Rectal Foreign Bodies: What Is the Current Standard?

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Abstract

Keywords

- rectal foreign bodies
- rectal trauma
- rectal perforation
- rectal repair
- transanal approach
- endoscopy

Rectal foreign bodies represent a challenging and unique field of colorectal trauma. The approach includes a careful history and physical examination, a high index of suspicion for any evidence of perforation, a creative approach to nonoperative removal, and appropriate short-term follow-up to detect any delayed perforation.

Objectives: After completion of this article, the reader should understand the current evaluation and therapeutic management for patients with rectal foreign bodies.

Rectal foreign bodies have a storied history as part of anorectal trauma. The first described report on the management of retained rectal foreign bodies dates back to the 16th century,^{1,2} and the first case reports of the modern era were published in 1919.³ Since these reports, there has been a consistent volume of case reports and small series on the topic, as well as two large series (~100 cases each from Russia⁴ and the University of Southern California).⁵ The management of this intriguing problem has evolved with the addition of laparoscopic, endoscopic, and minimally invasive surgical options. Here we will review and describe the current elements of diagnosis, evaluation, and treatment of the inserted rectal foreign body.

Epidemiology

The mean age at presentation is 44 years, but ranges from 20 to over 90^{6–9} with a decidedly higher proportion of male patients (17–37:1).^{6,10} At a large, urban public hospital, there was an average of one rectally inserted foreign body per month seen by the trauma service⁵ however, the reported community experience is much less. The true incidence is not known, as many patients do not seek medical attention or management is underreported for obvious reasons.

The types of foreign bodies vary widely, as do the reasons for insertion. Objects encountered are most commonly household objects consisting of bottles and glasses (42.2%). Other objects include toothbrushes, deodorant bottles, food articles, knives, sports equipment, cell phones, flashlights, wooden rods, broomsticks, sex toys including dildos and vibrators, light bulbs, nails or other construction tools, Christmas ornaments, aerosol canisters, cocaine packets, and many more. The reasons for insertion in decreasing order of frequency are autoeroticism, concealment, attention-seeking behavior, “accidental,” assault, and to alleviate constipation.⁹ Some patients present immediately upon recognition of the inability to remove the object, whereas others may wait up to 2 weeks after insertion to present for evaluation.⁵

Diagnosis

Patients with rectal foreign bodies are often embarrassed about their condition and may seek to conceal the true nature of their visit to the emergency room. A high index of suspicion is required to accurately diagnose their condition. At the same time, the practitioner needs to maintain the utmost degree of professionalism. One must remember that these objects may be inserted under duress, as a means of assault, or as a manifestation of a psychiatric disorder. It is essential to be nonthreatening and nonjudgmental, despite the fact their initial history may be fabricated. Once the foreign body is

effectively managed, arrangements can be made for psychiatric evaluation and treatment as needed.

Common complaints include rectal or abdominal pain, constipation or obstipation, bright red blood per rectum, or incontinence. In up to 20% of cases, patients or someone accompanying them will not initially offer the concern of an inserted rectal foreign body as the chief complaint.⁶ A thorough history will often provide the diagnosis; however, concern for the possibility of assault or nonvoluntary placement of the object should remain high. Be prepared to provide emotional support for the patient, and have a chaplaine in the room when performing the physical exam.

Evaluation

The first step in the evaluation of a patient should be the assessment for peritonitis, as this requires urgent laparotomy and suggests a perforation with intraperitoneal contamination. Clinical signs such as tachycardia, fever, and hypotension are particularly worrisome. Routine laboratory investigation is unnecessary, unless required for surgery. If there is any question, an abdominal series or upright abdominal radiograph can reveal the presence of free air and the location of the object relative to the pelvic floor. Abdominal imaging, however, is not routinely required in the evaluation of the rectal foreign body patient. Although some authors suggest imaging assists with identifying the shape and location of an object,¹¹ there is no evidence to suggest the shape of an object predicts successful removal. It has been shown that objects located in the sigmoid colon are 2.5 times more likely to require operative intervention versus those located more distally in the rectum.⁵ However, proximal location of an object is not an indication to delay attempts at removal. ►**Figure 1** demonstrates a plain film of the abdomen of a patient evaluated for a rectal foreign body. The plain film shows the absence of free air and the distal location of this aerosol can in the rectum.

A careful digital rectal examination is the most informative component of the evaluation process, as it indicates the proximity of the object to the pelvic floor. It is essential to also evaluate and document the functional status of the sphincter complex both by exam and clinical history. Because most patients with rectal foreign bodies are young, they are unlikely to have preexisting fecal incontinence; however, incontinence may be associated with sphincter damage from either the trauma of insertion or removal of object. If acute sphincter damage is identified, one small series demonstrated good functional long-term results with sphincter repair.¹²

If a foreign body is not palpable by rectal exam, further evaluation with rigid or flexible proctosigmoidoscopy should be performed. Alternatively, as discussed above, plain abdominal imaging may be obtained.

Classification

The American Association for the Surgery of Trauma Rectum Injury Scale may be used to assess injury from rectal foreign

Figure 1 Plain film of the abdomen of a patient evaluated for a rectal foreign body demonstrating no free air and the distal location of an aerosol can.

bodies (see ►**Table 1**).¹³ Although originally developed for use in penetrating and blunt trauma, use for inserted foreign bodies is also appropriate.

Another method of classification is based on reason for insertion (voluntary vs involuntary and sexual vs nonsexual). Voluntarily inserted objects include body packers, which is the one group of subjects where objects should be left to pass spontaneously, as any manipulation may cause rupture with catastrophic consequences for the host individual.¹⁴ Involuntarily inserted objects often require an enhanced degree of care in dealing with the patient, as these often represent rape or abuse victims, and unfortunately commonly affect children.

A third and final method of classification is based on location of the object. There is some evidence that objects located above the rectum on presentation are more likely to require operative intervention.⁵ Although some advocate waiting for these objects to progress distally,¹⁵ this does not always occur and attempts at removal should proceed regardless of location.

Extraction Techniques

If peritonitis is present or if a patient is unstable, no attempts at bedside extraction should be made and the patient should be transported to the operating suite for emergent laparotomy. Initial resuscitation with intravenous fluids and administration of intravenous antibiotics should be given prior to incision. If a perforation is suspected, a plain abdominal film can confirm the diagnosis rapidly by the presence of pneumoperitoneum and expedite the decision to operate. In the vast majority of patients, however, these signs will not be present and a less invasive method can be attempted.

Table 1 Rectum Injury Scale of the American Association for the Surgery of Trauma

Grade	Lesion	Description
I	Hematoma or laceration	Contusion or hematoma without devascularization Partial thickness laceration of wall
II	Laceration	Full-thickness laceration of wall that compromises < 50% of circumference
III	Laceration	Full-thickness laceration of wall that compromises > 50% of circumference
IV	Laceration	Full-thickness laceration that extends into the perineum
V	Vascular	Devascularized segment of rectum

Source: Adapted from Moore, Cogbill, Malangoni, et al.¹³

Transanal Extraction

There are a large variety of described extraction techniques; generally, one should proceed from the least invasive to the most invasive means of extraction. This will result in the best chance for success with the lowest risk to the patient. Unless signs of peritonitis are present, which necessitate emergency laparotomy, an attempt at bedside extraction in the emergency department should always be made. This is successful in removing the foreign body in 60 to 75%.^{5,15,16} This attempt should be performed with local anesthesia, either with or without conscious sedation.

Patients should be positioned in the lithotomy position with reverse Trendelenburg angulation. A perianal block should be performed with a local anesthetic if the object is not readily extractable. This can be supplemented with the use of conscious sedation using fentanyl, versed, propofol, or ketamine. This aids in full relaxation of the patient's abdominal wall musculature and anal sphincter muscles, which is important for successful extraction. Suprapubic or sigmoid pressure applied by an assistant helps move an object caudally and prevents cephalad migration with difficult to grasp objects. Alternatively, the patient can be asked to perform a Valsalva maneuver. Finally, sufficient lubrication should be used to allow transanal extraction. Sharp objects should not be grasped by this route and should prompt use of endoscopic techniques or other tools.¹⁷

Tools for grasping objects within reach include a variety of instruments designed for other purposes. Bone cutters, obstetric forceps, ring forceps, Kocher clamps, suction devices, and various grasping forceps have been used. If simple grasping is not possible, the object may potentially be scooped out by using a cup placed above the object that is filled with plaster of paris, superglue, or other semisolid substance. This technique is performed by inserting a wick in the cup that allows pressure to be applied from below, thereby scooping the object out. Similarly, a balloon catheter such as a Foley may be used to pull the foreign body after inflation of the balloon above the object. A Foley can also assist in breaking the vacuum seal that is created by many objects within the rectal vault. By placing the Foley alongside the object in the rectum, the seal can be broken and the object removed.

Body packers (those who have inserted packets containing drugs) should have objects removed with digital rectal exam only, as graspers or other objects are more likely to cause

perforation. Any systemic signs of perforation may warrant laparotomy with subsequent supportive care of any overdose geared toward the drug ingested. This can usually be obtained by history even in reluctant patients once they understand the life-threatening implications of overdose.¹⁸ If narcotics are suspected, it is wise to have Narcan immediately available should the package perforate.

There is some evidence that surgeons have a higher success rate at bedside transanal extraction than emergency medicine physicians.⁵ The exact reasons for this are not clear, but may represent a willingness to be more aggressive in attempts to remove the object given the ability to fix resultant damage in the operating room.

Endoscopic Extraction

If the object is not within reach for removal by hand or with the tools noted above, rigid or flexible sigmoidoscopy should be performed to visualize and attempt extraction. The use of enemas and stimulants to propel the object distally is not recommended, as these may cause further damage to the rectal wall. When the object is visualized through the scope, a polypectomy snare may be used to "lasso" the foreign body for extraction.¹⁰ Other techniques include using biopsy forceps through a rigid endoscope, or more advanced endoscopic techniques. A guidewire and balloon dilator may be used to inflate a 40-mm balloon proximal to the object in question. This may also require the addition of fluoroscopy to assist in the removal of the object.¹⁹ The use of endoscopy allows a practitioner to reach objects lodged higher up in the rectum and provides an additional means of noninvasive extraction before proceeding to surgery.

Operative Extraction

If the above techniques are not successful, the patient requires general anesthesia. An exam under anesthesia should be the first procedure attempted, as paralysis and the use of a general anesthetic may allow transanal extraction with complete relaxation. If not, there is again a progression of minimally invasive to maximally invasive means for extracting the object. A laparoscopic-assisted technique has been described, whereby an object may be milked inferiorly with direct intraabdominal visualization using a laparoscope and grasper to allow transanal extraction.²⁰ Similarly, a lower midline minilaparotomy may be used to directly squeeze the rectum and allow transanal removal. Finally, if none of these

techniques work, a colotomy with transabdominal removal may be required. This is also the technique usually required in an emergent setting where perforation has occurred. If gross contamination or spillage is present, a Hartmann procedure may be the prudent procedure. However, if tissue quality is good, a primary repair or short segment resection may be performed. This approach is well supported in the trauma literature with experience of blunt and penetrating trauma.^{21,22}

Postextraction Care

After the removal of an object, one must be concerned that the trauma from insertion or extraction caused rectal injury. This is often mild and limited to ulceration, but may be in the form of a full-thickness perforation. This can be assessed by several means. Most commonly, patients are observed for several hours for the development of any signs of toxicity. Additionally, proctosigmoidoscopic examination has been considered standard following removal to assess any mucosal abnormalities. Lake et al, however, described endoscopic examination in only less than half of cases, and only 16% of these revealed any mucosal abnormalities with no perforations. They concluded significant injury following removal of a foreign body was unlikely if it was not present on presentation.⁵ Most authors, however, recommend endoscopic evaluation as a means of visually assessing the degree of mucosal damage.¹⁰

The main purpose of follow-up examination or observation is to detect any perforation. If there is any question, a computed tomography scan with rectal contrast or rectal enema with water-soluble contrast can detect this potentially life-threatening complication. After diagnosis, stable patients may be managed with antibiotics. Patients with signs of toxicity including fever, hypotension, or severe pain should be managed by surgical exploration. Depending on the level of perforation, options for surgical management are similar to those described above. If the perforation is easily identified, good-quality tissue is present, and there is a lack of significant contamination, a primary repair may be performed. However, for significant pelvic sepsis, a large amount of contamination, and in the presence of poor-quality tissues, a diversion and drainage technique should be performed with debridement of the source.

There are no good long-term studies, and few articles describe long-term follow-up. One series included a telephone survey of 30 patients with a previous retained foreign body. None had any incontinence to solid, liquid, or gas with a follow-up ranging from 8 to 96 months.⁷ Although uncommon, complications from sphincter damage may include incontinence, fistulas, and stenosis.⁸ The most important distinction is that of peritonitis versus no peritonitis, as data show that the presence of peritonitis translates into longer hospital stays and worse outcomes.⁸

Finally, it is important to document sphincter function postextraction. If there is any evidence of sphincter dysfunction, many of these will improve with observation. As the tissues are often contaminated, and there are good functional

Figure 2 Algorithm for the treatment of rectal foreign bodies.

results without the need for immediate surgical therapy, any injury is left open. If incontinence remains, a delayed sphincteroplasty may be performed with good results.¹² A follow-up of at least 3 months is recommended before considering any sphincter repair.⁶

Summary

Rectal foreign bodies represent a challenging and unique field of colorectal trauma. The important factors in dealing with these patients is fourfold: careful history and physical with respect for what is often an embarrassing problem, a high index of suspicion for any evidence of toxicity that suggests perforation (and requires emergent laparotomy), a creative approach to nonoperative removal using tools originally designed for other uses, and appropriate short-term follow-up to detect any delayed perforation (which may be a life-threatening problem). By adhering to these four principles, patients with retained rectal foreign bodies can be managed safely and effectively. In the modern era, we have a variety of tools including endoscopy and laparoscopy that may allow extraction of difficult objects possible using a minimally invasive approach. —Figure 2 illustrates our summary algorithm for the approach to rectal foreign bodies.

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