

The analysis of retained surgical foreign bodies after gynecological and obstetric procedures

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SUMMARY

Introduction. Retained surgical foreign bodies are still a serious and underestimated problem. There are few data and publications on this undesirable event in the Polish literature. Despite the lack of a relationship with sex, these events are much commoner in gynecological and obstetric surgeries.

Aim. The aim was to analyze surgeries during which a foreign body was retained in the abdominal cavity. The analysis involves 7 cases of retained surgical foreign bodies after gynecological and obstetric procedures.

Results. Of the 7 cases, 3 events took place during a cesarean section, 3 during a laparotomy conducted for hysterectomy with salpingo-oophorectomy and 1 during a laparotomy conducted for adnexectomy. The average duration of the surgeries was 90 minutes (35–150 minutes).

Conclusion. Based on the case analysis, we propose principles for the management and control of surgical tools and dressing materials to help prevent such events.

Key words: foreign body; surgical sponge; surgical gauze

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Word count: 1566 **Tables:** 1 **Figures:** 0 **References:** 15

Received: 11.01.2018

Accepted: 18.05.2018

Published: 28.06.2018

INTRODUCTION

Retained surgical foreign bodies are a serious problem. There are few data and publications on these undesirable events in the Polish literature [1]. Despite currently employed procedures involving surgical material counts, which are conducted to prevent these undesirable events, dressing materials and tools are still retained in the body cavities. The most frequently retained objects are gauze pads used during operation. The statistical incidence of retained surgical foreign bodies ranges from 1 case per 5500 procedures [2,3] to 1 case per 18,760 procedures [4]. According to the available data, foreign bodies are usually retained after cholecystectomy, followed by cesarean section and hysterectomy. In Poland, this problem seems underestimated. There are no official data on this complication, but it seems to be at a similar level to that in other countries. Retained surgical foreign bodies are associated with various complications, additional diagnostic processes and significant costs for the public healthcare system. This event can result in peritonitis, intestinal fistula, abscess, gastrointestinal obstruction, the need for reoperation and removal of previously healthy tissues, and sepsis. Each of these complications may lead to death. Moreover, another aspect of retained surgical foreign bodies is that they are usually associated with errors of a surgical team or errors in the organization of the whole procedure. This may additionally entail legal consequences and result in justified compensation for the patient.

AIM

The aim of this work was to analyze procedures during which a foreign body was retained in the abdominal cavity. The analysis involved qualifications of surgical teams, employed procedures, types of surgeries and retained objects

which might have had an influence on the risk of this complication.

MATERIAL AND METHODS

The analysis involved 7 cases of foreign bodies retained in the abdominal cavity after gynecological procedures. All of them were reviewed in the Department of Forensic Medicine of the Pomeranian Medical University in Szczecin, Poland.

RESULTS

Of the 7 cases, 3 events took place during a cesarean section, 3 during a laparotomy conducted for hysterectomy with salpingo-oophorectomy and 1 during a laparotomy conducted for adnexectomy. The average duration of the surgeries was 90 minutes (35–150 minutes). In three cases, foreign bodies were retained after procedures conducted in district hospitals, two cases occurred in municipal hospitals and two in specialist hospitals.

The mean age of the surgeon performing the procedure was 48 years (35–59). Two surgeons were second-degree surgeons. One assisting surgeon took part in each procedure, and two assisting surgeons participated in three procedures. In one case, a surgeon joined the surgery and left it before it ended, and in one case

the surgical team changed completely during the operation. In three cases, information about starting suturing the peritoneum was not provided by the surgeon, and in four cases, the documentation confirms peritoneal inspection prior to suturing.

The mean age of a surgical nurse was 50.2 years (43–56). The mean work experience of an assisting nurse was 24.5 years (6–36). In one case, an assisting nurse had no scrub nurse training. In six of seven cases, two nurses were present. In one case, a surgical nurse prepared surgical tools and materials by herself without the help of an assisting nurse. The mean age of an assisting nurse was 44 years (30–55). In one case, an assisting nurse had received punishment associated with a retained surgical foreign body before. In three cases, it was confirmed that an assisting nurse had left the operating room. In five cases, common counting of surgical materials prior to and after surgery was confirmed; the numbers agreed in all these cases. In one case, one additional gauze pad was found after the surgery. In one case, a surgical nurse reported the absence of a surgical sponge. Sponges were secured with tools in only two cases. The use of X-ray detectable surgical materials was reported in four of seven procedures. Five procedures were complicated by significant hemorrhage, while peritoneal adhesions were noted in three cases.

Tab. 1. Characteristics of cases of retained surgical foreign body

Case	Type of procedure / indication	Time from procedure to foreign body detection	Type of retained material	Consequences of retained foreign body
1	Emergency cesarean section	5 month	Surgical sponge	Resection of the fallopian tube and a part of the greater omentum
2	Laparoscopy, conversion to minilaparotomy. Uterine myoma and ovarian cyst	3 month	Surgical sponge	No data
3	Laparotomy. Uterine myoma and pelvic tumor	10 days	Surgical sponge	Jejunum perforation, inflammatory tumor
4	Cesarean section	2 days	Two surgical sponges	Hysterectomy with salpingo-oophorectomy
5	Laparotomy. Salpingo-oophorectomy	4 month	No data	No data
6	Laparotomy. Hysterectomy with salpingo-oophorectomy due to tumor	12 month	Gauze pad	Abscess. Compression on the ureter with hydronephrosis and permanent left kidney injury. Nephrectomy
7	Cesarean section	9 month	Surgical sponge in the lumen of the intestine	Bowel inflammation with intraluminal migration of the foreign body

DISCUSSION

The analysis of the presented cases of retained surgical foreign bodies and of the literature has prompted the authors to present (in the conclusions) their own principles of surgical material management. These principles are routinely used in medical facilities where the authors perform surgeries.

A careful material count procedure is an important element in the prevention of retained surgical foreign bodies. It is a responsibility of a surgical nurse and an assisting nurse [6,7]. Negligence in this aspect is the most frequent operating room-related factor [5]. In two of the presented cases, the material count was either not performed or not documented. In one case, an additional gauze pad was found in the material count after the surgery. These data indicate the failure to perform, negligence in performing or failure to document the material count. The lack of documentation of this procedure suggests that it was not performed. According to the recommendations of the European Operating Room Nurses Association (EORNA), the count procedure should be strictly observed and conducted in accordance with established standards at least twice, and carefully documented.

In one of the described cases, the surgical nurse informed the surgeon about the absence of a surgical sponge during material count after the surgery. It seems that this information was either not treated seriously by the surgeon, which is reprehensible, or conveyed in an inappropriate way. This suggests either poor flow of information or the lack of mutual trust in the surgical team, or both these possibilities.

Conducting a material count procedure without detection of any inconsistencies does not exclude the risk of retaining a foreign body, especially in emergency surgeries [9]. This is probably associated not only with negligence in performing count procedures, but also with using unsecured materials and making rapid decisions that hinder or prevent proper security procedures. Unexpected bleeding, extending the range of surgery and emergency operations should make the surgical team even more vigilant to the possibility that surgical material may be retained in the patient's body. The available literature confirms this risk and enumerates additional risk factors, such as obesity, prolonged surgery and changes in the surgical team during the operation [4,7,8].

In three of the reported cases, X-ray detectable materials were not used, which made the

diagnostic processes associated with retained foreign bodies much more difficult. Some papers suggest that the application of routine radiography of the surgical field for excluding foreign body retention is safer and more economic than the standard material count only [9]. Routine usage of X-ray detectable materials is an appropriate procedure.

In four surgeries complicated with retained foreign bodies, the material was not secured to a surgical tool or not all materials were secured. It is recommended to secure all dressing materials to surgical tools.

Another issue worth mentioning here is a continuous attempt to optimize costs of surgeries. This phenomenon is desirable but cannot occur at the cost of patient and personnel safety. In the presented data, the assisting nurse was not present in the operating room for the whole surgery. The procedures of the EORNA and the management principles proposed by the authors of this article underline the need for the assisting nurse's presence during the entire surgery. There are more and more reports about the usage of gauze pads with chips emitting radio signals, thanks to which a manual scanner used during operation helps rule out retained foreign bodies. The sensitivity and specificity of this methods reach even 100% [9,11]. It seems, however, that conscientious and careful observance of security procedures is currently more cost-effective.

CONCLUSIONS

Based on the case analysis, we propose principles for the management and control of surgical tools and dressing materials to help prevent such events.

A surgical and an assisting nurse should count dressing materials separately and both should make a proper record in the surgical nurse's protocol. Each of them is individually responsible for the consistency of dressing materials dispensed for the surgery with materials acquired during and after surgery. Dressing materials are dispensed to the surgical team only by the surgical nurse assisting in surgery and it is the only person to receive materials after their usage. A situation in which other persons take materials from the Mayo table is unacceptable. Dressing materials used during surgeries should always contain radiopaque markers. A surgical sponge should be fixed to a tape and secured with a surgical tool with a lock. The usage of unsecured dressing materials during surgeries

within body cavities can occur only at the surgeon's demand, and not at request of other members of the surgical team. When such a demand is made, the surgical nurse should state that this is inconsistent with the accepted principles. The responsibility for retained foreign bodies lies in these cases solely on the surgeon, and the fact of using unsecured materials is recorded in the surgical nurse's protocol. The surgeon initiates body cavity closure upon receiving confirmation from surgical and assisting nurses about the consistency of dressing mate-

rials and after personal inspection of body cavities to rule out retained surgical materials. The surgeon should enable surgical and assisting nurses to carefully and conscientiously count and check the number of dressing materials.

These methods should significantly reduce the risk of retained surgical foreign bodies and their complications. From the point of view of medical personnel, maximum reduction of this risk is important as these events carry a risk for patients' health and are associated with potential legal responsibility should this complication occur.

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