

Gossypiboma: Where the scout holds the secret

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Section: Abdominal imaging

Area of Interest: Abdomen Mesentery

Procedure: Surgery

Imaging Technique: CT

Special Focus: Foreign bodies Case Type: Clinical Cases

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Patient: 55 years, male

Clinical History:

A 55-year-old man presented for preoperative assessment following diagnosis of a dysplastic duodenal polyp on a background of familial adenomatous polyposis (FAP). The patient had prior surgical history of subtotal colectomy with ileorectal anastomosis with formation of ileo-anal pouch in 1981 with subsequent stoma reversal in 2000 (more than 20 years earlier).

Imaging Findings:

CT of the abdomen and pelvis in arterial and portal venous phases was performed for preoperative assessment prior to the planned Whipple's operation for the duodenal adenoma obstructing the biliary tree. This demonstrated an incidental mass lesion within the left flank, extrinsic to adjacent bowel, measuring ~5.5 x 5 cm. The mass lesion appeared relatively homogenous containing an intrinsic curvilinear high density structure. No surrounding inflammatory changes were evident. There was no lesion enhancement on arterial or portal venous phase CT.

Inflammatory markers on preoperative blood tests were normal. The nature of the mass lesion was not initially apparent, particularly given the lack of recent surgical history. However, the scout image, clearly demonstrated the radiopaque marker strip of a retained gauze swab suggesting typical appearances of gossypiboma. During the Whipple's operation, the retained gauze swab was removed without complication.

Discussion:

Gossypiboma is a term derived from "gossypium" (Latin for cotton) and "boma" (meaning place of concealment in Swahili) [1]. A retained item, inadvertently left within a patient during surgery, can cause an inflammatory reaction and form an abscess or, as in this case, an aseptic fibrotic reaction resulting in mass formation [2]. Accurate diagnosis is imperative to ensure operative removal without delay.

From a clinical perspective, symptoms of gossypiboma are nonspecific and can appear years after surgery [3]. Presentation is variable, ranging from asymptomatic to a palpable mass or sepsis with pain and fever. Late complications can include adhesion formation and risk of bowel obstruction and fistula formation. Acute presentations more commonly present with sepsis and abscess formation whereas delayed presentations may be months or years following surgery, with adhesions and encapsulation [3]. Current surgical practice aims to avoid never-events of retained surgical item through multiple safety processes including pre-, intra- and post-operative swab counts and using only gauze pieces with radiopaque markers [4]. Despite this, the incidence of gossypiboma is reported to be 0.001% to 0.01% and is a well-known cause of medical malpractice claims [5, 6].

Gossypiboma may present a diagnostic challenge as it may mimic a soft-tissue tumour and the imaging appearance depends on the composition of the retained item [3]. On CT, gossypiboma is typically heterogenous and well-demarcated and may contain thin, wavy metallic density (the swab radiopaque marker strip). Sponges usually contain gas bubbles with a spongiform appearance (although this can be mimicked by surgical packing material, rendering operation details critical to making the diagnosis). In this case, the diagnosis was confirmed on the scout image which demonstrated the typical appearance of a retained swab, less characteristic on axial and coronal cross-sectional CT images, particularly given the long interval since surgery. The scout view (topogram) is particularly helpful as most radiologists are most familiar with recognising a retained swab on plain film and the scout for abdominopelvic CT is essentially a low-dose radiograph.

Correct identification of gossypiboma is critical to ensure appropriate management and reduce the risk of complication. Evidently, a high index of suspicion is needed as relevant surgical history may not be recent or known. In this case, correct identification and diagnosis of gossypiboma preoperatively through review of the scout image, enabled the swab to be successfully removed at time of pre-planned surgery without alternative inappropriate investigation or biopsy attempt.

Written informed patient consent for publication has been obtained.

Differential Diagnosis List: Intra-abdominal gossypiboma secondary to retained gauze piece, Primary mesenteric tumour, Secondary mesenteric tumour, Non-malignant mesenteric mass

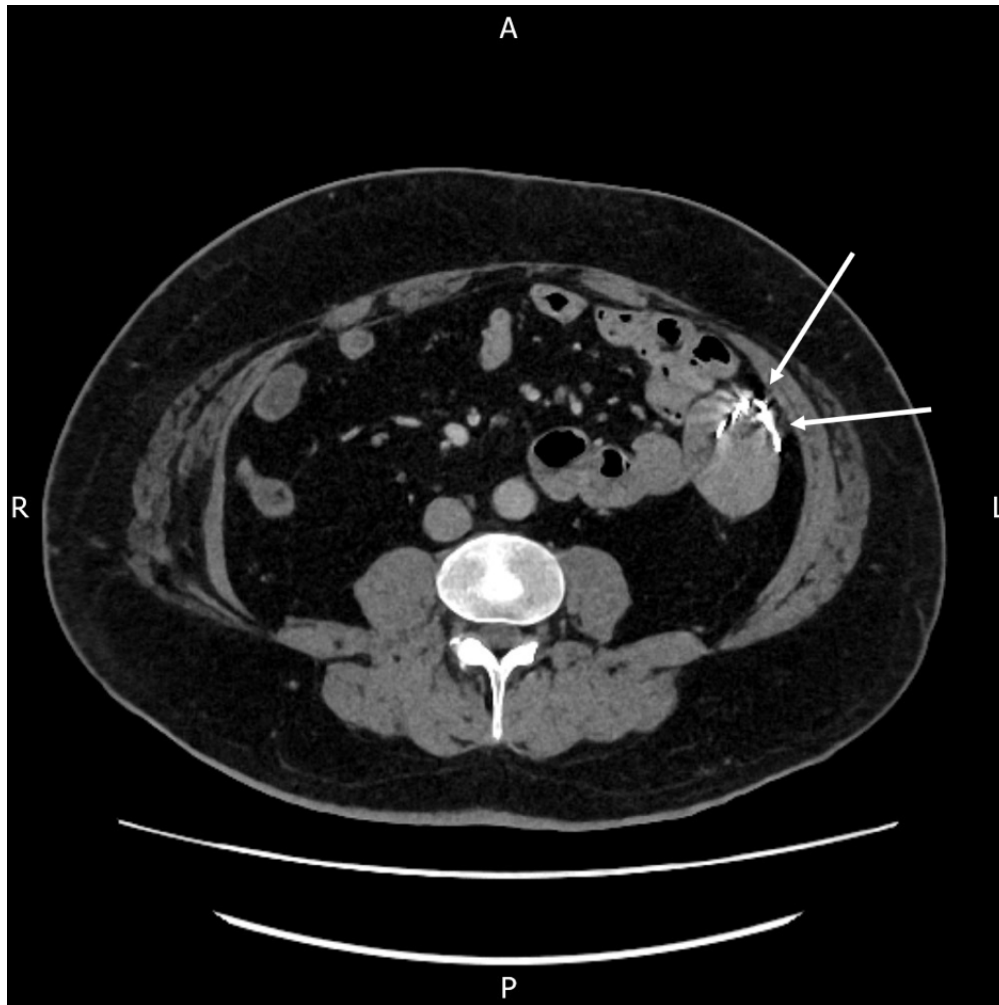
Final Diagnosis: Intra-abdominal gossypiboma secondary to retained gauze piece

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Figure 1

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Description: Axial portal venous phase CT demonstrating the retained swab gossypiboma within the left upper quadrant in close proximity to loops of small bowel (arrowed) **Origin:** Radiology Department, Bristol Royal Infirmary, Upper Maudlin Road, Bristol, BS2 8HW

Figure 2

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Description: Coronal portal venous phase CT demonstrating the retained swab gossypiboma within the left flank in close proximity to loops of small bowel (arrowed) **Origin:** Radiology Department, Bristol Royal Infirmary, Upper Maudlin Road, Bristol, BS2 8HW

Figure 3

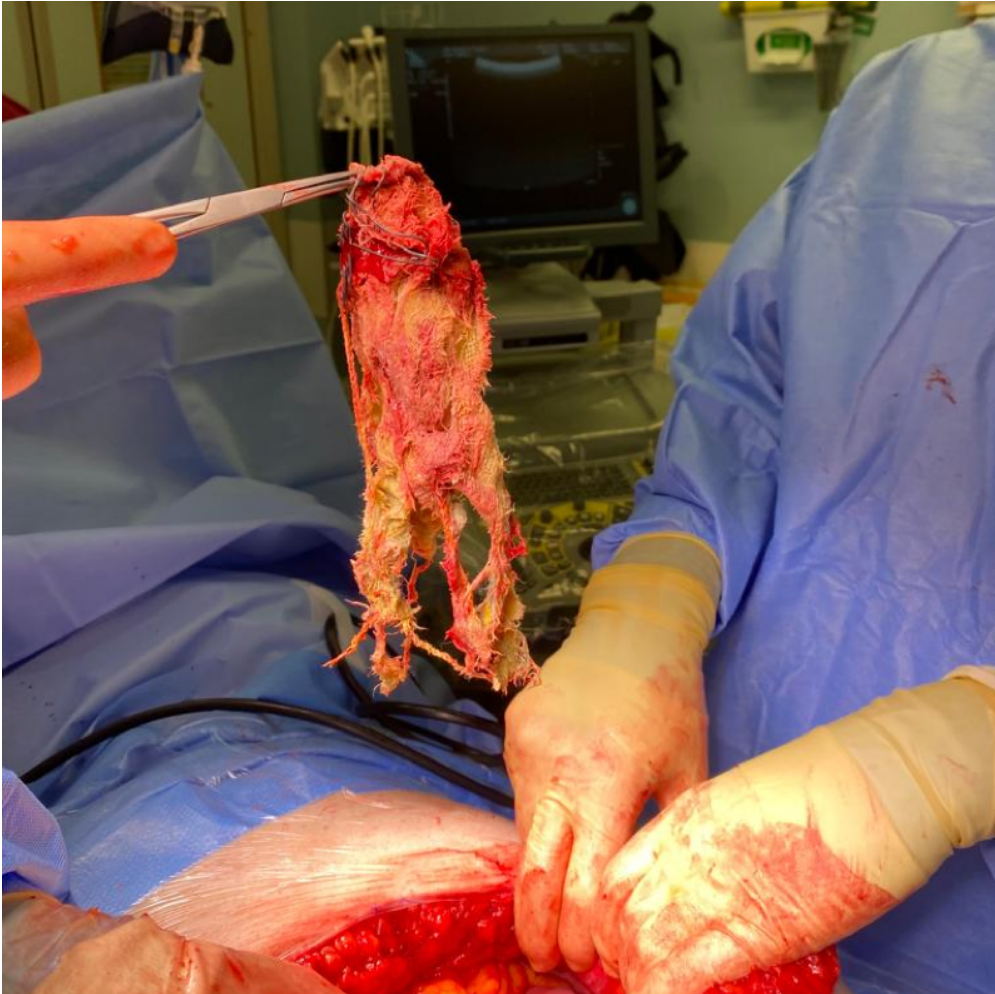
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Description: Scout (topogram) image from the CT demonstrating the gossypiboma within the left flank (arrowed) **Origin:** Radiology Department, Bristol Royal Infirmary, Upper Maudlin Road, Bristol, BS2 8HW

Figure 4

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Description: Intra-operative photograph demonstrating the removed swab gossypiboma **Origin:** Upper GI Surgical Department, Bristol Royal Infirmary, Upper Maudlin Road, Bristol, BS2 8HW