Chronic Evolution of a Covered Perforation of Middle Third Transverse Colon by a Toothpick: A Case Report

Bogdan Severus Gaspar 1,2, Sanda Maria Cretoiu 3, Mircea Beuran 1,2, Irina Mihaela Bejenaru 1, Iulia Cristina Parvulescu 1, Stefania Lavinia Manolescu 4, Ramona Iliescu 1, Alfred Najm 1

1Surgery Clinic, Emergency Clinical Hospital, Romania
2Surgery Department, Carol Davila University of Medicine and Pharmacy, Romania
3Department of Cell and Molecular Biology and Histology, Carol Davila University of Medicine and Pharmacy, Romania
4Buzau Emergency County Hospital, Romania

ABSTRACT

Background: Foreign bodies (FBs) ingestion is generally rare but they can cause often bowel perforation if they have a sharp form and the patient did not manage to eliminate it naturally in the stools. Sometimes they can pierce the digestive tube wall leading to acute complications. Among the numerous cases of ingestion of FBs presented in the literature, the current case of transverse colon perforation, with chronic evolution, epiploic and pelvic abscess, submesocolic perivisceritis represents a particular one.

Case Presentation: We present a case of a 59-year-old female patient, reported episodes of transitory melena in the past 6 months and chronic pain in the right iliac fossa, chronic anemia after ingesting a toothpick. The patient complained of chronic pain in the right iliac fossa, melena, intestinal transit disorders et impaired digestive tolerance. Computerized Tomography (CT) scan suggested peritonitis with pelvic adhesions and possible covered perforation in the right iliac fossa. Surgery started as an exploratory laparotomy to define the final diagnosis since a tumoral pathology couldn’t be eliminated. Colic perforation by a toothpick was found, followed by colporrhaphy and a biosynthetic patch on the great omentum.

Conclusion: This paper presents the case of a patient with a sharp foreign body (toothpick) positioned in the transverse colon. The toothpick was ingested a few months ago and had a subtle chronic evolution causing colon perforation, covered peritonitis, intra-abdominal abscess, and chronic anemia because of recurrent episodes of melena. The treatment of choice was surgery with good postoperative evolution.

Keywords: Foreign Body • Toothpick • Colon Covered Perforation • Surgery • Ultrasound • Computerized Tomography

Abbreviation: FBs: Foreign Bodies; ER: Emergency Room; CT: Computerized Tomography
INTRODUCTION

Most cases of ingestion of FBs consist in low-risk objects that can be eliminated by the natural digestive path. Emergency departments often have cases of FBs found inside the gastrointestinal tract which can be followed by a simple extraction if is in the lower or upper part of the digestive tract. The sharp, small FBs that can migrate in the digestive tube can be dangerous because of the risk of wall erosion and later digestive perforation, followed by peritonitis, which is as well a life-threatening complication [1].

Usually, in such cases, it is difficult to establish a diagnosis due to the fact that there is no single pathognomonic sign or symptom. Statistics and case studies describe variable clinical signs for an object ingestion situation [2,3]. The patient can be completely asymptomatic or can describe chronic nonspecific evolution that can persist even for months. Often, in the first interrogatory, the patient forgets to mention this kind of detail which can be a key point in finding a positive diagnosis. The specialized literature describes in the majority of cases FBs in the digestive tract as the result of a voluntarily action in psychiatric patients, drug users, and cases of severe alcohol intoxication [2]. The rest of the cases are FBs accidentally ingested when the patient is aware of the gravity of the situation and presents himself immediately in the Emergency Room (ER) or to the general practitioner’s office. In both situations, the patient should search doctor’s advice, because depending on its form, diameter, shape, consistency, and material, the complications can be severe, and treatment is required immediately [4].

The high number of cases presenting in the ER with foreign object ingestion in pediatric and adult ages suggested the need for the implementation of a guideline regarding the treatment of this pathology [5]. According to the literature in 80% of the cases, the foreign object is spontaneously eliminated by the peristaltic movements, and the imagistic examination can validate this hypothesis [6] Rarely, the object can become blocked at a specific level of the digestive tract and can cause irritation, local inflammation, even perforation and peritonitis in severe cases [7].

It is very important in the anamnesis to ask about this type of accident, in order to rapidly take a good decision, and validate the diagnosis with imaging examinations like abdominal X-ray, CT scan, or even endoscopic procedure that can be both diagnostic and therapeutic examination, especially for the upper part of the digestive tube [8,9].

In the case of digestive perforation, surgery is needed and rarely one can have a covered perforation that can mask the gravity of the case.

We report the case of a patient with a small sharp FB (toothpick) accidentally ingested because the patient loses the sense of the dangerousness of his act. The toothpick migrated during several months in the transverse colon. The uniqueness of the case consists in the fact that the FB was asymptomatic for several months, giving recurrent symptoms like melena episodes, chronic anemia, chronic pain in the right iliac fossa, and digestive disorders. These signs at patient presentation, although non-specific, can suggest the chronic presence of FBs that might lead to severe complications. The toothpick was extracted in our surgery clinic by surgical intervention with good postoperative evolution of the patient.

CASE PRESENTATION

A 59-year-old Caucasian female patient was referred to the emergency department for chronic pain in the right iliac fossa in the past half year, with progressive aggravation in the past 2 weeks, increasing in intensity in the last 7 days. The main symptoms were: generalized abdominal pain, biliodigestive vomiting, and impaired digestive tolerance. In the past 36 hours, the patient describes the aggravation of the general condition with lack of intestinal transit for feces and gas.

The patient had a long medical history of asthma, rheumatoid arthritis, non-insulin-dependent diabetes mellitus from 7 years ago, hypertension, and coronary artery disease. The patient also had a surgical history: two C-sections over 30 years ago. Recent history consists of intestinal transit disorders, episodes of melena stools occasionally during the last 6 months., and the appearance of other symptoms during the last 2 weeks.

Clinical examination at admission to our department showed an obese patient, conscious, cooperating, temporally-spatially oriented, in good general condition, afebrile, hemodynamic, and respiratory stable, with generalized osteoarthritis modifications. The clinical examination continued with the abdominal palpation displaying a distended and meteorized abdomen, excessively developed adipose tissue, pain in the hypogastrium and right iliac fossa, but no signs of peritoneal irritation, without palpable pathological masses intra-abdominally, and a suprapubic C-section postoperative scar. The rectal examination showed only remnants of feces of normal appearance, without pain in the Douglas recess.

The laboratory tests of the patient showed hyperglycemia (181 mg/dl), microcytic hypochromic anemia (Hb 7.4 g/dl), hypoproteinemia with hypoalbuminemia, without...
leukocytosis (7100 leucocytes/mm$^3$). Pulmonary X-ray at admission was normal. Abdominal X-ray at admission showed aerocolia, without radiologically pneumoperitoneum, without the presence of hydro-aeric levels.

The abdominal ultrasound at the admission detected a cystic formation of 8.5/5 cm and a thick wall (12 mm), in Douglas recess, inhomogeneous content, and liquid collection measuring 4 cm between the small intestine loops and in the lower abdomen, intestinal loops fixed in the right iliac fossa. Gastric antrum with the discreetly thickened wall.

A gynecological exam was done and shown as normal.

After the anamnesis, clinical exam, laboratory blood analysis, and the two imagistic exams one reached an admission diagnosis: right iliac fossa pain syndrome, non-insulin-dependent diabetes mellitus, rheumatoid arthritis and asthma, suspicion of colon cancer.

The imagistic investigations were completed after admission with a superior digestive endoscopy performed, and the conclusion was erosive antral gastritis without signs of bleeding during the examination. Furthermore, the abdominal and pelvic CT scan showed pelvic intraperitoneal fluid, between the intestinal loops, and in the right paracolic space, infiltrated edematous ileal mesentery, and great omentum. A thin blade of dense material between the large epiploon and anterior wall of the right iliac fossa suggested an extravasated contrast substance. The CT scan also detected preserved intestinal transit of the contrast substance, absence of a pneumoperitoneum, no hydro-aeric levels, normal retrocecal appendix, uterus, and uterine appendages with normal appearance. The final conclusion of the imaging exam was peritonitis with pelvic adhesions, possible covered perforation in the right iliac fossa. Because of the suspicion of colonic perforation raised by the CT scan, the colonoscopy was contraindicated.

After the CT scan, the suspicion of digestive perforation was raised, one started the antibiotic with broad-spectrum therapy, and took the decision to maintain a conservative treatment and supervise the general evolution in 24 hours. The treatment initiated in the surgery department included: a nasogastric tube insertion with minimum gastric liquid, hydro-electrolytic rebalancing, antibiotic treatment with third-generation cephalosporins and metronidazole to cover the aerobic and the anaerobic bacteria.

Favorable evolution during the first and second day of hospitalization with the decrease in pain following the treatment administration, intestinal transit resumed immediately, without vomiting, normalization of blood glucose, but increasing leucocytes in the blood laboratory test, rising from 7100 to 8500 leucocytes/mm$^3$.

Between day 3 and day 4, the general evolution was in a negative direction with recurrence of right iliac fossa pain (persistent, continuous, low intensity), and sub febrility (37.2 °C-37.40 °C). The abdominal palpation detected an inaccurately delimited formation in the right iliac fossa and mesogastric area, with normal intestinal transit, and no vomiting. After two days of unfavorable evolution, with the increasing level of pain, and the presence of inflammatory and infectious syndrome one decided to discuss a differential diagnosis in order to adopt the best medical strategy. The first diagnosis was appendicular pathology like acute appendicitis/appendicular mass in the diabetic patient with an inflammatory syndrome, considering that in such immunosuppressed patients this can develop very fast. Pros criteria like dominant symptomatology in the right iliac fossa, intestinal transit disorders, impaired digestive tolerance, inaccurately delimited formation in the right iliac fossa 2 weeks after symptoms debut were suggestive of an appendicular abscess, appendicular tumor, or appendicular plastron. Cons criteria against an appendicular disease: normal leukocytes, fast resumption of intestinal transit and improvement of digestive tolerance.

The second suspected pathology was a gynecological pathology like ovarian cyst and ovarian cancer.

Criteria in favor of this diagnosis was the ultrasound appearance (metastatic nodules with carcinomatous ascites) and inaccurately delimited formation in the right iliac fossa at the abdominal palpation. Criteria against a gynecological pathology was the CT aspect and the normal gynecological examination. The third presumptive diagnosis was an ovarian torsion cyst suggested by sudden worsening of symptoms and the ultrasound appearance. Criteria against this are subacute symptoms, with variable evolution, normal gynecological consultation, and no pain in the Douglas recess. Transvaginal ultrasound and determination of ovarian neoplastic markers could not be performed. The fourth diagnosis and the more suggestive is digestive perforation: gastric (cortisone gastropathy because of her rheumatoid arthritis treatment), appendicular or colonic.

Pro criteria: the symptoms and CT aspect. Criteria against: normal digestive tolerance, intestinal transit preservation, absence of ultrasound, and X-ray signs pneumoperitoneum. The last diagnosis suggested by the clinical exam and laboratory analysis was colon cancer. Left colon cancer: initial occlusive episode, slow evolution, blood in the stools. Right colon cancer is explained by chronic anemia, intestinal transit maintained, and imaging exams that can suggest a peritumoral abscess.
Other diagnoses were: postoperative perivisceritis, diabetic neuropathy, and kidney disease.

Corroborating all the data beginning with the patient anamnesis and clinical examination, laboratory tests, imaging test, and evolution during the hospitalization, the decision of surgery strategy was decided, with both diagnostic and therapeutic roles. Preoperative treatment with; hydro-electrolytic rebalancing, analgesic treatment, gastric antisecretory, antibiotic prophylaxis, and deep vein thrombosis prophylaxis.

A median xipho-pubic incision was made. After opening the peritoneal cavity, an inflamed omentum, distended colic frame and distended small intestine, false membranes covering the viscera, and an aspect of pelvic perivisceritis was found. During the exploration, an orifice in the great omentum was observed, with a toothpick penetrating the fatty tissue. The greater omentum was as well inflamed and with a small quantity of pus. A sample of pus was sent for bacteriological analysis. (Figure 1).

The dissection continued behind the structure and a transverse colon perforation was noticed, as well. The perforation site corresponds to the sharp object that was found at the beginning of the intraperitoneal exploration (Figure 2). The rest of the visualized organs were of normal macroscopic appearance.

![Figure 1: A: Macroscopic intraoperative view of the perforation in the greater omentum and the abscess generated by the covered perforation; B: The mobilized omentum at the perforation site involving also the mesentry.](image1)

![Figure 2: A: Intraoperative view of the transverse colon perforation (arrow) and the toothpick in the greater omentum; B: The perforated transverse colon (arrow) and the omentum after toothpick extraction.](image2)
After the intraoperatory exploration we had a final diagnosis: covered perforation of the middle third transverse colon by a foreign body (toothpick) with chronic evolution. A minimal revitalization of the edges of the colonic perforation followed by double-layer colporrhaphy was performed followed by local hemostasis, lavage, Douglas drainage, and preventive application of hemostatic patches at the site of omental perforation before abdominal wound closure (Figure 3).

Postoperatively, the patient was transferred to the intensive care unit. The management of the patient in the post-anesthetic period (approximately 24 hours in this case) included the evaluation and monitoring of vital functions and postoperative wound in order to detect possible hemorrhages, treatment of postoperative symptoms such as pain, nausea, vomiting, and antagonistic treatment of residual effects of anesthesia. The immediate postoperative evolution of the patient was good with a rapidly favorable evolution, early resumption of intestinal transit, and oral nutrition. On day 1 postoperatively, the patient was in good general condition, afebrile, balanced hemodynamically and respiratory, with a supple abdomen, mobile with respiratory movements, discreet pain on diffuse palpation, normal-looking surgical wound, normal diuresis with normochromic urine. Douglas drainage was 150 ml, without signs of active bleeding. It was decided to suppress the nasogastric tube at approximately 24 hours postoperatively and the patient was moved to a normal salon and continuing the prescribed treatment, oral water intake was instituted. On day 2 postoperatively the patient had intestinal movements, the general condition was good, the postoperative wound was normal, the 24-hour diuresis was normal, and the serous drainage from Douglas was minimal, the reason for which it was decided to suppress it. Day 3 postoperatively kept the patient’s favorable evolution, he was in good general condition, with discreetly painful abdomen at peri incisional level, no signs of peritoneal irritation, intestinal transit present for gas, normal diuresis, normochromic urines, and the drainage was approximately 100 ml, without other changes compared to the previous day and it was decided to suppress the Foley catheter, the patient having normal mobility. On day 4 the drain tube was suppressed maintaining minimal drainage, the digestive tolerance for solid foods was resumed, the intestinal transit for feces was present and she was informed about the possibility of discharge the next day. Day 6 postoperatively was the day when the patient was discharged, with good general condition, good digestive tolerance, intestinal transit for gas and stools, with postoperative wound looking normal for this day after the surgery, without other special mentions, with a treatment in case of symptoms like nausea, pain, constipation or diarrhea, and a thromboprophylactic treatment to be continued for 10 days and indication to maintain the abdominal binder 6 weeks after the surgery, and indications for the wound bandage. The patient was discharged 5 days after the surgical intervention without wound complications. The case had a favorable short-term prognosis however, the long-term prognosis can be influenced by the evolution of underlying diseases.

The patient received hydro-electrolytic, analgesic,
gastric antisecretory, antibiotic, antiemetic, and antibiotic treatment, as well anticoagulation for deep vein thrombosis prophylaxis.

The patient returned for control and removed the sutures according to the instructions. The colonoscopy performed a month after the outpatient operation was normal, the long-term evolution of the patient being favorable.

**DISCUSSION**

Accidentally ingestion of FBs is a common reason for presentation in the emergency department. They are identified in the digestive tract most commonly after ingestion mainly in children, elderly persons, psychiatric patients, drug addicts and in prisoners [10]. Most of the time the ingested FBs are represented by stones, small bones, like fish bones, metals and aluminum (batteries) [6]. Radiography is the main examination for evaluating these patients in order to visualize the object and to identify as well the most dangerous complications, e.g., digestive perforation, where a pneumoperitoneum is identified on the abdominal X-ray. In the majority of cases the swallowed foreign body appear as radiopaque on X-ray examination [11]. Sometimes FBs cannot be detected by an X-ray exam because the generate an inflammatory environment, such as covered digestive perforation, and the object is frequently found only during the surgery exploration. Upon localization of the FB the management plan is established. Depending on localization, shape and size of the FB is effectively extracted either by endoscopy or by surgery. In some simple cases, if the foreign body is in the rectal ampulla, it is extracted by rectal tract [12].

This paper presents a particular case of a patient hospitalized in our general surgery clinic in the Emergency Clinical Hospital of Bucharest. A FB was identified, only after exploratory laparotomy, as a toothpick in the transverse colon which perforated the colonic wall and the greater omentum. Less than 1% of cases of swallowed FBs lead to perforation [13].

The X-ray, the ultrasound examination, as well the CT scan, were not specified in this case because of the inflammatory reaction that the toothpick created in the transverse colon wall, causing a digestive perforation that was immediately covered by the great omentum as a natural defense mechanism of the body. This explains the non-specific chronic evolution of patient symptoms (chronic abdominal pain, episode of melena stools, intestinal transit disorders, impaired digestive tolerance, inaccurately delimited formation in the right iliac fossa two weeks after acute symptoms). The necessity of an exploratory laparotomy in order to find the exact cause and the specific surgical treatment was decided because of the bad evolution of the patient after two days of hospitalization. In the current case, the treatment was initiated as exploratory laparotomy, with the extraction of FB, followed by a colporrhaphy of the colonic perforation orifice, with a favorable evolution of the patient.

**CONCLUSION**

FBs can be ingested or introduced in the digestive tract causing obvious symptomatology, but sometimes, the body’s defense mechanism, such as covered perforation does not have a specific symptomatology, and the diagnosis is determined during the surgery. Numerous cases of ingestion of FBs are presented in the specialized literature, but the presented case has the particularity of a chronic evolution of the colonic perforation due to the great omentum that covers the perforated orifice causing a local inflammatory reaction and abscess.

**CONFLICT OF INTEREST**

The authors declare that they have no conflicts of interest.

**AUTHOR CONTRIBUTIONS**

ICP, MB, and BSG perform examinations and therapy on the patient. BSG and AN drafted the manuscript. RI contributed to the discussion section and prepared the images. ICP, AN, SLM, and BSG critically reviewed and revised the full article. All authors read and approved the final manuscript.

**DECLARATIONS**

*Ethics approval and consent to participate:* Ethical approval was not sought for the present study because it is not reporting research funding. Written consent was obtained from the patient or their relative for publication of the patient’s details.

*CONSENT FOR PUBLICATION*

We thank the patient for giving us written consent for publishing this study.
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