ABSTRACT

Background: Ingestion of foreign bodies is an old medical problem of decreasing occurrence. Several cases have been reported in the medical literature, and the diagnostic and therapeutic approaches must be applied in a multifaceted and differentiated manner.

Case Report: Our case concerns a 54-year-old female with accidental swallowing of a needle. We describe our diagnostic procedure with laparoscopic removal of the appendix due to fixation of the object in the right lower abdomen.

Discussion: The ingestion of foreign bodies is an old medical problem, although its incidence has decreased drastically due to changes in lifestyles. Today, it is rather the unusual cases and intentional ingestion that are in the forefront. Initial endoscopic treatment attempts are followed by the “wait-and-see” attitude in hopes of spontaneous passage that can be monitored via radiological methods. If the object does not pass naturally and is localized in the colon, what remains as a treatment option is endoscopy followed by surgery that can be performed in a minimally invasive manner.

Key Words: Ingestion of foreign bodies, Needle ingestion, Fluoroscopy guided laparoscopy, Appendix.

INTRODUCTION

Foreign bodies are ingested either accidentally or during autoaggressive behavior by patients suffering from psychiatric illnesses. The first reports go back to the early 1700s. At that time, not only was dressmaking/tailoring purely manual work leading to the swallowing of sewing needles often held between the lips, but eating of shot game was also still widespread. Today, the overall incidence has dropped to 0.005%.

Up to 1971, a total of 225 cases of foreign bodies in the appendix had been documented. Foreign bodies described can be anything from fishbones to intrauterine contraceptive devices. The most common, however, are needles and lead shot. One interesting series stems from Reddy, who examined 62 Inuit, who often showed ingestion of lead shot due to their natural way of life still practiced today and the associated tradition of hunting. The cases collected by Reddy show deposits of lead shot in the appendix, but with no complications during follow-ups after 2 to 13 years.

In addition to pediatric ingestions, those involving adults occur from time to time. In small children, especially in the case of benign objects like coins, spontaneous passage can be expected, not necessitating an invasive intervention; however, there are those cases requiring an interventional procedure.

CASE REPORT

We report the case of a 54-year-old female patient who accidentally swallowed a sewing needle. After an initial cervical sensation of a foreign body, treated by the patient by drinking liquids, the patient was completely free of symptoms upon admission. She had been referred by her general practitioner for monitoring. The initial abdominal X-ray already showed the needle projecting into the right lower abdomen. Laboratory work yielded no abnormalities.

After repeated X-rays of the abdomen without moving the needle, a computed tomographic (CT) scan of the abdomen was performed, where the needle seemed to be localized in front of Bauhin’s valve. This was followed...
by an orthograde intestinal irrigation intended to mobilize the needle in the direction of the rectum, and also in preparation for endoscopic retrieval. The patient remained free of complaints. The colonoscopy in conjunction with ileoscopy resulted neither in retrieval nor in a visualization of the object. We finally decided in favor of laparoscopy although the patient remained free of symptoms.

With the patient under general anesthesia in a supine position, a 10-mm trocar was inserted supraumbilically with subsequent creation of pneumoperitoneum. Additional 5-mm and 10-mm working trocars were implanted. Through the use of fluoroscopy guided laparoscopy and intraoperative simultaneous manipulation of the intestine, the localization matched to the appendix. During mobilization of the appendix base, the perforated needle showed up in the area of the small mesentery (Figure 3). The appendix was resected and retrieved as a whole with the needle.

The postoperative course was normal, and the patient was discharged 3 days after the surgical procedure in excellent medical condition.

The histological examination showed a 4 cm long and 0.8 cm wide appendix with a sewing needle in situ. Microscopically we found acute periappendicitis with local fibrinous-granulocytic peritonitis.

DISCUSSION

The ingestion of foreign bodies is a diagnosis first found in literature in 1735,1 but undoubtedly occurs to this day in the form of accidental or intentional pathology, and not only in populations with unusual lifestyles, such as the Inuit.5 The incidence has, without a doubt, drastically decreased due to a change in lifestyle, because accidental ingestion of lead shot in game, for instance, only happens rarely today. In our own patient cohort, we also found the random case of an accidental lead shot ingestion (Figure 4). Balch,2 in 1971, determined an incidence of 0.005% in 13,000 appendectomies compared with Collins7 who, in 1963, described an incidence of 3% in his examination of 71,000 appendectomy specimens, but includes natural foreign bodies, such as gall stones, in the appendix.

Independent of the incidence, there is the question of the diagnostic and therapeutic approach. First, there is the consciousness or lack thereof of the fact that an ingestion has occurred. In the case of an ingestion, an endoscopic retrieval can be attempted within the first 2 hours. Of course, the size of the passage is a limitation to the ingestion of the object, because objects that are too big either get stuck at one of the narrow sections of the esophagus or at the pylorus. However, if the size and condition of the object are known and passage is possible, the question of the next approach arises. Among the objects, in addition to the needles8,9 and lead shot,4,10–13 there are things such as a tongue studs14 or pieces of tooth replacement material.1 The cautious approach of pediatricians who even recommend dispensing with a radiological passage if there are no clinical irregularities can surely only be implemented in the case of benign objects such as the observed coins. If potentially dangerous objects are involved, and subject to their shape and condition, a diagnostically observant approach is indicated, 95% of all ingested objects pass through the intestine without incidents.15 The time of passage depends on the shape and weight of the object so that—as we also observed—a needle can reach the cecum within hours.1 In the cecum, there now exists the danger of the foreign body sinking due to its own relative weight compared with the stool in the surrounding small intestine.
and the location in the appendix lumen.\textsuperscript{2,16} Once in the appendix, continuation of a natural passage is improbable. Nevertheless, the location in front of or inside of the appendix must not necessarily result in a clinical symptom, as Reddy\textsuperscript{5} observes. Of course, pointed, thin objects that can lead to a perforation caused by the movement of the appendix and the cecum are dangerous.\textsuperscript{8,9} Once an object is stuck in the appendix, the risk of becoming symptomatic is 93\% in case of sharp foreign bodies with inflammation in 88\% and perforation in 70\%. Even round, smooth objects become symptomatic in 66\%. The pathophysiological explanation is not only the acute perforation due to sharpness of ingested bodies but also the fetal coating of objects with obstruction of the appendix lumen due to chronic inflammation with later decubital perforation.\textsuperscript{1} This pathomechanism of a one-way street with the danger of perforation does not only exist in the appendix, however, but also if a Meckel’s diverticulum is present.\textsuperscript{17}

If the object no longer moves and projects into the right lower abdomen or another rigid location in the abdomen, the decision regarding the next approach is difficult, especially in clinically unremarkable patients. Neither a CT scan nor other procedures can completely preclude ambiguities, especially because mobility is not out of the question after the examination. What remains as a diagnostic and possibly therapeutic alternative is a colonoscopy, in the course of which even nails can be retrieved from the appendix.\textsuperscript{18} If the result of this procedure remains negative, the next approach must be weighed in close consultation with the patient. If it is clinically unremarkable, a “wait-and-see” approach is possible if this is...

\textbf{Figure 2.} CT scan of the abdomen showing the needle in the area of the cecum or Bauhin’s valve.
what the patient wants. Every clinical change, however, must be an indication for surgical treatment, which is the last remaining option. In pediatric surgery, Sinha9 first and foremost recommends surgical treatment in the case of a needle ingestion, but only in isolated cases. This is certainly questionable. Hadi,14 on the other hand, describes surgery as the procedure of choice if the foreign object is located in the right lower abdomen, so that a position in the appendix must be assumed. We share this opinion.

The ingestion of foreign bodies is an old medical problem, although its incidence has no doubt decreased drastically due to a change in lifestyles, but the problem is still present and must be considered as a differential diagnosis. Also incidental, asymptomatic findings of lead shot in the appendix are documentable especially in hunters and their family. Today, it is rather the unusual cases and intentional ingestion that are in the forefront. Initial endoscopic treatment attempts are followed by the wait-and-see attitude hoping for spontaneous passage that can be monitored via radiological methods. If the object does not pass naturally and is localized in the colon, what remains as a treatment option is endoscopy followed by surgery that can be performed in a minimally invasive manner. A longer wait and see technique will bring no better outcome to the patient’s health when an object is stuck in the area of the appendix. An initial laparoscopic procedure can avoid further problems due to perforation in common with peritonitis.

Future limitations will be in the form of industrial production of modern materials, which can escape radiological visualization despite the fact that they may be stronger than steel. Then we will again be faced with diagnostic

Figure 3. Intraoperative visualization of the needle in the appendix with perforation.

Figure 4. Random finding of lead shot in the appendix during a topogram before CT abdomen.
difficulties and regress to the 18th century when the diagnosis could only be made intraoperatively.

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