

Surgical instrument left inside abdomen

Authors' Contribution:

A – Study Design
B – Data Collection
C – Statistical Analysis
D – Data Interpretation
E – Manuscript Preparation
F – Literature Search
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ABSTRACT:

Leaving surgical instruments in the patient's body is one of the most difficult situations in the professional career of an operator and it can also have severe consequences for the patient. Contrary to world literature, there are no reports of such incidents in Polish publications. Lack of such reports creates an illusion that leaving surgical instruments in the patient's body does not happen in Poland, which is an unsubstantiated thesis. This paper presents two cases of leaving hemostats in the abdominal cavity. According to the authors, similar publications may facilitate critical assessment of the existing rules for inspecting instruments and surgical material by surgical teams. Importantly, confirming the compliance of instruments and material by surgical nurses is not the only criterion of assessment in this matter for the operator.

KEYWORDS:

surgical instrument – foreign body, abdominal surgery

INTRODUCTION

It is extremely rare to leave a foreign object in the patient's body during surgery. Most often it is operational material. Professional literature mentions only a few reports regarding leaving surgical instruments in the cavities of the body. So far, Polish publications have not dealt with this issue. Such events are the subject of increasingly frequent not only civil, but also legal claims.

MATERIAL AND METHOD

This paper presents two cases of leaving surgical forceps left in the patient's abdominal cavity. Data comes from medico-legal opinions made by a team of experts from the Department of Forensic Medicine. This paper analyzed the reasons for leaving a foreign object in the body, as well as rules that should prevent such events.

Case I

A 58-year-old patient, 180 cm tall, body weight of 80 kg, who underwent cholecystectomy performed via Kocher's incision as well as splenectomy, was admitted to the surgical clinic of a university hospital. The patient was diagnosed with chronic pancreatitis, inflammatory tumor and carcinoma of the head of the pancreas. The patient was qualified for removal of the head of the pancreas. The abdominal cavity was opened via transverse incision under both costal arches. During surgery, massive adhesions around the pancreas and signs of portal hypertension were found. The head of the pancreas was dissected locally. Pancreatojejunostomy was performed using Frey-Smith's method (a side-to-side anastomosis of the pancreatic duct and the small-bowel loop isolated via Roux's method was made). The main stages of surgery were conducted by a specialist in general and oncological surgery (dr hab. med). The final stage of the procedure was attended by a specialist in general surgery. After obtaining information from the operating room nurse regarding the compliant condition of instruments and operating material, the operator closed the abdomen. Approximately two hours after the end of the procedure, the doctors received a message from the sterile services department that the set of instruments received after pancreatic surgery was missing Kocher's

forceps. A control radiological examination was performed, which confirmed that surgical instruments had been left in the patient's abdominal cavity. A decision was made to perform urgent surgical intervention. During the surgery it was found that Kocher's forceps were fastened "on the top of the peritoneum." The instrument was extracted and the abdominal cavity was closed again.

Case II

A patient aged 61, 169 cm tall, with a weight of 102 kg, who underwent a sigmoid resection due to diverticulitis, formation of an artificial anus and subsequent reconstruction of the gastrointestinal tract, was admitted to the surgical department of a district hospital. The patient was qualified for incisional hernia repair. Abdominoplasty repair for abdominal wall hernia with insertion of a synthetic implant was performed by a general surgery specialist. During the procedure, due to the large size of the hernia and the patient's obesity, it was necessary to supplement surgical instruments. After receiving confirmation of compliance of tools and operating material from the surgical nurse, the operator closed the abdomen. The patient was discharged from the ward. During the patient's stay at home, she experienced abdominal pain. After 18 days from surgery, the patient returned to the hospital where hernioplasty was performed. The radiographic image shows a surgical instrument in the abdominal cavity. During extraction of the foreign body, necrosis of the strangulated small intestine was found on Kocher's forceps, "fastened on the edge of the ring of hernia." An affected 25-cm intestine fragment was removed and end-to-end anastomosis was performed. There were no postoperative complications.

DISCUSSION

The estimated frequency of leaving a foreign object in the body cavities ranges from 1:5500 to 1:18760 [1,2,3]. About 1,500 foreign objects are left behind in the United States annually [4]. This generates not only costs associated with necessary reoperation but also other, such as compensation or professional absence. These amounts are considerable and can range from \$ 37 thousand up to 2.350 million; \$ 95 thousand on average [5,6]. Some publications indicate that the risk of leaving a foreign object increases in obese

patients and during operations performed for traumatic and emergency reasons, which require the use of many surgical instruments and a significant amount of additional gauze material [7,8,9,10]. Estimated data indicate that the risk of leaving behind a foreign object increases nine times in urgent operations and four times in cases when there is an unplanned change in the course of surgery [11]. Other risk factors include intra-operative complications and unexpected events, e.g., bleeding [7, 10]. Numerous studies confirm that the most important reason for leaving behind a foreign object is inadequate communication between individual members of the surgical team and errors in counting instruments and additional gauze [12,10]. Erroneous control may be caused by long duration of surgery (over two hours), presence of more than two nurses in the operating theater, and performing surgery in the evening hours [3]. As results from professional literature, even intraoperative confirmation of compliance of operating material and surgical instruments does not fully secure from leaving behind a foreign object. Some authors report that among all patients with a revealed foreign object, compliance of surgical material and surgical instruments was confirmed in as many as 80-88% of people [11, 13, 14, 15]. The majority of foreign objects left behind regard the abdomen and may reach 74%, and 11% in case of the chest [16]. According to reports, unintentional leaving of a foreign object requires resurgery in 70% of cases [15]. A foreign object can cause a number of complications, the most common of which, in addition to pain, include: abdominal tumors, intraperitoneal abscesses, mechanical bowel obstruction, intestinal perforation, gastrointestinal fistulas, bleeding, migration of the intestinal wall, sepsis and even death [17, 18]. It happens that the operating material left in the abdominal cavity and some instruments may migrate through the wall of the large intestine and be eliminated through the anus [9,19]. Surveys confirm that among all foreign objects [9,19] left behind, surgical instruments account for 5.21% [20]. Usually symptoms of leaving foreign objects are manifested in the first two months after surgery [16,18,21]. It was similar in the patient described in case II, where the foreign body was diagnosed 18 days after the first surgery. Incidence of symptoms in persons with foreign objects varies depending on the location and type of these objects [20]. Symptoms do not occur in 33% persons with surgical instruments left behind, as opposed to cases with remaining operative material, where lack of manifestation of the presence of foreign objects is rarely recorded, only in 12% [20]. The decisive factor in determining the diagnosis is abdominal radiological examination [17,22]. When a tumor or fistulas are detected, after abdominal surgery it is recommended to perform imaging tests: computed tomography or magnetic resonance, in order to establish the diagnosis [17,22,23]. In patients with gastrointestinal obstruction, urgent surgery is necessary; it consists not only in extraction of the surgical instrument, but also in performing appropriate intestinal procedures [24]. It was similar in case II which we have described, where bowel resection was necessary due to necrosis. Medical interventions necessary to evacuate a foreign body are linked to serious consequences and may be associated with the occurrence of complications in up to 80% of people, and mortality may reach 35% [25,26].

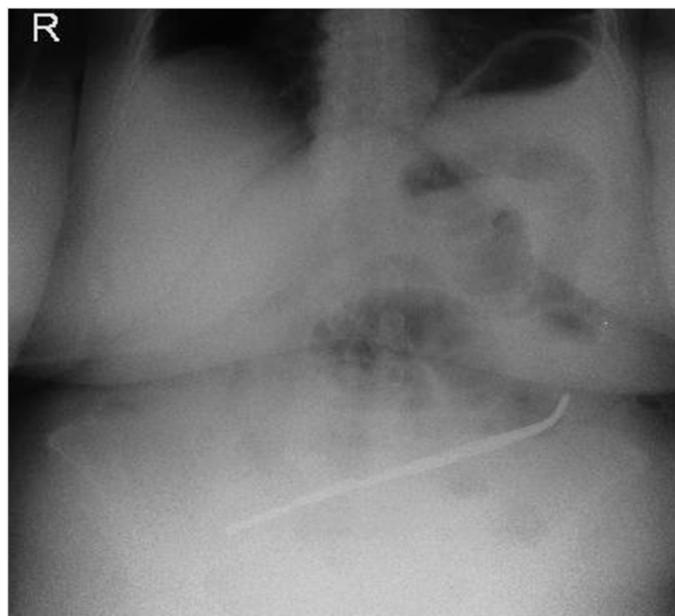


Fig.1. Surgical tool left in the abdominal cavity of the patient.

In addition to the surgical nurse's duties consisting in constant supervision over compliance of instruments, the role of the operator is emphasized in checking the abdominal cavity in terms of leaving behind a foreign object [10]. In the case of non-compliance in the count of instruments and additional gauze material, radiological or computed tomography examination is recommended [10,27]. In the case of high risk of leaving behind a foreign object (patient's obesity, emergent surgery, unexpected change in the course of surgery), some authors suggest to perform radiological control on the operating theater, regardless of the count of operating material and surgical instruments [15].

Regarding the risk factors for leaving behind a foreign object described in this work, in case I it could be a change of operator during the procedure. In case II, the patient's obesity, as well as supplementation of instruments necessary to perform the surgery may have contributed to the error. He points out that in both cases, forceps used for closure were left in the abdominal cavity. This may suggest that the count of compliance of instruments was carried out before this stage.

CONCLUSIONS

1. There are currently no certain and commonly accepted methods to prevent the surgical instrument remaining in the abdominal cavity, other than ongoing supervision over compliance of instruments by the nursing staff as well as control of the abdomen before its closure by the operator.
2. Subsequent Polish publications may make operators and surgical nurses realize that such events occur in Poland, just as in other countries.

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