

A novel technique for safe, non-surgical removal of ingested sharp objects at the ileo-caecal junction. Using the modification of an overtube

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Abstract

Background: The number of people ingesting of solid objects either for self-harm or pleasure is increasing, with this comes increasing challenges in extracting these objects with minimal complications. We describe a technique, using an overtube during colonoscopy, for removing objects from anywhere within the large bowel avoiding the need for surgery.

Methods: A patient that had intentionally swallowed a sharp object that had reached the ileo-caecal junction and was not passing naturally. In order to negate the need for surgery we removed the object with forceps during colonoscopy. In order to reduce the risk of perforation or injury at the sigmoid colon we inserted an overtube to a length of 40 cm into the colon and dropped the object into this before extracting it.

Results: The object was successfully removed with no complications.

Conclusions: The use of overtubes in removing objects from the large bowel has been suggested but not published in literature. We describe a technique using one to safely extract a sharp object from the ileo-caecal junction to protect the sigmoid colon.

Keywords

Foreign body removal; overtube; colonoscopy; ileo-caecal junction; non-operative

Abbreviations

ED: Emergency Department; CT: Computerised Tomography

Introduction

The ingestion of objects, either by accident or to cause self-harm is well documented. The majority of these cases will not require invasive intervention as the objects pass spontaneously with few complications [1]. Sharp objects, ingested in this way, however have an increased risk of perforation, while large objects risk causing obstruction. As such common practice is for the swift removal of sharp objects anywhere above and including the duodenum [2], for which several techniques and devices have been designed. There is also a growing practice seen in patients of inserting objects rectally for self-gratification and the techniques to extract these usually involve removal under general anaesthesia [3]. As a general rule however, once objects make it to the large bowel, they do not require removal and will pass naturally. In those cases where it has not passed after a few days the mainstay of treatment is surgery, in order to reduce the risk of perforation [2]. There are a paucity of cases whereby colonoscopy has been used to remove an object from the large bowel, and these tend to be objects close to the rectum or small in size [4,5]. We report a technique of using an overtube during colonoscopy for removal of a large sharp object from the caecum.

Case Vignette

A 34 year old lady with an extensive psychiatric history presented to the Emergency Department (ED) having ingested a large object. This patient was an inpatient at a secure mental health unit and had a history of self-harm by ingesting metallic objects. For this presentation she had managed to remove the nail file from a set of nail clippers and swallowed it. She was assessed in ED and she did not complain of any abdominal pain, her bloods were within normal limits and her chest x-ray showed no evidence of perforation. Her initial abdominal x-ray showed a 6 cm radiopaque density projected over the right upper quadrant (see figure 1). She was subsequently referred to the surgical team.

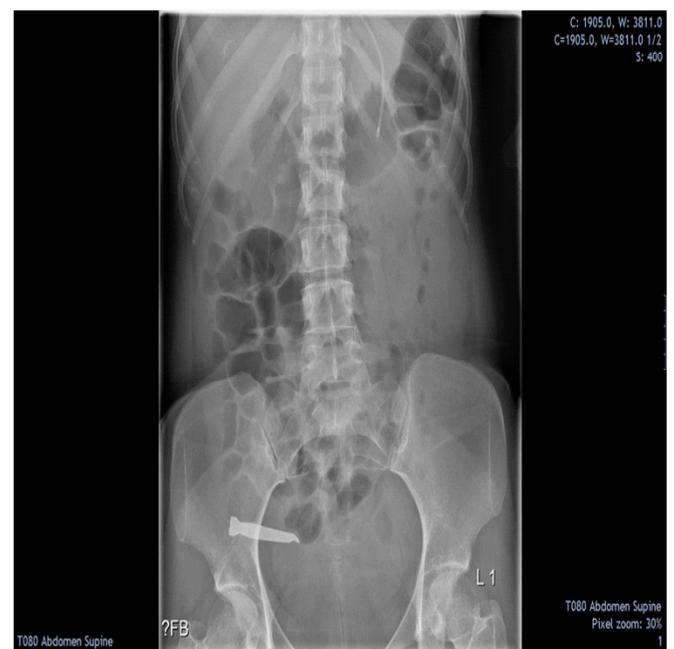
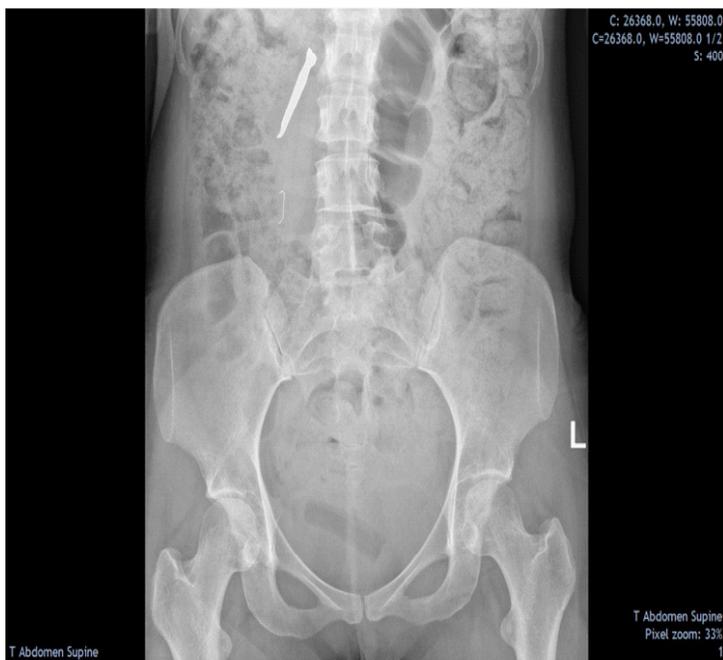


Figure 1: There is an unfurled staple projected over the right side the abdomen and a 6 cm radiopaque density projected over the right upper quadrant. There is no evidence of obstruction. Day of admission

Figure 2: The foreign body is in the right lower quadrant most likely at the ileocecal junction. The unfurled staple appears to have passed. 20 days after admission.

Since it appeared that the nail file had passed the second part of duodenum, the plan was made for conservative management as there was no sign of perforation or systemic instability. To encourage speedy passage, Moviprep (bowel preparation for colonoscopy) was used but to no avail. An abdominal X-ray 10 days post admission showed that the nail file had moved into caecum (see figure 2). On subsequent X-rays the object had moved no further.

A CT abdomen and pelvis with contrast was performed on day 21 showed no sign of local perforation or collection. The decision was then made to attempt removal endoscopically using an overtube in order to avoid surgical removal.

Retrieval

There were a handful of challenges with this case. Surgical management would be suboptimal as it would create a surgical scar or a stoma site and given this patient's history that could introduce a new port for her to insert objects to cause self harm. In addition to this we were not able to find any literature describing endoscopic techniques to remove objects of this size from the caecum or the right side of colon. Furthermore, the meandering shape of the sigmoid colon posed a challenge to remove the object endoscopically as it could fall on or cut the surface in this area and cause a perforation or bleed.

We subsequently theorised a way in which to extract the object as safely as possible without surgery, using an overtube. Overtubes are traditionally used for removal of sharp foreign bodies from the oesophagus or stomach. The tube is inserted over the endoscope and lines the oesophagus. The object is then grasped via forceps on the endoscope and then brought out through the overtube to ensure that the object does not cut the oesophagus.



Figure 3: Photograph taken during colonoscopy showing the sharp end of object firmly grasped by forceps. Object remained well held and positioned in the centre of the lumen during extraction.



Figure 4: Photograph of file after it had been removed

The procedure was performed under sedation. An Olympus 260 series colonoscope was used along with a 40 cm Guardus © overtube. The colonoscope was inserted upto the caecum where the sharp end of the object was grasped using forceps (see figure 3). The object was carefully withdrawn through the ascending and transverse colons while being positioned in the centre of the lumen throughout. As it approached the sigmoid colon, the overtube was extended into sigmoid colon and nail file brought inside the overtube. Subsequently the overtube and colonoscope were withdrawn without any damage to the sigmoid colon and the object was safely removed (see figure 4).

Discussion

Surgical resection for ingested foreign bodies is rare, it is necessary in just under 5% of cases. However of the cases which need surgery 53.8% are due to ileocaecal impaction [6] making this area a particularly problematic location in the management of these patients. Surgery itself however is not without complications with wound site infections, anastomotic leaks and failure of surgery being the most common. In addition to this, in those that frequently intentionally ingest objects (mainly those with developmental delay or psychiatric illness) a surgical scar or stoma provides an extra access point for attempting to self harm by inserting objects into themselves [6]. Therefore it is prudent to develop techniques to safely remove these objects without the need for surgery.

From a technical standpoint each case should be evaluated individually. This case is the first to ever describe using an overtube to remove a sharp object from the right side of colon. This is due to anatomical looping of the sigmoid colon to minimise the risk of perforation and mucosal damage.

Conclusion

In conclusion, ingested sharp objects carry with them the risk of perforation or obstruction. Should they reach the large bowel but not pass naturally then surgery is the conventional technique used. However this is not without complication both short and long term and is suboptimal in certain patient groups. We present a case which shows that colonoscopy with an overtube can be considered a safe and effective technique while avoiding the risks of perforation or surgery.

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