal surgeries, accounting for nearly 50% of all retained foreign body lawsuits.⁴ The usual sites are the abdomen (56%), pelvis (18%), and thorax (11%), with the duration of presentation ranging from a few days to 40 years from the index surgery.⁵ Emergency surgery, female gender, unexpected change in surgery, body mass index, involvement of multiple surgical teams, volume of blood loss, hurried sponge count, and change in nursing staff in between surgeries are the usual risk factors.⁶

Clinically, gossypiboma can present with a wide range of symptoms, including fever, nausea, vomiting, anorexia, chronic pain, palpable mass, infection, rectal bleeding, and altered bowel habits. The variability in presentation is often related to the location of the retained sponge, the time elapsed since the surgical procedure, and the type of body's immune response, which can be a fibrous aseptic inflammatory reaction or an exudative inflammatory reaction. The former response leads to dense adhesions encapsulating the foreign body, leading to less conspicuous symptoms, while the latter type typically presents as a complication of an abscess or fistula. Atypical pseudo-presentations like mesenteric cysts, hepatic hydatid cysts, complicated urachal cysts with umbilical perforation, and transmural migration causing bowel obstruction, intussusception, or spontaneous expulsion through the rectum have also been reported.^{3,7,8} To the best of our knowledge, this is the first reported case of gossypiboma masquerading as a cystic duct stump calculus.

Radiologically, gossypiboma may mimic a variety of other more common post-operative conditions, depending on the reaction it incites and the surrounding anatomical structures, posing a diagnostic challenge as evident from the index case. The common differentials include post-operative hematoma, abscess, faecaloma, tumors, intestinal obstruction, and seldom reported cystic stump calculi, as presented in the index case. Radiological features usually include the presence of a soft tissue opacity/density mass with a curved radio-opaque/dense line on a radiograph or computed tomography (CT). On ultrasonography, they may be cystic or solid with mixed



Fig. 1: Ultrasonography of the whole abdomen showing echogenic foci with distal acoustic shadow



Fig. 2: MRI of the abdomen showing T2 hyperintense lesion at GB fossa region

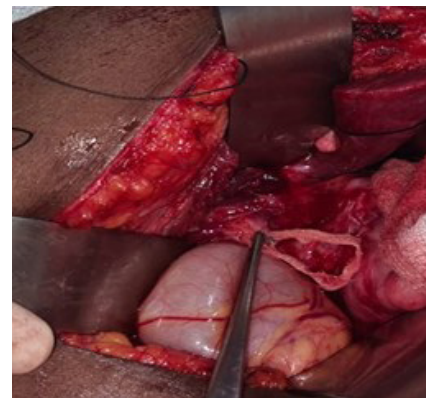


Fig. 3: Intraoperative photo showing removed surgical sponge from GB fossa region

echotexture and a strong posterior acoustic shadow due to the sponge, calcifications, or an air bubble.^{4,9} CT is the most specific and the investigation of choice for gossypiboma and related complications with typical features of "spongiform pattern" and "calcified reticulate rind" sign.^{4,10} Magnetic resonance imaging has a limited role with typical features of a well-circumscribed mass with T1 hypo-intensity and T2 hyperintensity with a dark capsule on both T1 and T2 weighted



Fig. 4: Intraoperative cholangiogram showing no filling defects

images.⁴ A cystic duct of length more than or equal to 1 cm following surgery is considered a remnant cystic duct.¹ In cases of suspected remnant cystic duct or stump calculi, MRCP, being a non-invasive modality, is the investigation of choice with an accuracy of around 92%, and an added advantage of whole biliary tree screening, the same was done in the index case.¹

The gold standard treatment modality for cystic duct stump calculi remains laparoscopic or open completion cholecystectomy. Still, other modalities like extracorporeal shock wave lithotripsy with or without endoscopic removal of fragments, cholangioscopy, endoscopic retrograde cholangiopancreatography (ERCP), and transcutaneous Fogarty balloon catheter deployment have been tried successfully. They are usually reserved for poor surgical candidates.^{1,11}

The recommended preventive measures for gossypiboma include carrying out two audible, careful sponge counts, one at the beginning and the second before the closure of the wound by at least two nurses, a quiet, well-organized operating room with minimal distractions, using only surgical textile materials impregnated with a radio-opaque marker in body cavities with the availability of intraoperative radiography which can be used in cases of discrepancy, and more advanced microchip, radiofrequency or barcode mediated electronic surveillance of surgical sponges.^{3,12-15} The preventive measures for residual stump disease include leaving an ideal cystic duct stump of less than 0.5 cm without any bilio-vascular injury.¹ The estimated cost of a retained sponge is nine times the seemingly expensive sponge-counting technology.⁴

CONCLUSION

To conclude, gossypiboma is a rare but serious post-operative complication that can mimic other conditions, such as cystic stump calculi, leading to diagnostic challenges. This case highlights the importance of considering gossypiboma as a differential diagnosis in patients with a history of surgery who present with atypical symptoms and cystic masses. Proper surgical protocols, including accurate sponge counts and vigilant post-operative monitoring, are essential to prevent this complication. Early identification and management can

prevent serious complications, improve patient outcomes, and minimize medicolegal consequences.

AUTHOR CONTRIBUTIONS

SS: Substantial contributions to the conception or design of the work, acquisition, analysis, and interpretation of data for the work, drafting the work, and revising it critically for important intellectual content

AG: Substantial contributions to the conception or design of the work, the acquisition, and analysis.

SKS: Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; drafting and revising it critically for important intellectual content.

AA: Accountable for all aspects of the work, Substantial contributions in reviewing the literature, editing the draft, and final approval of the version to be published.

Nizamuddin Ansari: Accountable for all aspects of the work, Substantial contributions in reviewing the literature, editing the draft, and final approval of the version to be published.

AAS: Accountable for all aspects of the work, Substantial contribution in reviewing the literature, editing the draft, contributions to the conception and design of the work, and final approval of the version to be published.

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IEC APPROVAL

Not Applicable.

INFORMED CONSENT

Written informed consent was given to publish the patient data and photographs anonymously.

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