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Migration of a foreign body into the colon and its autonomous excretion

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Summary

Background:

The frequency of foreign body retention in the abdominal cavity ranges from 1 in 100 to 1 in 3000 surgeries performed. Worldwide literature describes only a few cases of the migration of misplaced surgical gauze into the colon.

Case Reports:

The first case is a 60-year-old patient following laparoscopic cholecystectomy, who excreted (on his own) a cotton sheet 30×65 cm after 26 weeks, which did not possess a radiological locator. The latter fact caused diagnostic difficulties in interpreting ultrasonography, CT-scans and abdominal X-rays. Colonoscopy after 4 months following the excretion of the sheet showed flat, stretched ulceration of the colonic wall near the hepatic turn.

The second case is a 76-year-old who had undergone several abdominal surgeries, including a classical cholecystectomy and extirpation of the uterus along with related tissues, as a result of cancer and with subsequent radiotherapy. The reason for the last intervention was an occlusion, which required a resection due to abscesses inside the peritoneal cavity. Abdominal pain continued after the surgery. Uroscopy and abdominal X-rays were performed 3 months later, which confirmed the presence of foreign matter in the abdominal cavity.

Conclusions:

Most foreign objects that have migrated into the colon will be excreted autonomously, which warrants a conservative assessment. Radiologically-tagged materials should be used, which will greatly ease identification in cases of suspected retention of surgical materials in the abdominal cavity.

key words:

surgical sponge • surgical gauze • foreign bodies

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BACKGROUND

The frequency of the retention of foreign bodies in the abdominal cavity ranges from 1 in 100 to 1 in 3000 performed surgeries [1]. These foreign bodies consist of various types of cotton surgical materials. Gauze may cause 2 types of intraperitoneal reactions: an aseptic fibrosis, which causes fusions and encystment; or a suppurating reaction, which causes the formation of pustules [2]. Yet another possibility is the migration of the foreign body from the peritoneal cavity into the gastrointestinal lumen, most often occurring after gynaecological surgery and cholecystectomy [3]. The aforementioned types of surgery suggest the section of the gastrointestinal tract into which the surgical gauze migrates. Surgical material regularly migrates to the section of the gastrointestinal tract located closest to it. For this reason, the foreign body most often migrates into the lumen of the small intestine, and less often to the stomach, duodenum, colon or bladder [3]. The literature describes only a few cases of the migration of surgical gauze into the colon. The cases we present are unusual due to the size of the foreign body left in the patient, its type, and diagnostic difficulties.

CASE REPORTS

Case I

Laparoscopic cholecystectomy was performed in a 60-year-old man because of chronic cholecystitis caused by gallstones. During the surgery, haemorrhaging was observed in the area of the gallbladder. Open abdominal surgery was decided upon. The haemorrhaging was staunched using a suture with underpin. Six cotton surgical napkins with a radiological tag and a blue ribbon loop sewn onto a corner were used during the surgery (30×70 cm). Abdominal pain ensued following the surgery. Several ultrasound examinations made of the site of the excised gallbladder showed a heterogeneous area of 7×12 cm. This formation had hyperchogenic reflections and septa inside. The ultrasonography (USG) operators treated the ensuing changes as the image of a haematoma being absorbed post-cholecystectomy. After 6 months, X-ray analysis (Figure 1) and computer-aided tomography (Figure 2) of the abdominal cavity were performed, and neither showed deviation from normal conditions. Two weeks following the tomography, the patient autonomously excreted the cotton material, a 30×65 cm cotton napkin, lacking the blue ribbon and in-woven surgical marker (Figure 3), through the anus. This material was not used in the surgical ward, but in the neonatal and obstetrical wards. Likely, during preparation and sterilisation, this material was placed together with the surgical napkins. The foreign body left in the abdominal cavity was not noticed because of the lack of visual tags. Following the operation, the absence of radiological markers made the unequivocal identification of the ensuing changes difficult, and they were treated as a haematoma. A further, retrospective, examination of the X-ray analysis CT-scan showed that a foreign body could have been observed in the abdominal cavity. Likewise, the changes observed in the USG were not due to a haematoma, but to surgical material. Colonoscopy control performed 4 months following the excretion of the napkin showed flat, stretched ulceration of the colon wall near the hepatic flexure. This was interpreted as a trace of the migration from the subhepatic region through the colon wall.



Figure 1. Patient I Abdominal cavity X-ray in the vertical position.

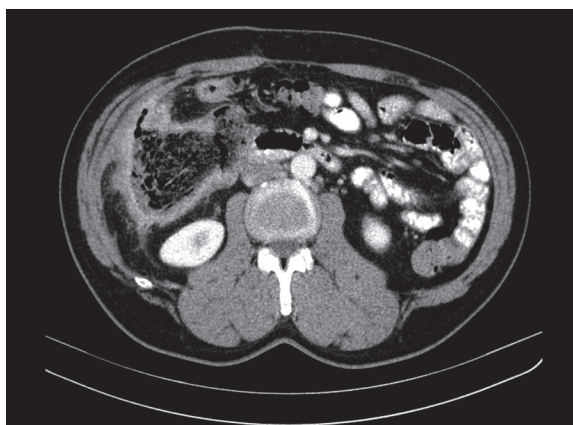


Figure 2. Patient I Abdominal cavity CT scan.



Figure 3. Patient I surgical gauze spontaneously excreted through the colon.

Case II

A 76-year-old woman had undergone several abdominal operations; 20 years prior to submission she underwent

Table 1. Migration of foreign body into the colon – literature review.

Author Nation	Godara [5] India	Choi [2] South Korea	Zantvoord [3] Netherlands	Glockeman [9] Germany	Manabe [8] Japan	Klein [6] USA	Richards [10] USA	Karila [11] Africa	Sarda [4] Singapore
Age in yrs.	19	29	39	39	50	65	46	30	40
Sex	M	W	W	M	W	M	W	M	W
Original procedure	Exploratory laparotomy	Cesarian section	Cesarian section	Cholecystectomy	Cesarian section	Cholecystectomy	Cholecystectomy	Cholecystectomy	Historectomy
Haemorrhaging during surgery	+	Not given	+	Not given	Not given	Not given		Not given	Not given
Time from operation	16 mos.	3 mos.	4 mos.	4 years		1 year	2 mos.	5 lat	1 year
Site of ingress	Splenic flexure	Colon ascending	Sigmo/rectum	Hepatic flexure	Sigmoid	Hepatic flexure	Hepatic flexure	Entero-colic fistula	Ileo-sigmoid fistula
Gauze size cm	5×13	5×6	40×60	Surgical napkin	5×5	Penrose drain	10×12		8×10
X-Ray marker	Not given	+	+	Not given	+	Not given	+		Not given
Pain	Mild, intermittent	Colicky	–	Mild, intermittent	Diarrhoea	Mild	Pain Fever		Pain constipation
Abdominal examination	Tender lump	Tender lump	Lump	Norm		Norm	Tender mass	Tender lump	–
WBC/μL	Not given	10 500	9 300	Norm		Norm			
Plain abd. X-Ray	–	+	+	–	+	+	+	+	
USG	+			–		–		+	+
CT	+	+	+		+	–		+	+
Barium enema						+	+		+
Colonoscopy					+	+			+
Evacuation	Spontaneous expulsion	Spontaneous expulsion	Spontaneous expulsion	Spontaneous expulsion	Spontaneous expulsion	Endoscopic removal	Laparotomy	Laparotomy	Laparotomy

a classical cholecystectomy, and 6 years earlier she underwent a full ovario-hysterectomy and excision of the inguinal lymph nodes due to uterine cancer. The reason for another surgical intervention was a mechanical obstruction. During laparoscopy it was noted that the final loop of the small intestine had been drawn into a metastasis in the lesser pelvis, which obstructed the intestinal lumen. A side-to-side anastomosis was made of the small intestine with the caecum, bypassing the drawn-in loop. Lower abdominal pain appeared after the operation, as well as periodic diarrhoea, burning sensation during urination, urinary incontinence and fever. Suspecting a subhepatic abscess on the basis of USG analysis, the abdominal cavity was re-opened. A small cavity containing serous matter was emptied in the subhepatic region. Furthermore, a number of adhesions were partially separated in the abdominal cavity. The aforementioned symptoms continued to occur in the patient following the operation. Urography was performed after another 3 months, and X-ray analysis showed a foreign body in the

abdominal cavity. Tomography was performed, but its conclusions were equivocal. The patient was admitted into the surgery ward, but during the preparation for investigative laparoscopy, her condition worsened. Due to respiratory and circulatory dysfunction, the patient was intubated and placed in intensive care. Following another month, the patient excreted the surgical material. After another month in the intensive care ward, the patient died. During the post-mortem, in a section of the sigmoid colon, a 5×4 cm indentation was found, covered by a small quantity of serous matter. This indentation contained a perforation of the colon, 1.5 cm in diameter, connected to a similar opening in the ileum. Nearby was a similar opening in the small intestine, connected to an opening in the bladder.

DISCUSSION

The literature describes 10 cases of migration of a foreign body from the peritoneal cavity into the colon (Table 1).

The abandonment of a foreign body in the abdominal cavity is not characteristic only of nations with a low level of medical development; the data shows that this complication occurs in many nations. The compiled data relating to the migration of surgical materials shows that the most frequent operations following with gauze remains in the abdomen are cholecystectomy and caesarean section [3]. This also pertains to patients in whom the foreign body enters the colon. From among 10 cases of foreign body migration into the colon, in 4 this occurred following cholecystectomy, and 3 in women following caesarean section. The increasing use of the laparoscopic technique in the treatment of bile stones may change the aforementioned ratio in favour of the caesarean section.

Although the documentation relating to the 10 discussed cases of the migration of surgical gauze into the colon is not always complete, it is certain that haemorrhaging during surgery occurred in 3 cases. In a further 2 patients, caesarean section was the indication. In 5 cases the aforementioned circumstances may have been caused by the hurried activity of surgical staff and may have led to the abandonment of foreign matter in the abdomen.

The period elapsing from the operation during which the foreign body was left behind to the diagnosis varied from 2 months to 5 years. Most often, however, this period was less than 1 year; this was true in 6 cases out of 10. In all of the described cases, the foreign body entered the colon in the immediate vicinity of the operated organ. In female patients who had undergone caesarean sections or hysterectomies, the foreign body migrated into the sigmoid colon or rectum.

The migration of dressing materials through the colon wall is made possible by the intraperitoneal reaction to a foreign body, where aseptic fibre-formation processes occur, leading to the occurrence of numerous adhesions [2]. In this way, despite the opening of the colon wall, peritonitis does not occur. Abscess formation does not accompany the migration of a foreign body through the colon wall. Abscesses in the area of the ingress of surgical material into the sigmoid colon occurred in only 1 patient, and was accompanied by numerous perforations of the small intestine [4].

The material which entered the colon varied in size, from swabs of several centimetres in size, up to comparatively large napkins of 40×60 cm, or 30×70 cm. The mechanism of migration of such large material through the colon wall is not entirely understood. Significantly, the volume of the surgical material decreases after saturation with blood or serum, and the material is further folded and twisted by the surrounding organs.

The complaints noted in patients with remaining foreign bodies were periodic pains of moderate intensity. Rarely, other symptoms were noted: fever or bowel movement disorders such as constipation or diarrhoea. Physical examination showed painful resistance in as many as 6 out of 10 cases. Abdominal X-ray analysis demonstrated signs of a foreign body in 7 out of 9 cases. As some authors indicate, this diagnosis is unequivocal if the foreign body contains a radiological marker, whereas in the remaining cases it is difficult [5]. Excluding metallic foreign bodies, the investigative X-ray will show small air bubbles [2] or banded shading

[6]. The air bubbles may be the result of contact between the foreign body and the colon as a result of its perforation or erosion [2]. Another explanation of the air bubbles may be the inflammation caused by a foreign body, abscess formation or air caught in the synthetic fibres [2]. The air bubbles disappear gradually over time [7].

USG examination was performed on 4 persons. It showed a hyperechogenic foreign body in the lumen of the transverse colon and intestinal oedemas [5]. The masses observed during USG are often cystic, with a strong acoustic signature [7]. CT scans of the abdominal cavity were performed more often than were USG analyses. In this technique, foreign bodies are characterised by calcification and air bubbles, forming a marbled image [5]. In 3 persons, a contrasting perfusion was made of the intestine, which showed signal loss [6]. Colonoscopy was performed in 3 cases, which confirmed the presence of a foreign body. It should be stressed that this examination made it possible to remove the foreign body in 1 of the patients [6]. In another case, the migration of surgical material was observed through the colon wall, up to its autonomous excretion [8].

Among the 10 cases of foreign body migration through the colon wall, 6 patients autonomously excreted the surgical material, and only in 3 cases was surgical treatment required. In 2 patients the migration of the foreign object into the colon was accompanied by perforations of the small intestine [4]. In these patients the foreign body was removed from the colon, and portions of the small intestine and colon were resected [4]. The number of reports of abandonment of foreign bodies in the abdominal cavity, and thus cases of migration through the colon wall, is likely lower than the actual occurrence of this event [5].

CONCLUSIONS

Surgical material with radiological markers should be used, which greatly eases diagnosis in suspected cases of material being left in the abdominal cavity. Colonoscopy is indicated in cases of suspected migration of a foreign body into the colon, which is not only of diagnostic significance, but also facilitates the endoscopic removal of the surgical material from the intestine. Most foreign bodies that have migrated into the colon will be excreted autonomously, which justifies a conservative approach.

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