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Case Report

Retention of surgical sponge: An act of providence?

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Introduction

Retained foreign bodies (RFB) are rare causes of lump in abdomen.¹ Presentation several years after surgery is rarer.¹ Discovery of coexistent adjacent colonic tumor, providentially at an early stage, during investigation of such a lump is exceptional. We report such a singular case.

Case report

A 50-year-old female patient, with history of cholecystectomy 5 years back, presented with abdominal discomfort and a painless lump she felt in her abdomen. Examination revealed

pallor; healed scar of Kocher's incision; a 10 cm × 10 cm spherical nontender intra-peritoneal lump in right upper quadrant, moving with respiration. Laboratory investigations were unremarkable except low hemoglobin – 7.4 g/dl. Ultrasonography showed dense posterior shadowing of a mass and a pseudokidney sign suggestive of colonic mural thickening, inferior to the shadowing (Fig. 1). Computerized tomogram (CT) showed a well-defined spherical mass with whorled appearance, with heterogeneously hyper dense contents within, abutting the inferior hepatic surface and indenting the gastric antrum/first part of duodenum (Fig. 2). Just inferior to this mass, asymmetric circumferential wall thickening of the right half of transverse colon was noted with associated pericolic lymphadenopathy (Fig. 3). Imaging features being suggestive of gossypiboma, endoscopies were performed to rule out erosion into gut. Gastro-duodenoscopy showed extrinsic compression on the duodenum. Colonoscopy revealed, unexpectedly, a hepatic flexure growth, which proved to be adenocarcinoma on biopsy. Serum carcinoembryonic antigen level was found elevated – 235.4 ng/ml. Exploratory laparotomy revealed a spherical mass, adherent on its outer surface to the parietes and inferior hepatic surface, while its inner hemi-circumference densely adherent to pyloro-duodenum and to a smaller spherical 6 cm × 6 cm colonic mass at hepatic flexure. En-block resection included right hemicolectomy, lymphadenectomy till the origin of middle colic vessels and segmental pyloroduodenal resection (Fig. 4). Cut section showed colonic tumor, inseparably adherent to an encapsulated gossypiboma (Fig. 5). Histopathology confirmed moderately differentiated adenocarcinoma of colon, T₃N₀M₀ – Stage IIA. Patient is well 1 year following treatment.

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Fig. 1 – USG picture showing posterior shadowing of the mass with pseudokidney sign suggestive of colonic thickening.

Fig. 2 – CT image showing a well-defined heterogeneous mass abutting the inferior hepatic surface and indenting the gastric antrum and first part of duodenum.

Fig. 3 – Asymmetric circumferential wall thickening of hepatic flexure, just inferior to the mass.

Fig. 4 – Right hemicolectomy specimen with densely adherent gossypiboma.

Discussion

Gossypiboma [*Gossypium* (Latin) – cotton; *boma* (Swahili) – place of concealment], cottonoid or textiloma are terms used for inadvertently retained surgical sponge/gauze following surgery.¹ This occurs with a frequency of 1 in 1000–1500 operations, which is probably a conservative estimate owing to under reporting.¹

The retained sponge elicits two types of body response.¹ Exudative inflammatory response – often detected in early post-operative period, leading to its early removal. Or, an aseptic encapsulating fibrosis – leading to formation of lump, as in our case. Omentum and gut loops contribute to the encapsulating fibrosis and get firmly adhered to gossypiboma in the process. Hence, obstruction due to adhesions; gastrointestinal bleed/obstruction/perforation/spontaneous extrusion through body orifices due to gut erosion; malabsorption due to

Fig. 5 – Cut open specimen showing gossypiboma with concomitant colonic tumor.

fistulization/blind loop formation are obvious consequences which bring the patients to the surgeon. Many patients remain asymptomatic or have minor symptoms, such as, discomfort or feeling of lump in abdomen, as in our case.

Most surgical sponges have radio-opaque marker to aid detection. Literature is rife with reports, urging us to look for the marker in a whorl like radio-lucency with trapped air bubbles in the radiograph, when faced with the above symptomatology.² Although a sound advice, but sadly, the marker is often mistaken for commoner radio-densities, such as, clips, calcification or contrast, probably due to twisting/folding of the radio-opaque marker into unrecognizable shapes.¹ Luckily, other imaging modalities, such as, ultrasonography and CT have some characteristic features which may increase the chances of detection.² Ultrasonography shows wavy internal echoes in a well defined complex mass containing both hyper and hypo echoic regions, with a hypoechoic surrounding ring with strong posterior acoustic shadow – caused either by the material, entrapped air or calcification.² When the sponge elicits exudative response, a cystic lesion with zigzag echogenic bundle may be seen.²

CT is the imaging modality of choice for detecting gossypiboma, which is seen as low density heterogeneous mass, with or without calcification, with high density surrounding wall and the radio-opaque marker is seen as metallic density in it.² Administration of contrast enhances

the picture and reveals spongiform pattern with entrapped air bubbles – characteristic of gossypiboma.² The calcium salts may gradually get deposited on the fibers revealing a reticulate pattern on CT called the reticulate rind sign.²

Endoscopy is often used to detect as well as retrieve gut eroding sponges.³ We did endoscopy suspecting fistulization of the sponge into colon/duodenum, in view of the CT picture and the associated anemia. However, finding of concomitant colonic malignancy was a surprise being the first case in literature.

Retrieval of sponge by laparotomy is the recommended treatment.¹ However, it bears reiteration that the sponge is often densely adhered to the surrounding bowel – pyloro-duodenum in our case, necessitating its resection, lest perforation be the consequence.⁴

Landmark work by Gawande et al.⁵ identified the following risk factors for RFB, in their univariate analysis: high body mass index (BMI), unplanned changes in operation, emergency surgery, more than one operating team, change of nursing staff during surgery, female sex, surgical counts, and blood loss. Of these, only the first three were found significant on multivariate analysis. Surprisingly, in majority of such cases, the counts were reported correct, hence, the authors recommended radiographic screening in high risk cases.⁵ Our case had an elective previous surgery; her BMI was 21 kg/m² and one team operated on her, and hence, it was a low risk case. This shows that despite best intentions and precaution like radiographic screening, there will still be some cases, where sponges would get retained and escape detection, till they cause diagnostic dilemma.⁶ Probably, standard drills need to be observed to minimize chances of RFB,^{1,4} such as, exclusive use of sponges with radio-opaque marker, avoiding use of small gauze pieces in large cavities, taking some dedicated time off at the end of surgery and 'play around in abdomen' i.e. thoroughly inspect and re-inspect the abdomen for inadvertent mistakes, such as, overlooked sponge/foreign body, unclosed rents in mesentery, un-evacuated blood clots, needles, loose strips of suture, internal hernia etc., despite a correct count call by scrub nurse.

Newer modalities such as tagging with electronic surveillance, bar coding of sponges with sponge counting using bar code scanner and radiofrequency identification have been proposed to prevent and detect RFB.^{1,4} However, they do not seem to have been widely adopted.⁴

Our case proved exceptional being the first case in literature to have documented coexistent adjacent colonic malignancy with gossypiboma. Retention of sponge proved harbinger of misery for most, but for our patient it was a blessing in disguise as its investigation led to discovery of a sinister adjacent malignancy at an early stage, which in its natural course would have come to light by causing symptoms of obstruction at an advanced stage, with connotation of poor survival. Therefore, in addition to human folly in the retention of sponge, there appears to have been almighty's infinite grace, as well.

Conflicts of interest

The authors have none to declare.

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