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A review of gastrointestinal foreign bodies

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SUMMARY

Gastrointestinal tract (GIT) foreign bodies represent a significant clinical problem in the Emergency Department, causing a high degree of financial burden, morbidity and mortality. A large variety of foreign bodies are accidentally ingested or inserted into the GIT in different age groups.

This a retrospective review of 38 patients who presented to the Emergency Department with GIT foreign bodies between January 2001 and December 2004. Computer database and case note search of patients' personal data, nature of the foreign objects and mode of entry to the GIT were recorded.

There were 30 males and eight females (M : F ratio of 3.75:1) with an age range of 10 months to 87 years (median age 25.5 years). Foreign body ingestion/insertion was accidental in 14 patients, deliberate in 11, for anal erotism in 11 and as a result of assault in two cases. The median time before presentation was 12 h, and the mean length of hospital stay was 1.7 days. Treatment was conservative in 15 patients; five patients had gastroscopic retrieval; 15 patients underwent examination under anaesthetic, retrieval and proctosigmoidoscopy and three patients underwent laparotomy for impacted foreign bodies.

GIT foreign body ingestion or insertion is common; however, majority of cases can be successfully managed conservatively.

Keywords: Gastrointestinal tract; foreign body; erotism; conservative

BACKGROUND

Gastrointestinal tract (GIT) foreign body ingestion or insertion poses a significant clinical problem, causing a significant degree of morbidity and mortality. A total of 1500–1600 deaths occur annually as a result of foreign body ingestion/insertion in the US (1). The problem is encountered in all age groups; however, foreign body ingestion is commoner in the paediatric age group and the peak incidence is between 6 months and 6 years (2,3). Foreign body ingestion is rare in adults and usually occurs accidentally or in those with psychiatric problems, behavioural disorders, emotional disturbance, mental retardation or impaired judgement caused by alcohol (2,3). Rectal foreign bodies are uncommon in children, and when they occur in adults, they are either used for autoerotic stimulation or result from sexual assault.

This is a review of our experience in managing GIT foreign bodies in a District General Hospital in the Southeast of London.

PATIENTS AND METHODS

This is a retrospective review of patients presenting to the Emergency Department with GIT foreign bodies between January 2001 and December 2004. The hospital computer database was used to identify patients, and information was gathered from case notes, recording patients' personal data, the nature of the foreign objects and mode of entry to the GIT and whether the reason for insertion was deliberate, accidental or due to assault. Clinical presentation, length of time before presentation, diagnosis, mode of treatment, duration of hospital stay and complications were all noted. Analysis was performed by SPSS version 11.5 software (SPSS Inc., Chicago, IL, USA) and descriptive statistics presented.

RESULTS

Thirty-eight patients were seen in our centre over a 4-year period; there were 30 males and eight females (M : F ratio of 3.75:1) as shown in Figure 4. The ages of the patients ranged from 10 months to 87 years (median age 25.5 years). Foreign body insertion was accidental in 14 patients, deliberate in 11, for anal erotism in 11 and as a result of assault in two cases.

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Table 1 Types of gastrointestinal tract foreign body ($n = 38$)

Types of foreign body	*Number of patients*	*Percentage*
Four bags of cocaine	1	2.6
AA battery	3	7.9
Aerosol cap	4	10.5
Baby wipe	1	2.6
Broken bottle with cap	1	2.6
Button battery	2	5.3
Clip, blade, battery	1	2.6
Cocktail stirrer	1	2.6
Coins	7	18.4
Fish bone	1	2.6
Food bolus	1	2.6
Glass jar	3	7.9
Hair clip	2	5.3
Knife file	1	2.6
Metal blade	4	10.5
Phytobezoar	1	2.6
Plastic object	1	2.6
Plastic toy	1	2.6
Vibrator	2	5.3
Total	38	100.0

The spectrum of foreign bodies ingested or inserted is shown in Table 1 and in Figures 1, 2 and 3. The time before presentation was between 1 h and 168 h (median time 12 h), and length of stay in hospital was 1–8 days (mean 1.7 days). Presenting clinical features are shown in Table 2 and associated psychosocial problems in Table 3. Eight patients had presented with same problem in the past, the number of previous attempts ranged from one to six.

Biplanar x-ray was the main diagnostic tool used and was positive in 33 cases. Four foreign bodies were lodged in the oesophagus, five in the stomach, two in the duodenum, five in the jejunum, three in the ileum, one in the colon, one in the rectosigmoid region and 12 in the rectum. One of our patients had inserted an AA battery into the rectum and a wire into the urethra both demonstrated on the plain pelvic x-rays.

Table 2 Clinical presentation in gastrointestinal tract (GIT) foreign bodies ($n = 38$)

Clinical presentation	*Number of patients*	*Percentage*
Abdominal pain	4	10.5
Dysphagia	2	5.3
PR bleeding	4	10.5
Vomiting	2	5.3
Obstruction	2	5.3
Anal pain	5	13.2
Confusion	1	2.6
Choking	1	2.6
Constipation	2	5.3
None	15	39.5
Total	38	100.0

Table 3 Psychosocial problems associated with gastrointestinal tract (GIT) foreign bodies ($n = 38$)

Psychosocial disorders	*Number of patients*	*Percentage*
None	24	63.2
Prisoner	3	7.9
Dementia	1	2.6
Physical disability	1	2.6
Intravenous drug abuser (IVDA)	1	2.6
Phytobezoar	1	2.6
Behavioural disorder	1	2.6
Developmental delay	1	2.6
IVDA/prisoner	2	5.3
Alcoholism	2	5.3
Oesophageal motility disorder	1	2.6
Total	38	100.0

Treatment was conservative in 15 patients; five patients had endoscopic (OGD) retrieval; 15 patients underwent examination under anaesthetic, retrieval and proctosigmoidoscopy and three patients were treated with laparotomies for impacted foreign bodies in the pylorus, the jejunum and the rectosigmoid region. There were no complications recorded in 33 patients, while two developed rectal bleeding and three sustained rectal mucosal tears.

Figure 1 Plain abdominal x-ray showing a disc battery in the small bowel in a child. It passed spontaneously

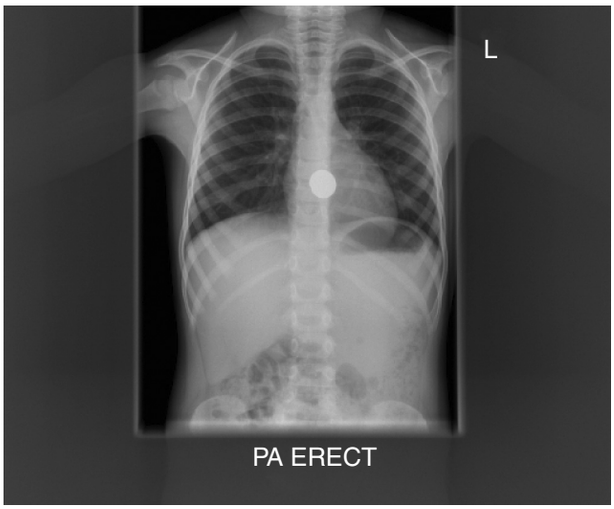

Figure 2 Plain x-ray showing impacted 2 pence coin in the oesophagus in a child. It was retrieved endoscopically

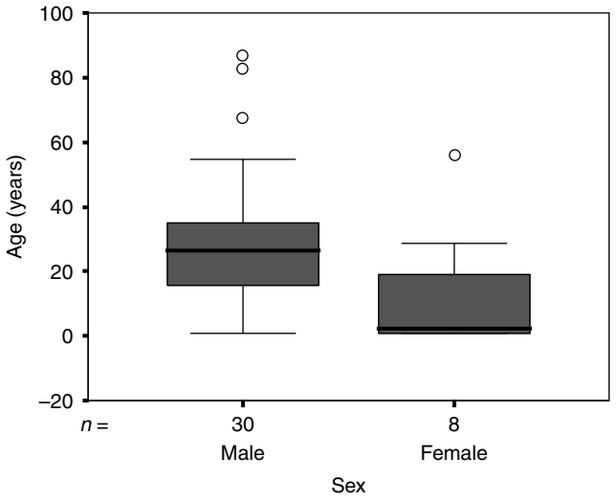

Figure 4 Sex-related age group of patients with gastrointestinal tract (GIT) foreign bodies

DISCUSSION

A large variety of foreign bodies find their way into the GIT. Children are more likely to ingest coins (4). Other types of foreign objects found in the GIT include toys, keys, batteries, jewellery, pins, needles, razor blades, nails, clips and bones. The peak age incidence for foreign body ingestion in children is 6 months to 6 years (2,3). Kelley et al. reported that about 67% of their patients were below 3 years of age (5). Eleven of our patients who ingested foreign bodies were children aged 10 months to 10 years, and one of the 11 adults with foreign body ingestion had had six previous episodes of food bolus obstruction due to oesophageal dysmotility. Webb (2) advocated prompt investigation of patients with food bolus obstruction as there is usually an underlying oesophageal pathology (2,3). Adults who ingest foreign objects are likely to be illicit drug users, alcoholics, have bizarre eating habits, suffer mental retardation or be prison inmates (3). Edentulous adults are at an increased risk of ingesting foreign bodies including their dental prosthesis (6), but none were reported in our series. 'Body packers' – those who ingest or insert

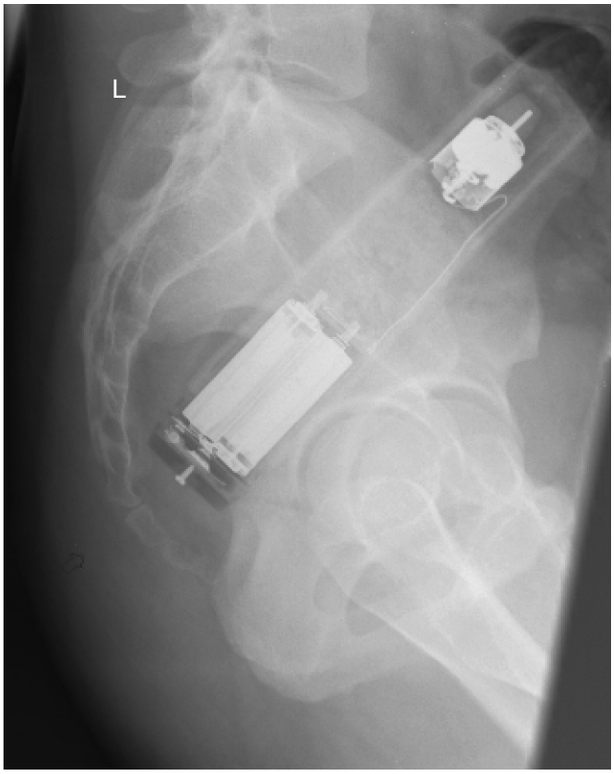

Figure 3 Plain x-ray showing vibrator in the rectum in an adult patient

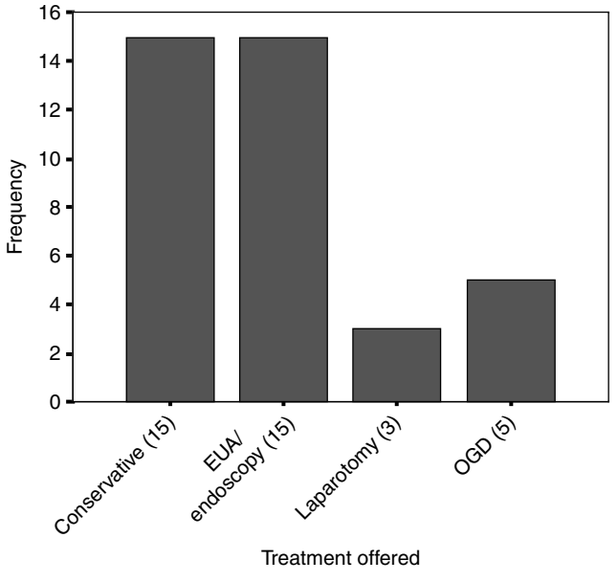

Figure 5 Treatment group for gastrointestinal tract (GIT) foreign bodies

wrapped packets of illicit drugs such as heroin or cocaine into the GIT – are usually adults, although teenagers have also been victims of this act (3). One of our patients had ingested four bags of cocaine.

Rectal foreign body insertion is usually seen in adults. In this series, only three of 16 patients with rectal foreign bodies were children. Rectal foreign bodies in children are more likely to result from sexual abuse but are also seen in adolescents experimenting with autoerotism. Most impacted rectal foreign bodies in adults result from anal erotism with few resulting from assault, and the male preponderance shown in this series has been previously reported (7,8). Cohen and Sackier (7) reported that erotic stimulation accounted for 78% of their cases, while 10% was due to assault. A similar trend is hereby reported with 12/16 (75%) of our patients confessing to anal autoerotism and two (12.5%) were assaulted.

Patients presenting with ingested foreign bodies may be asymptomatic, while some present with a wide range of symptoms (3,4). Other symptoms may be related to the effects of the absorbed substance in the content of the ingested foreign body (2). Patients with impacted rectal foreign bodies although symptomatic tend to present later than in the ingested group because of the perceived/associated shame. Presenting symptoms are usually related to the lower abdomen and anorectal region (9). Most gastrointestinal foreign bodies are identified by biplanar plain radiography of the relevant part of the body based on the history (3–9). This simple investigation is useful in identifying the number, size, shape, location and direction of the foreign bodies. This information is vital in planning treatment. Non-visualisation of the object on x-ray does not rule out the presence of a foreign body such as fish bones, plastic, glass and thin metal (4). Contrast examination is not recommended routinely and is required only in special cases (3).

The majority of ingested foreign bodies pass through the GIT without any adverse effect, and only in the minority of cases, intervention will be necessary. Oesophagus is the narrowest part of the paediatric GIT and the likely site of impaction, ulceration and perforation. The commonest oesophageal foreign body in adults is impacted meat or food bolus (2). The physician must decide not only whether intervention is required but also the timing and the means. The management is influenced by the age of the patient, clinical condition, the size, shape, type of foreign body, the anatomical location and the endoscopic technical ability of the unit (3,9). The management of most ingested foreign bodies is expectant where the foreign body has passed into the stomach as they will eventually pass out in the stool (4). Impacted oesophageal foreign bodies almost always require intervention, and under no situation should a foreign body be allowed to remain in the oesophagus beyond 24 h from presentation (2,3). Endoscopic intervention is advocated in such cases for retrieval and to rule out a dysmotility disorder or an obstruction (3). Long objects of the range of 6–10 cm such as a toothbrush or spoon are less likely to pass the duodenal curve and will require endoscopic removal (3). Majority of sharp foreign bodies will pass once they are in the stomach without any complication, but any sharp object that has remained within the stomach or the duodenum and failed to progress should be retrieved endoscopically if this can be accomplished safely (2,3). Such patients should be kept under close observation, and serial x-rays may be required to monitor its progress while awaiting passage. Only two of our patients in the ingested group required laparotomy for retrieval of the foreign bodies because of small bowel obstruction from a phytobezoar and severe abdominal pain from impacted multiple razor blades in the pylorus and had failed endoscopic retrieval.

Small disc or button battery ingestion is increasingly common (10) and need special consideration as they can become lodged in the GIT causing ulceration, necrosis and perforation. Mercury batteries are dangerous, and the mechanism of causing gut perforation includes pressure necrosis, corrosive toxic contents and short circuit burns (11,12). There is also the risk of acute mercury poisoning, and this type of foreign body should be treated promptly. Such patients require close observation in hospital until the foreign body is passed if they are not retrievable endoscopically. Two of our patients ingested button batteries and all passed within 48 h of presentation with no complication. Narcotics are usually concealed in latex condoms or balloons before ingestion; and rupture or leakage of the contents can be fatal due to acute toxicity and may also cause intestinal obstruction. Endoscopic retrieval of the packets should be avoided as there is a risk of rupture. Surgical intervention is advocated if the packets fail to progress through the gastrointestinal tract, if there are features of intestinal obstruction and suspected rupture or leakage (3).

Rectal foreign body impaction almost always requires intervention as most patients would have attempted self-removal and failed before presentation. The basic principles include transanal removal under the appropriate anaesthetic, proctosigmoidoscopy following retrieval to assess the extent of damage and inpatient observation to rule out possible complications (13). Laparotomy for retrieval should be used only as a last resort after failure of attempts at transanal removal, and this should follow the principle of repair or resection of the injured bowel, faecal diversion, cleansing of the bowel and drainage of the presacral space where necessary (8,9,13). An anoscope or sigmoidoscope should be used to remove the foreign body under direct vision where possible to avoid iatrogenic injury (9). Foreign objects can easily be removed with guided grasping forceps or a clamp. Digital manipulation to peel the oedematous anorectal mucosa off the object may be required before direct retrieval with the grasper. All our patients except one underwent successful transanal retrieval with or without endoscopic aid and digital manipulation. One patient underwent laparotomy after failed removal under

general anaesthetic for impacted 30-cm-long knife file lodged in the rectosigmoid area. It was inserted in the course of autoerotism and had been in place for 7 days before presentation.

Vaginal spatulas, uterine vulsellum, obstetric forceps and suction devices are also effective in retrieving anorectal foreign bodies (9,13,14). Care, however, must be exercised when using these instruments to avoid iatrogenic injury to the bowel or the anal sphincter. Upward migration of the anorectal foreign body sometimes occurs, and this may require a period of observation if the patient has no features of acute abdomen, rectal bleeding or sepsis from erosion or perforation. However, flexible sigmoidoscopic or colonoscopic retrieval should be considered in such cases that fail to descend over reasonable length of time (8,9). It is mandatory to perform a proctosigmoidoscopy after removal of an anorectal foreign body to rule out bowel injury and ensure that the patient has not inserted more than one foreign body, which would otherwise be missed (8,9,13). Minor traumas such as abrasion, superficial mucosal tears and oedema are relatively common either as a direct result of the foreign body or from its removal. Patients with such injuries are to be admitted for observation for early diagnosis of delayed complication (9).

Patients with a background history of psychosocial disorders should be referred for psychological evaluation and counselling. Children in whom a non-accidental injury is suspected should be referred to a paediatrician for further evaluation. The aim is to avoid future occurrence by detection of treatable psychiatric or psychosocial disorders and offering support to victims of assault or abuse (9).

CONCLUSION

GIT foreign body ingestion or insertion is common; however, majority of cases can be successfully managed conservatively.

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