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CASE REPORT

Management of rectal foreign bodies: Description of a new technique and clinical practice guidelines

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Abstract

A number of techniques have been described to remove rectal foreign bodies. In this report, a novel endoscopic technique using a pneumatic dilatation balloon normally used in achalasia patients is presented. In addition, a systematic review of the literature was performed for non-operative methods to remove foreign bodies from the rectum. These results are summarised, presented as a practical at-a-glance overview and a flow chart is offered to guide the clinician in treatment decisions. The design of the flow chart was based on the aims to treat the patient preferably on an outpatient basis with minimally invasive techniques and if possible under conscious sedation rather than general anaesthesia.

Key words: Foreign body; Rectum; Rectal; Removal; Review

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INTRODUCTION

Intentional or unintentional insertion of rectal foreign bodies is not uncommon and often poses a serious challenge on the clinician. Objects can be inserted for diagnostic or therapeutic purposes, or self-treatment of anorectal disease, by criminal assault and accident or, most commonly, for sexual purposes. Most patients with rectal foreign bodies present to the emergency room usually after efforts to remove the object at home. Many endoscopic and surgical techniques to remove rectal foreign bodies have been described in the literature and the reported variety in foreign bodies is as large as the number of techniques used to remove them[1-46]. The descriptions in the available literature are anecdotic and consist largely of case reports or case series[1-46].

In this report, a novel endoscopic technique to remove rectal foreign bodies using a pneumatic dilatation balloon normally used in achalasia patients is presented. In addition, a systematic review of the literature was performed for non-operative methods to remove foreign bodies from the rectum. These results are summarized and a practical flow chart is presented to guide the clinician in his or her treatment decisions.

CASE REPORT

A 19-year-old man presented at the emergency department, 12 h after insertion of a high pressure container with tanning spray into his rectum. A plain abdominal radiograph (Figure 1) showed the container in the rectosigmoid region. There were no signs of perforation. A flexible sigmoidoscopy was performed under conscious sedation. The object was located just above the rectosigmoid junction. The container could not be extracted by bimanual manipulation. An attempt to remove the object with conventional endoscopic instruments, such as polypectomy snares, was unsuccessful.

The sigmoidoscope could be passed alongside the foreign body to its proximal end. A guide wire was left behind with the sigmoidoscope removed. Subsequently, a 40 mm pneumatic dilatation balloon (Rigiflex®, Boston Scientific), normally used in achalasia patients, was inserted over the guide wire and inflated just above the container (Figure 2). For safety purposes, the sigmoidoscope was reintroduced alongside the catheter of the balloon to allow endoscopic visual control of

Figure 1 Plain abdominal radiograph showing the foreign body impacted in the rectosigmoid.

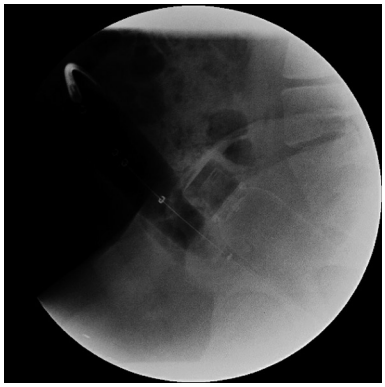

Figure 2 Lateral view of abdominal radiograph depicting the foreign body with the achalasia balloon inflated just above the container.

the distal end of the container in the rectum. Gentle traction was exerted on the balloon catheter, and the container was successfully removed under fluoroscopic and endoscopic control (Figure 3).

DISCUSSION

A large number of surgical and non-surgical techniques have been described to remove rectal foreign bodies[1-46]. Our case illustrates that for removal of foreign bodies retained in the rectosigmoid, extraction with a pneumatic dilatation balloon, inflated above the foreign body, may be an elegant and safe alternative when conventional techniques fail. Our technique has not been described before as revealed by a systematic review of the literature. We performed a systematic PubMed search from 1966 to present, using the search terms 'rectal', 'rectum', 'colorectal', 'foreign', 'bodies' and 'endoscopic'. Only reports in English were included. The results of the systematic search of the literature, specified for the type of foreign body, are summarized in Table 1[1-36]. Table 1 also summarizes endoscopic techniques and non-endoscopic techniques for removing foreign bodies. In addition to the reports presented in the Table 1, several case series have been published without detailed information on the techniques used to remove various foreign bodies[18,22,25,37-46].

An algorithm was provided to guide the clinician in his or her treatment decisions, partly based on the methods presented in the Table 1 (Figure 4). We included only those methods most commonly used and excluded rare treatment variants.

The first step in the evaluation is that one should always be aware of the possibility of a large bowel perforation and perform radiological investigations. Plain abdominal radiography or water soluble contrast enemas may be helpful. An abdominal X-ray will also provide information on the localization of the foreign body, whether it is below or above the rectosigmoid junction. If perforation of the bowel has occurred, immediate laparotomy is warranted. If there are no signs of perforation, several management approaches can be tried. Our aim was to treat the patient on an outpatient basis with minimally invasive techniques and preferably under conscious sedation instead of general anaesthesia.

First, digital removal of the object should be attempted, if necessary with the patient at different positions. If this approach fails, one can try bimanual manipulation. The next step is the insertion of an endoscope with subsequent attempts to grasp the foreign body with regular endoscopy accessories like polypectomy snares. When this fails, it may be helpful to

Figure 3 The removed container.

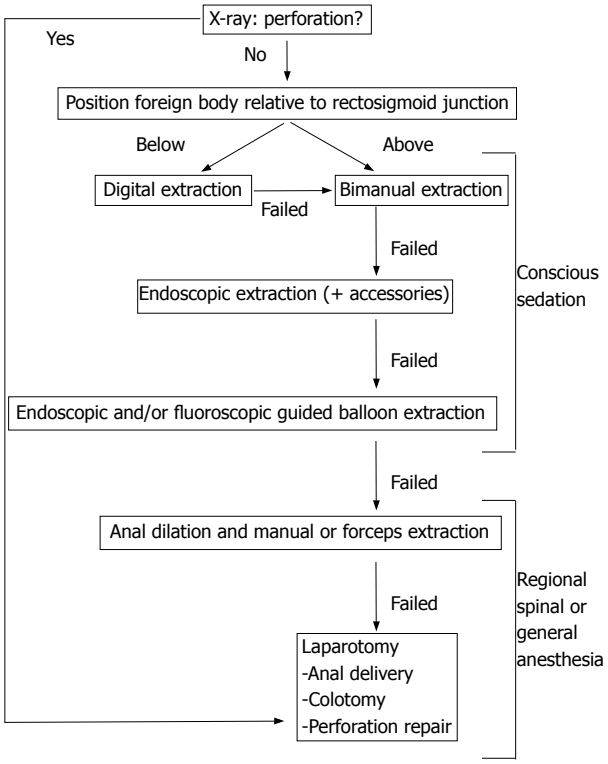

Figure 4 Algorithm for the removal of a colorectal foreign body.

Table 1 Overview of reports on endoscopic and non-endoscopic removal of rectal foreign bodies

Type foreign body	Technique	Anaesthesia	Author[Ref.]
Ballpoint pen	Polypectomy snare[1]	-	Richter[1]
Water filled balloon	Puncture and forceps[1]	-	Wolf[2]
Chicken bone	Polypectomy snare[1]	-	Tarnasky[3]
Toothpick	Polypectomy snare[1]	-	Over[4]
Apple	Defragmentation by APC[1]	None	Glaser[5]
Glass bottle	Biopsy forceps[1]	General	Huang[6]
Vibrator	Polypectomy snare[1]	None	Huang[6]
Glass test tube	Inflated Sengstaken tube[1]	-	Hughes[7]
Test tube	Polypectomy snare[1]	-	Kantarian[8]
Enema tip	Polypectomy snare[1]	-	Kantarian[8]
Vibrator	Polypectomy snare, biopsy forceps[1]	-	Kantarian[8]
Pencil	Polypectomy snare[1]	-	Vemula[9]
Iron bar	2-channel colonoscope and wires[1]	-	Ahmed[10]
Bottle neck	Inflated Foley cathether[1]	General	Humes[11]
Spray container	Achalasia balloon[1]	None	Present report
Spongy toy ball	Obstetric vacuum extractor	General	Feigelson[12]
Vibrator	Obstetrical forceps, anal dilation	Local	Haft[13]
Vibrator	Uterine vulsellum	Local	Levin[14]
Aftershave bottle	Rubber-shod bone olding clamp	Spinal	Siroospour[15]
Chicken bone	Digitally	None	Davies[16]
Aerosol-can Cap	Tenaculum forceps, anal dilatation	General	Aquino[17]
Vase	Filling with plaster	General	Couch[18]
Glass jar	Extraction with plaster rolls	Spinal	Graves[19]
Glass jar	Endotracheal tube, anal dilation	Local	Garber[20]
Apple	Bimanual manipulation	Local	Sharma[21]
Glass jar	Inflated Foley catheter	General	Yaman[22]
Glass bottle	Obstetric vacuum cup	General	MacKinnon[23]
Glass bulb	3 inflated Foley catheters	-	Diwan[24]
Thermometer	Biopsy forceps	General	Huang[6]
Vibrator	Transanal Kocher clamps	Local	Huang[6]
Bowling bottle	Obstetric forceps	General	Huang[6]
Perfume bottle	Manually	Spinal	Busch[25]
Piece of wood	Manually	General	Jansen[26]
Toothbrush case	Inflated Fogarty catheter	-	Wigle[27]
Oven mitt	Forceps after anal dilation	General	Losanoff[28]
Sink waste pipe	Obstetric forceps	General	Peet[29]
Metallic boule	Electromagnet	General	Coulson[30]
Carrot	Myomectomy screw	-	Vashist[31]
Glass	Obstetric vacuum extractor	Spinal	Johnson[32]
Rubber ball	Manual extraction, anal dilation	General	Nivatvongs[33]
Wooden rod	Bimanually, anal dilation	Spinal	Nivatvongs[33]
Bottle	Manually after anal dilation	General	Gopal[34]
Dildo	Myomectomy screw	-	Clark[35]
Light bulb	Abdominal compression	Spinal	Konishi[36]

-: No description; APC: Argon-plasma coagulation; [1]Endoscopic removal of rectal foreign bodies.

use devices that can be inflated in the rectosigmoid, such as a Foley catheter or an achalasia balloon. Such a device prevents a vacuum that might develop upon extraction of the foreign body and may also be directly used to remove the object.

If these interventions fail, we refer the patients to the operating theatre. Full relaxation of the anal sphincter muscles can be achieved by local, spinal or general anaesthesia. Sometimes, bimanual manipulation of the relaxed abdominal wall under spinal or general anaesthesia may evade surgery. Patients should be consented for a laparotomy prior to general anaesthesia should the manual or endoscopic removal fail.

Finally, when conservative measures fail, laparoscopic or laparotomic approaches are indicated. After removal, sigmoidoscopy is generally recommended to rule out perforations. In the largest series of patients with rectal foreign bodies described thus far (n = 93), it was found that objects retained for more than 2 days, those larger than 10 cm and those located proximal to the rectum increase the likelihood of surgery[37].

In conclusion, many techniques are available for the extraction of rectal foreign bodies. If possible, patients should be treated with minimally invasive techniques and preferably on an outpatient basis under conscious sedation.

REFERENCES

1 **Richter RM**, Littman L. Endoscopic extraction of an unusual colonic foreign body. *Gastrointest Endosc* 1975; **22**: 40
2 **Wolf L**, Geraci K. Colonscopic removal of balloons from the bowel. *Gastrointest Endosc* 1977; **24**: 41
3 **Tarnasky PR**, Newcomer MK, Branch MS. Colonoscopic diagnosis and treatment of chronic chicken bone perforation of the sigmoid colon. *Gastrointest Endosc* 1994; **40**: 373-375

4 **Over HH**, TOzUn N, AvSar E. Toothpick impaction: treatment by colonoscopy. *Endoscopy* 1997; **29**: S60-S61
5 **Glaser J**, Hack T, Rubsam M. Unusual rectal foreign body: treatment using argon-beam coagulation. *Endoscopy* 1997; **29**: 230-231
6 **Huang WC**, Jiang JK, Wang HS, Yang SH, Chen WS, Lin TC, Lin JK. Retained rectal foreign bodies. *J Chin Med Assoc* 2003; **66**: 607-612
7 **Hughes JP**, Marice HP, Gathright JB Jr. Method of removing a hollow object from the rectum. *Dis Colon Rectum* 1976; **19**: 44-45
8 **Kantarian JC**, Riether RD, Sheets JA, Stasik JJ, Rosen L, Khubchandani IT. Endoscopic retrieval of foreign bodies from the rectum. *Dis Colon Rectum* 1987; **30**: 902-904
9 **Vemula NR**, Madariaga J, Brand DL, Hershey H. Colonoscopic removal of a foreign body causing colocutaneous fistulas. *Gastrointest Endosc* 1982; **28**: 195-196
10 **Ahmed A**, Cummings SA. Novel endoscopic approach for removal of a rectal foreign body. *Gastrointest Endosc* 1999; **50**: 872-874
11 **Humes D**, Lobo DN. Removal of a rectal foreign body by using a Foley catheter passed through a rigid sigmoidoscope. *Gastrointest Endosc* 2005; **62**: 610
12 **Feigelson S**, Maun D, Silverberg D, Menes T. Removal of a large spherical foreign object from the rectum using an obstetric vacuum device: a case report. *Am Surg* 2007; **73**: 304-306
13 **Haft JS**, Benjamin HB, Wagner M. Vaginal vibrator lodged in rectum. *Br Med J* 1976; **1**: 626
14 **Levin SE**, Cooperman H, Freilich M, Lomas M. The use of a curved uterine vulsellum for removal of rectal foreign bodies: report of a case. *Dis Colon Rectum* 1977; **20**: 532-533
15 **Siroospour D**, Dragstedt LR 2nd. A large foreign body removed through the intact anus: report of a case. *Dis Colon Rectum* 1975; **18**: 616-619
16 **Davies DH**. A chicken bone in the rectum. *Arch Emerg Med* 1991; **8**: 62-64
17 **Aquino MM**, Turner JW. A simple technique for removing an impacted aerosol-can cap from the rectum. *Dis Colon Rectum* 1986; **29**: 675
18 **Couch CJ**, Tan EG, Watt AG. Rectal foreign bodies. *Med J Aust* 1986; **144**: 512-515
19 **Graves RW**, Allison EJ Jr, Bass RR, Hunt RC. Anal eroticism: two unusual rectal foreign bodies and their removal. *South Med J* 1983; **76**: 677-678
20 **Garber HI**, Rubin RJ, Eisenstat TE. Removal of a glass foreign body from the rectum. *Dis Colon Rectum* 1981; **24**: 323
21 **Sharma H**, Banka S, Walton R, Memon MA. A novel technique for nonoperative removal of round rectal foreign bodies. *Tech Coloproctol* 2007; **11**: 58-59
22 **Yaman M**, Deitel M, Burul CJ, Shahi B, Hadar B. Foreign bodies in the rectum. *Can J Surg* 1993; **36**: 173-177
23 **Mackinnon RP**. Removing rectal foreign bodies: is the ventouse gender specific? *Med J Aust* 1998; **169**: 670-671
24 **Diwan VS**. Removal of 100-watt electric bulb from rectum. *Ann Emerg Med* 1982; **11**: 643-644
25 **Busch DB**, Starling JR. Rectal foreign bodies: case reports and a comprehensive review of the world's literature. *Surgery* 1986; **100**: 512-519
26 **Jansen AA**. Foreign body in the rectum. *N Z Med J* 1969; **70**: 174-175
27 **Wigle RL**. Emergency department management of retained rectal foreign bodies. *Am J Emerg Med* 1988; **6**: 385-389
28 **Losanoff JE**, Kjossev KT. Rectal "oven mitt": the importance of considering a serious underlying injury. *J Emerg Med* 1999; **17**: 31-33
29 **Peet TN**. Removal of impacted rectal foreign body with obstetric forceps. *Br Med J* 1976; **1**: 500-501
30 **Coulson CJ**, Brammer RD, Stonelake PS. Extraction of a rectal foreign body using an electromagnet. *Int J Colorectal Dis* 2005; **20**: 194-195
31 **Vashist MG**, Arora AL, Salil. Screwing a carrot out of the rectum. *Indian J Gastroenterol* 1997; **16**: 120
32 **Johnson SO**, Hartranft TH. Nonsurgical removal of a rectal foreign body using a vacuum extractor. Report of a case. *Dis Colon Rectum* 1996; **39**: 935-937
33 **Nivatvongs S**, Metcalf DR, Sawyer MD. A simple technique to remove a large object from the rectum. *J Am Coll Surg* 2006; **203**: 132-133
34 **Gopal S**. A bottle in the rectum. *J Indian Med Assoc* 1974; **62**: 24-25
35 **Clark SK**, Karanjia ND. A cork in a bottle--a simple technique for removal of a rectal foreign body. *Ann R Coll Surg Engl* 2003; **85**: 282
36 **Konishi T**, Watanabe T, Nagawa H. Impaction of a rectal foreign body: what is the final approach before surgery? *Dis Colon Rectum* 2007; **50**: 262-263; author reply 263
37 **Lake JP**, Essani R, Petrone P, Kaiser AM, Asensio J, Beart RW Jr. Management of retained colorectal foreign bodies: predictors of operative intervention. *Dis Colon Rectum* 2004; **47**: 1694-1698
38 **Clarke DL**, Buccimazza I, Anderson FA, Thomson SR. Colorectal foreign bodies. *Colorectal Dis* 2005; **7**: 98-103
39 **Rodriguez-Hermosa JI**, Codina-Cazador A, Ruiz B, Sirvent JM, Roig J, Farres R. Management of foreign bodies in the rectum. *Colorectal Dis* 2007; **9**: 543-548
40 **Cohen JS**, Sackier JM. Management of colorectal foreign bodies. *J R Coll Surg Edinb* 1996; **41**: 312-315
41 **Barone JE**, Sohn N, Nealon TF Jr. Perforations and foreign bodies of the rectum: report of 28 cases. *Ann Surg* 1976; **184**: 601-604
42 **Kouraklis G**, Misiakos E, Dovas N, Karatzas G, Gogas J. Management of foreign bodies of the rectum: report of 21 cases. *J R Coll Surg Edinb* 1997; **42**: 246-247
43 **Eftaiha M**, Hambrick E, Abcarian H. Principles of management of colorectal foreign bodies. *Arch Surg* 1977; **112**: 691-695
44 **Nehme Kingsley A**, Abcarian H. Colorectal foreign bodies. Management update. *Dis Colon Rectum* 1985; **28**: 941-944
45 **Ooi BS**, Ho YH, Eu KW, Nyam D, Leong A, Seow-Choen F. Management of anorectal foreign bodies: a cause of obscure anal pain. *Aust N Z J Surg* 1998; **68**: 852-855
46 **Viceconte G**, Viceconte GW, Bogliolo G, Pietropaolo V, Dell' Anna A, Montori A. Endoscopic removal of foreign bodies in the large bowel. *Endoscopy* 1982; **14**: 176-177

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