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PREVENTABLE " NEVER EVENTS" IN OPERATING ROOM: GOSSYPIBOMA

Surgery

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ABSTRACT

Introduction: Never events are medical errors that should never happen. Retained foreign bodies are uncommon but serious never events in surgery that may lead to the agony of undergoing another major surgery and medicolegal problems. The most common surgically retained foreign body is the laparotomy sponge.

Methods: The authors report five cases of gossypiboma to highlight the varied presentation of this condition and the need for proper count of surgical items.

Results: All the five cases were females in the age range of 25-55 years. The index surgery in four patients was caesarean section. One patient had hysterectomy and cholecystectomy in the same sitting. The average duration of symptoms was 5 months. Two of these patients presented with an abdominal lump. One patient presented with an enterocutaneous fistula and the other with pus discharge from the drain site. The fifth patient with lower abdominal pain radiating to the back. Preoperative diagnosis of gossypiboma was clinched in only two patients while the other two pateints were misdiagnosed as ovarian teratoma and abdominal koch's respectively. In one patient diagnosis remained a dilemma and she was planned for diagnostic laparoscopy. Surgery was done with retained laparotomy sponge in four patients. One patient passed the sponge per rectally while awaiting surgery.

Discussion: Gossypiboma is a classic example of medical negligence in which the presence of a foreign body inside the patient can be easily proved. The possibility of this condition should be kept if any patient postoperatively presents with a lump abdomen, infection or pain. The best approach to manage this condition is prevention.

KEYWORDS

never events, gossypiboma, retained foreign object

Introduction:

Surgical interventions inherently carry some risk. The actual risks are accepted as complications if physicians show necessary professional care and attention and act in accordance with the general rules of medical science; otherwise they are considered as negligence and malpractice. "Never events" are medical errors that should never happen. They are identifiable, measurable, serious and preventable. Retained foreign body (RFB) is an uncommon but a serious never event in surgical practice that may eventually lead to the agony of undergoing another major procedure with its associated morbidity and mortality. The most common RFB surgically is the laparotomy sponge because of its common usage and amorphous structure[1]. Gossypiboma may present with a broad spectrum of symptoms ranging from fatal to none. Pain, (42%), palpable lump (27%), and fever (12%) have been reported as the most common symptoms[14].

Case Series

Over a period of 10 years, the authors have encountered five cases of gossypiboma. The clinical presentation, index surgery, methods of diagnosis and treatment and final outcome was compiled for each case prospectively. All the five cases were females in the age group of 25-55 years with a mean ± SD of 34± 11.06 years. The index surgery of four of these patients was emergency lower segment caesarean section and one patient had a combined open cholecystectomy and total abdominal hysterectomy in the same sitting. All the patients had their index surgery done in different hospitals and were referred to us. The time interval between the index surgery and the diagnosis of gossypiboma varied from 2.5 to 8 months with a mean of 4.6 months. The patients presented with varying presentations ranging from an abdominal lump in two patients to an enterocutaneous fistula in another. The fourth patient had persistent pus discharge from the drain site and the fifth patient presented with lower abdominal pain radiating to back. A pre-operative diagnosis of gossypiboma could be made only in 2 patients by the presence of a radiopaque marker visualised on X-Ray whole abdomen. The ultrasonography and CECT of the abdomen and pelvis showed characterstic features of a gossypiboma. Diagnosis of gossypiboma could not be made in three out of the five patients. One patient was misdiagnosed as an ovarian teratoma on CT scan and the patient who presented with enterocutaneous fistula was diagnosed as Koch's abdomen and was empirically started on anti tubercular treatment. However, when the patient did not respond to treatment CECT abdomen was performed wherein gossypiboma was suspected. The patient with persistent pus discharge from the drain site had an inconclusive ultrasonography and CECT scan and so she was planned for diagnostic laparoscopy.(Table 1) Four patients were subjected to laparotomy for retrieval of gossypiboma.The patient with enterocutaneous fistula expelled the gossypiboma spontaneously per rectally. The per operative findings of all these patients ranged from a well circumscribed pelvic abscess to an encapsulated mass adhered to the surrounding bowel loops and omentum. The postoperative recovery of all the patients was satisfactory and are now symptom free on further follow up.

Discussion:

Retained surgical sponge is an infrequent but a serious surgical never event which leads to problems for both the surgeon and the patient. The term gossypiboma is derived from the latin word "gossypium" meaning cotton and the Swahili "boma" meaning place of concealment.[2]. It is also known as textiloma[3], cottonoid, cottonballoma, muslinoma[4] and gauzoma[5].

Data published in the literature regarding gossypiboma is just the tip of the iceberg and the true incidence of this condition is not known as it is frequently under reported due to negative publicity, medicolegal implications and also because of its asymptomatic nature at times. It is less common in the western world due to their strict adherence to local theatre policies and is more common in the third world countries where surgeries are carried out in compromising conditions and fear of medicolegal implications are less[6,7]. Silva et al [8] have reported its incidence to be 1:1000 to 1:5000 laparotomies where as Bani-Hani et al estimated its incidence to be 1:5027[9]. Gossypiboma has been reported to occur after almost every surgical procedure including abdominal, orthopaedic, thoracic and neurosurgical. The abdominal cavity is the most common site for gossypiboma (56%) followed by

pelvic (18%), thorax (11%) and others (15%)[10]. In our study the most common site was pelvis (60%). This could be explained by the fact that the most common index surgery in our study was an emergency caesarean section (80%). The female preponderance in our study has been described by other authors also[9,11] and may be explained by the increased number of obstetric procedures done in our region; but female sex has not been identified as a risk factor[11].

The mean age of presentation in our study was 34±11.06 years with a range of 25-55 years. The mean age in other studies was 49 years with a range of 6-92 years[1]. The mean time from index surgery to the diagnosis of gossypiboma in our study was 4.6 months. Authors have reported an average discovery time of 6.9±10.2 years[1]. However, a latency period of 37 years has also been reported [3,12]. This highlights the fact that some cases may never be discovered.

The presence of a surgical sponge triggers a foreign body reaction which can be of two types: an acute, exudative form which leads to abscess formation and is more common and an aseptic, fibrinous reaction that leads to encapsulation and adhesions[13]. The acute form ususally presents within months of index surgery. In our study all the patients presented within months of the index surgery, indicating that all of them had an acute, exudative type of foreign body reaction to the retained surgical sponge. Migration of gossypiboma into the bowel lumen is rare but when it occurs, it is because the pressure and irritation of the sponge on the bowel wall leads to necrosis and the sponge erodes partially or entirely into the lumen of the intestine leading to intestinal obstruction or fistula formation[14-16]. In our study one patient presented with an enterocutaneous fistula who was misdiagnosed as tubercular abdomen and the patient received anti tubercular treatment without any response.

According to Gawande et al [10], the three most important risk factors having statistical significance for gossypiboma are emergency surgery (9 times), unexpected change in procedure (4 times) and high body mass index. Other risk factors which have been reported are, more than one surgical team involved, change in nursing staff during procedure, multiple surgical procedures done at the same time, inter personal and communication issues, no standardised procedure for performing sponge counts, distractions in the theatre, new equipment, excessive traffic and too much noise, pressure for increased productivity and lengthy and difficult surgery causing fatigue of the surgical team[17]. In our study four patients had undergone an emergency caesarean section and one had undergone an open cholecystectomy and transabdominal hysterectomy in the same sitting.

Diagnosis of this condition may be a high clinical suspicion, the presence of a lump or the patient feeling unwell after surgery. A plain X ray may show the radiopaque marker, as was present in two of our patients, however it may not be very easy to see it if the marker lies beneath a radiodense area or bone[18]. (Fig.1). Ultrasosnography reveals a characteristic well demarcated mass with wavy internal echoes surrounded by a hypoechoic ring with strong posterior acoustic shadow. However, it is often misinterpreted due to the clinical rarity of this condition[18]. Ultrasound in our study was interpreted for gossypiboma in only one patient. (Fig.2). The investigation of choice is a contrast enhanced CT scan which shows a spongiform mass containing gas bubbles or having a whorly appearance[18]. Four of our patients underwent a CT scan, but the diagnosis of gossypiboma could only be confirmed in two patients. CT scan of one patient was reported as having a well defined mass lesion of 17.5 cm (CC) x 13.3 cm (ML) x 11.8 cm (AP) in the pelvis containing fat, fluid, and calcification suggestive of an ovarian teratoma and in another patient the radiologist could not see the RFB in the upper abdomen. (Fig 3). When Ultrasosnography or CT is not diagnostic, the characterstic internal structure of gossypiboma may be seen on MRI,[6] however, MRI was not done in any of our patients. In one of our patients the diagnosis of gossypiboma was confirmed on diagnostic laparoscopy. Intra-operatively we encountered an encapsulated pus collection with retrieved gossypiboma from the abscess cavity (Fig 4).

In almost all cases, gossypiboma will require re-operation; non-operative management is usually the result of spontaneous self-expulsion of the retained sponge[19-23]. The morbidity after surgical management of gossypiboma has been reported to be ranging from 10%-50% [21-22] and mortality rates may be as high as 35% [24]. There were no complications or mortality in our study as reported by other authors as well[24].

The most pertinent point in the treatment of gossypiboma is prevention.[20] The importance of correct surgical item counting cannot be over emphasized. The counts should be done according to standardized guidelines. In case of an incorrect count during surgery, radiograph should be done to find the missing sponge. Appropriate documentation on the patient's medical record should include the measures taken to resolve the discrepancy and the outcomes. The incident should be reported as per organizational incident reporting policies and practices[24-25]. Although human fallibility will remain, continuous training and strict adherence to standard operation theatre policies should reduce the incidence of gossypiboma. In our study, the hospitals where the index cases were done were informed to facilitate the initiation of preventive steps.

The medicolegal complications of gossypiboma are grave. The presence of a foreign body inside the patient can be easily proved and the victim can litigate the surgeon as this is an avoidable problem. Patient may be informed that masses may be malignant and undergo unnecessarily invasive investigations and extirpative surgery. The doctor's negligence in allowing the sponge to remain may add to the injury.[26]. Because these cases are avoidable and preventable, many may lead to malpractice claims. In one such case, the court asked whether a retained sponge can cause a life threatening situation, organ weakness or infertility[27].

Newer technologies are being developed that may decrease the incidence of RFB. An electronic surveillance system has been designed that uses a tagged surgical sponge which can be identified electronically[28-29]. Bar coding of sponges can also be applied and with the use of bar code scanner, the sponges can be counted. Radiofrequency identification devices have also been used.[13].

Conclusion:

Gossypiboma is still a problem even in countries where strict policies are followed to avoid this complication. It should be considered in any postoperative patient who presents with pain, persistent wound infection and palpable lump. A high index of clinical suspicion is warranted in patients who are not “keeping well” or have not recovered, as they should have, under normal circumstances after surgery. CECT scan is the best diagnostic modality. Even though the surgeon carries the major responsibility, this problem can only be overcome if all the members in an operation team work together meticulously. The best approach is prevention. Despite all technologic advances of the 21 century human fallibility remains.

Table 1: Distribution of our cases

Patient	Index surgery	Presentation	Pre operative diagnosis
1	Emergency C/S	Abdominal lump	Ovarian teratoma
2	Emergency C/S	Enterocutaneous fistula	Koch's abdomen
3	Emergency C/S	Abdominal lump	Gossypiboma
4	Emergency C/S	Lower abdominal pain and back pain	Gossypiboma
5	Open cholecystectomy and trans abdominal hysterectomy	Persistent discharge from drain site	Intra abdominal abscess

Figure 1: Radio-opaque marker seen in plain X-ray of pelvis

Figure 2: Ultrasound showing whorled appearance with posterior acoustic shadow

Figure 3: Gossypiboma misdiagnosed as Ovarian teratoma on CT scan

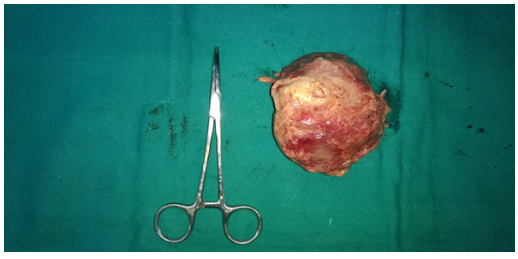

Figure 4: Encapsulated pus collection with retrieved gossypiboma from abscess cavity

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