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GOSSYPIBOMA: AN ENIGMA

Surgery

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ABSTRACT

Retained surgical sponge in the body following surgery though not as common in the present times as in the pre laparoscopic era, when laparotomies were routinely done for abdominal pathology is still a much feared entity mainly from the surgeons point of view as it is a sure shot way to infamy legal tangles and financial troubles if discovered in unfavourable circumstances. What we have endeavoured to find out in our study of five gossypiboma cases which we have encountered in past 12 years and review of past cases published on this subject is – does the operating surgeon has any control over the unfolding events post inadvertent retention of the foreign body .

DISCOVERIES

One patient had a gauge piece tucked away behind the strap muscles, two patients were found with intraluminal migration of surgical sponge - one complete (tightly coiled) . One incomplete (into jejunum and ileum). Two were discovered with sponge encapsulated between dense intestinal and bladder adhesion, one in the process of dissolution and another completely dissolved into abscess cavity without any bowel injury.

CONCLUSION

Heed patients complaints and have a high degree of suspicion when dealing with post op patients even when they complain of vague symptoms. These and quite a little bit of luck is required in surgical practise to help the surgeon stay clear of dangerous situations.

KEYWORDS

Retained surgical object, varied manifestations, gossypiboma.

INTRODUCTION :

Gossypiboma is the term given to retained textile sponge following surgical intervention of any part of the body and has been reported from almost all body parts but most commonly from abdominal cavity mainly due to large area and need for laparotomy to access various organs across different surgical specialities.

Even after availability of a range of imaging investigation like USG, computerised tomogram and MRI it requires a high degree of suspicion from both the clinician and radiologist alike to diagnose a gossypiboma as it may mimic almost any pathology from infective (abscess) to infestation (ascariasis) to infiltrative(malignant growth) [1].

Gossypiboma, if discovered , is a direct evidence of medical neglig ence of the surgical team and no court of law will be lenient towards the surgeon or willing to be taken as sympathetic view of extenuating circumstances under which the surgery was carried out , which might have been life saving in most of the cases [2]. And that one lawsuit is enough to destroy the morale of surgeon, nullify all the good work done in the past and leave the reputation of the hospital and the surgeon in tatters.

But not all gossypibomas are discovered, some stay in the body life long without causing any symptoms , to be discovered only on autopsy. While other enter the bowel lumen by as an yet unknown mechanism to be eventually expelled out through the rectum [3,4,5]

The one that are found out may detect incidentally, due to the routine use go imaging investigations done either for screening as for other unrelated disorders[3] even though asymptomatic, get attributed as the prime cause for patients with often vague complaints.

With the help of the following five cases which we have encountered in our practice in the past 12 years and review of literature on this subject we try to deter-mine why gossypibomas behave the way they do.

CASE 1 :

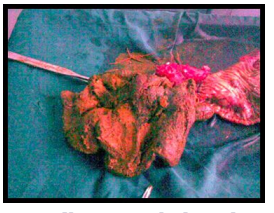

Figure 1 surgical gauze adherent to the bowel

A 25 years woman with solitary nodule thyroid right lobe was posted for right hemithyroidectomy. During surgery a series of gauze pieces were used to control haemorrhage from the region of upper pole of thyroid. Before closure gauze piece count was declared correct by the assisting nurse. Patient was discharged on the second post op day after drain collection was found to be minimal. Patients presented to the O.P one week later with complaints of pain and discharge from the wound, was diagnosed to have wound infection and prescribed antibiotics for a week. Even after a week there was no alleviation of symptoms when the surgeon who is one of the author, rechecked the swab count with the scrub nurse, which was again proclaimed to be correct and accompanied the patient to radiology department to get ultrasound of the neck which revealed space occupying lesion suspicious of gossypiboma. Patient was convinced to undergo second procedure for treating the infection, wound opened under general anaesthesia and the retained surgical sponge extracted from behind the strap muscles in the region where upper pole of thyroid would have been before thyroidectomy. Wound cleaned throughly with normal saline and closed . Patient has uneventful recovery and discharged.

CASE 2:

Figure 2 retained gauze along with the bowl after resection

A 32 year woman admitted with complaints of intermittent periumbilical pain and vomitings of 3-4 duration with history of similar complaints in past 2-3 months . On examination the patient had tenderness guarding in right side of umbilical region and right iliac fossa. Patient had undergone cesarian section 2 years back in another hospital. Post op period was apparently uneventful. UCG abdomen revealed a SOL in right iliac fossa of indeterminate origin. Patient was taken for laparotomy suspecting appendicular mass. Peroperatively a mass was found at midileal level with clumping of intestinal loops which on separation after careful dissection revealed a surgical sponge with half of it in the intestinal lumen through a perforation and the other half surrounded and adhered to the intestinal loops. Perforated and unhealthy segment of the intestine resected and end to end anastomosis carried out. Patient had uneventful post op period and discharged on 10th pod.

CASE 3:

An obese 55 years old patient was operated by Gynaecologist for DUB and fibroid uterus and TAH was done. Patient started complaining of abdominal pain even before suture removal and was managed with analgesics as the suture healed and were removed on 10th POD. After consulting multiple physicians and gynaecologists for pain, she was advised to undergo CT abdomen which reported as ? tuboovarain mass ? intestinal mass Patient returned back to the first gynaecologist who had operated with the CT scan report and complaints of bleeding pervaginum. She was admitted and gave consent for surgery. Help of one of the authors was taken for the reexploration suspecting intestinal adhesions. Per operatively inflammatory phlegmon was found in the pelvis involving terminal ileal loops, sigmoid colon and urinary bladder. After dissecting out the ill loop adhesion to bladder surgical sponge of size 13 x 10 cm found which was trying to ulcerate the vaginal vault (hence the complaint bleeding pervaginal). Sponge extracted and disposed off. Saline wash given. Defect in the vault closed and with vicryl sutures. Patient had uneventful post op a period and discharged on 8TH POD.

Figure 3 Adhesion of multiple jejunum loops

A 26 year thin woman with primary infertility and endometriosis underwent diagnostic laproscopy was detected to have grade 3 endometriosis and bilateral hydrosalpinx and advised exploratory laparotomy by another gynaecologist and patient underwent the same as she was anxious to concieve. Intra operatively apparently to release dense intestinal adhesion, surgeon was called and completed the procedure of salpingectomy.

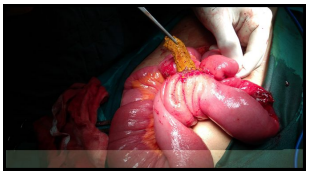

Figure 4 migrated gauze in to the lumen

Post operatively patient complained of lower abdominal pain from day 1 itself but was managed with analgesic. She developed wound infection and dehiscence which was managed conservatively with dressing and antibiotics apparently took 3-4 weeks for complete healing.

Even after wound healing patient complained of intermittent colicky abdominal pain sometimes associated with vomitings which was managed by antispasmodics. CT abdomen was done and was report

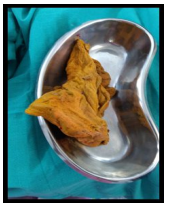

Figure 5 completely extracted retained gauze from the lumen

reported as bilateral tuboovarian mass endometriotic, This cycle of spasmodic pain, medication and consultation with gynaecologist continued for 6 months till she was referred to one of the authors by a gynaecologist to rule out intestinal obstruction. On examination patient had tender vague mass around the umbilical and infraumbilical region, signs of malnutrition, anaemia, glossitis and angular cheilitis. CT scan of abdomen done earlier was reviewed which showed intraluminal filling defect. Hence a repeat CT scan of abdomen was advised which reported as partial volvulus of jejunum due to round worm infestation. Patient was started on antihelmintics mebandazole but there was no relief of symptoms even after 1 week and no history of passing worms in stools. Patient was advised to undergo surgery Exploratory laparotomy .

On Laparotomy adhesion of multiple jejunum loops to previous operative site at umbilicus was present which on release revealed intraluminal sol of about 6x4x3 cm on extraction through an enterotomy it was found to be tightly coiled surgical sponge. The enterotomy site and densely adherent portion of the jejunum resected and end to end anastomosis carried out. Exploration of pelvis failed to reveal any tuboovarain pathology or bowel adhesions.

Patient had uneventful post op period and discharged on 5th POD after passing stools and developed mild wound infection. 2 weeks after the suture removal which was managed with dressings. Patient is free of abdominal pain with disappearence of angular cheilitis and glossitis 2 months post surgery. HPE of resected jejunum segment showed Foreign body reaction and plenty of giant cells of foreign body type.

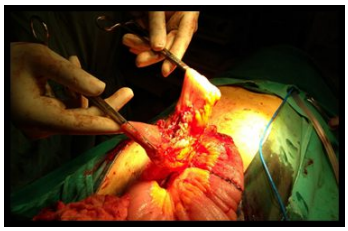

Figure 6 Resected bowel for end to end anastomosis

CASE 5:

A 72 year well nourished woman presented with the complain of lower abdominal pain associated with anorexia dysuria and constipation of 23 weeks duration not relieved with analgesics and antibiotics prescribed by local doctor. She gave a history of undergoing total abdominal hysterectomy 30 years back. On examination patient had features of localised peritonitis in lower abdomen and CT scan abdomen was done which revealed inter loop collection of pus with air fluid level surrounded and walled of by a contrast enhanced capsule. Patient was taken up for laparotomy suspecting sealed off intestinal perforation. Peroperatively 10x12x8 cm irregularly shaped abscess cavity filled with thick pus and walled off by dense capsule compressing mid ileal loops, dome of bladder and sigmoid colon was found.

Even after separating out the entire ileal adhesion and bladder from the sigmoid, no source of pus or sealed off perforation could be found. By excluding all other possibilities like pancreatitis and tuberculosis, it was surmised that retained foreign body possibly gossypiboma was the probable cause. Wall of abscess cavity biopsied, adhesion broken down by blunt and cautery dissection, drain placed and abdomen closed.

Post operatively patient had prolonged paralytic ileum but recovered by 5th POD. Discharged on 9th POD after the suture removal. Wound infection from the lower part was managed conservatively. Two months after the surgery patient was asymptomatic repeat USG revealing mild interlope fluid collection, probably reactive.

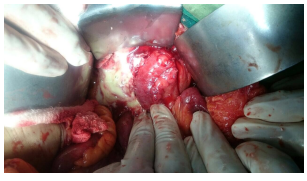

Figure 7 Frank pus noted in the cavity

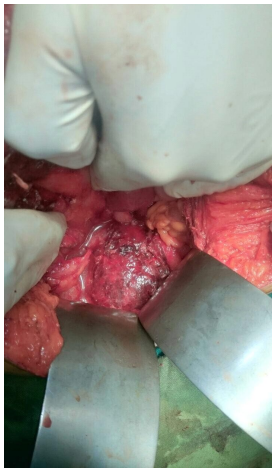

Figure 8 Cavity walled off by dense capsule

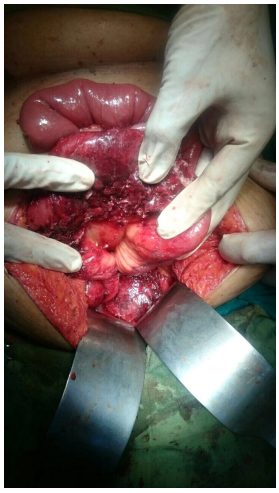

Figure 9 No source of pus or sealed off perforation could be found

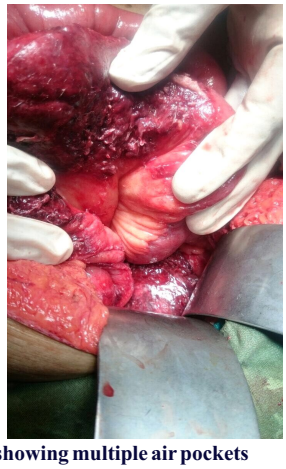

Figure 10 CT showing multiple air pockets

Table 1: GENERAL DETAILS

S.No	Age of The Patient	Type of Initial Surgery	Time Lapse Between Initial Surgery and Symptoms	Type of Presentation	Operative Findings
Case 1	25 years (Female)	Right hemithyroidectomy	9 days	Pain and discharge from the wound	Surgical sponge found behind the strap muscles where upper pole of thyroid would have been before thyroidectomy
Case 2	32 years (Female)	C- section	2 years	Intermittent periumbilical pain with vomitings	Mass found at mid iliel level with clumping of intestinal loops. Half gauze in the intestinal lumen and other half surrounding the intestinal loop
Case 3	55 years (Female)	TAH	Less than a week	Abdominal pain.	Inflamotary phlegmon in the pelvis involving ileal loop sigmoid colon and bladder. Retained sponge was trying to ulcerate the vaginal vault
Case 4	26 years (Female)	Exploratory laparotomy	1 day 2 months	Lower abdominal pain. colicky pain,	Intraluminal tightly coiled surgical sponge in the jejunum
Case 5	72 years (Female)	Abdominal hysterectomy	30 years	Lower abdominal pain with anorexia dysuria and constipation	10x11x8 cm access cavity with pus and walled off at mid ileal loops dome of bladder and sigmoid colon

DISCUSSION

The natural way in which the human body responds to foreign body is by trying to break it down and phagocytise it by tissue emperophagus as usually happens in any bacterial infection ; in cases where body finds it difficult to eliminate by usual process of phagocytosis, it forms a granuloma consisting of focal collection of inflammatory cells, including macrophages histiocytes epitheliod cells and giant cells as well as lymphocytes and plasma cells surrounded by varying amounts of fibrous tissue[6].

A retained surgical sponge otherwise called as gossypiboma elicits both the above reaction [7,8,9,10] and in addition a curious third i.e transmural migration into lumen of hollow viruses like GIT & Genitourinary tract which is very well documented [3,4,5,11,12] and found as well in two patients of our series

What are the factors which decide the type of response ?
This is detrimental to the type of presentation and time gap between initial incident and the final revelation which may result in a legal complaint being raised against the surgical team operating surgeon as it happens commonly [2][13] or is just passed off as a routine minor post operative complication to be managed conservatively if patient presents to the first operating surgeon (first case in our series) and the gossypiboma is accessible for easy extraction from the wound (in whose support there are many anectodal incidents)or just passes off from rectum through stools[3][4] [5]. In such incidences a medico legal issue is unlikely as the surgeon or the hospital takes adequate precaution against revealing the true case of the complication or patient themselves may be reluctant to proceed in case of spontaneous resolution of symptoms.

Size of the retained sponge does not appear to determine the type of response as almost the same size gauze was extracted from intestinal lumen in case 2 and 4 while a capsule was formed with surrounding dense intestinal adhesions with pus within the cavity in cases of 3 & 5 of our series, Similar varied presentation reported by Supreeti Kohli et al[9], Kamal E BaniHani [5] and Alper sozutek et al[1].

Neither does the duration the sponge being retained in the body before causing symptoms and investigated appears to change the course of the disease as is evidenced by the 25 year old woman in our study (case 4) who had wound infection and dehiscence following first surgery, healed completely with dressing and then developed colicky abdominal pain suggestive of subacute intestinal obstruction within a

period of 2 days while it took 2 years for 32 year old woman (case 2) before any symptoms developed, that too vague, even though both had intraluminal migration of the sponge, Similar is the contrast in the duration and time of presentation between patient 3 and 5 (< 10 days i.e before suture removal and 30 years respectively), both had thick encapsulation with pus inside and no injury to bowel even after dissecting densely adherent intestine from the capsule. Almost similar variation was described by M.Ezzedien Rabie[10] and S.Kohli [9] in their case reports.

Indication of surgery elective/emergency unexpected change in operation, seems to have effect on incidence of retained foreign body [13] rather than on type of response with five patients in our series, all women, undergoing different surgeries, showing three types of responses wound infection and persisting discharge (case 1), encapsulation and adhesion (case 3 & 5) intraluminal migration (case 2 & 4)

That leaves us with the final possibility, different immunogenic capacity of the material from which the surgical sponge is made and varying immunological response to the foreign antigen which for obvious reasons cant be measured or quantified because of the rarity of incidents. Hence the oft repeated refrain prevention is better by taking adequate precaution. But how much is adequate ? double, triple counting of mops before closure of operative wound which is routinely performed has conclusively shown to be ineffective one extensive study reporting correct count in 88% of patients with retained objects [13].

The same author advised routine intra operative radiographic screening in selected high risk category of operation [13]. Even this is not fool proof as is demonstrated in a case reported by John N Hyslop where both surgeon and radiologist confused the laparotomy pad markers inadvertently left in the abdomen with Penrose drain left after draining extensive lesser sac and left subphrenic abscess in a patient with acute necrotising pancreatitis[14].

Almost similar instance happened to the patient in case 4 in one series when the operating surgeon asked for a C.T scan abdomen on patient complaining of severe colicky abdominal pain in post operative period and the radiologist missed the clumped intestine loops adherent to anterior abdominal wall with irregular reticulated space occupying lesion with in the internal lumen and instead reported on the ovarian Endometriotic cyst .

Even the second, more experienced radiologist reported as ascariasis and partial volvulus in the repeat C.T abdomen done to determine / confirm the findings detected in the first one.

While other authors advised adding a radio frequency tag to a barcode system to each surgical sponge[10] . Cost of installing and maintaining such sophisticated equipment is prohibitively high and just not practical in a country like ours where a majority of healthcare is provided by small and medium sized hospitals and an operative procedure can be carried out with the money which is spent on a plain radiography in USA (100$ in 2003)[13].

So is there no way out of this conundrum ? Sadly it appears so. It doesn't mean the surgical team shouldn't take any precautiononly to do the best we can in the given circumstances and leave rest to fate/god or which ever we believe in and hope the patients are as understanding as the well known English fiction author Mario Puzo who wrote " nothing should go wrong but only that in surgery anything could go wrong" which concisely describes the possibility of sudden unexpected events in an otherwise routine surgery which any regularly operating surgeon encounters more number of times than he/she would rather do without. Incidentally and fortunately for the first surgeon none of the patients in our series to pressed for any legal damages either out of ignorance of exact cause of their ailment or because too long a time had elapsed between the initial incident and the onset of their present symptoms and probably they were happy to be relieved of their present symptoms and let bygones be bygones.

We would like to thank Dr.Mir Azhar Ali for providing us with intra-operative photographs of second case in our series and allowed us to report the same in this article. As this casewas operated in our hospital.

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