

Foreign Bodies in the Upper Gastrointestinal Tract in Adults: A Review of 102 Cases

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Abstract

Original Research Article

Foreign bodies (FB) are a common emergency in endoscopy, it requires an endoscopic extraction in approximately 10-20% of cases, and in less than 1% surgical treatment is indicated to managed complications. The adult population at risk is represented by the elderly, patients with behavioral disorders or those with a physical risk factor, such as peptic or neoplastic stenosis, esophageal motor disorders or esophageal diverticula. The therapeutic strategy is decided on the basis of the patient, the location, the type of object, the presence of symptoms and the time of ingestion. Endoscopy must sometimes be preceded by an imaging examination (X- ray or CT scan), the purpose of which is to determine the nature of the object, its location and to look for possible complications. Obstructive, sharp, toxic or more than 6 cm long and 2 cm wide FB must be urgently extract. Complications are rare but can be severe, with esophageal perforation being the most common and feared. We report a retrospective study of 102 cases of ingestion of digestive foreign bodies.

Keywords: Foreign body, Upper gastrointestinal tract, Endoscopy, Extraction.

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INTRODUCTION

The accidental or intentional ingestion of foreign objects (FB) is a frequent and multifactorial situation. Ingested FB can be dangerous by their location or nature, which sometimes makes their endoscopic extraction urgent. The aims are to analyze the epidemiological profile, the endoscopic appearance, the tools of extraction and to assess the success rate in extracting of FB.

MATERIALS AND METHODS

From January 2009 to July 2021, we included all patients admitted in the emergency for ingestion of FB. We have listed all the FB ingested, the means used for their extraction, as well as the rate of therapeutic success. All endoscopies were realized under Propofol sedation associated with tracheal intubation depending on the patient's condition using a flexible endoscope, after the elimination of surgical emergency.

RESULTS

Out of a total of 1640 eso-gastro-duodenal fibroscopies performed urgently, 102 were indicated for

ingested foreign body (6.2%). There is a female predominance (sex ratio: 0.64) and an average age of 46.8 years (16 years-75 years). 22.5% of the patients were prisoners and 5.8% had a psychiatric disorder. Ingestion was accidental in 72.5% of patients and intentional in the remainder. The time between dental prosthesis in 23.5%, a piece of meat in 20.5%, ingestion and endoscopy was between 2 and 48 h. The type of FB was a pin in 25.4% of the patients, a chicken bone in 17.6%, a razor blade in 4.9% of patients, a coin in 3.9%, a cocaine capsule in 1.9%. The rest were batteries, lighters, trichobezoar, nail clippers, snail shell and parts of toy. The FB was found in the esophagus in 37,2% of patients and in the stomach at 56,8%. The endoscopic extraction was done by the polypectomy snares, Dormia baskets, triprong graspers and retrieval snare net. The endoscopic extraction success was obtained in 80 cases (78,4%), the FB was evacuated towards the stomach in 6.8% of the patients and not found in 6,8%. The endoscopic extraction failure was in 8% of the cases, which were proposed to surgery. The complication rate (hemorrhage, perforation) after removal of FB ingestion was less than 5% in our patients.

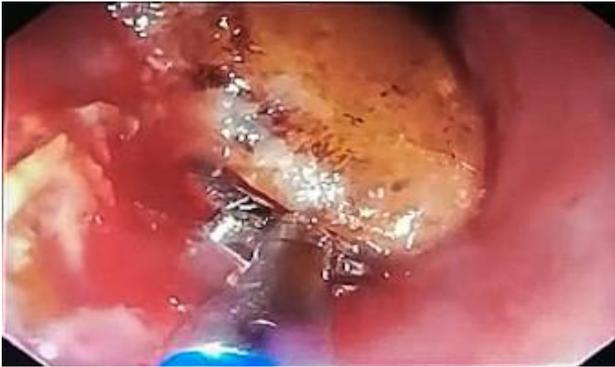


Figure 1: Food impaction



Figure 2: Intra-esophageal FB (Chicken bone)



Figure 3: Sharp FB at bulbar level (Pin)

DISCUSSION

Ingestion of foreign bodies (FB), including bolus impaction, is frequently encountered in clinical practice, endoscopy is considered the first-line treatment in such circumstances. In adults, most ingestions of FB are related to meals, while true ingestion of FB (non-food items) occurs more frequently in people with psychiatric disorders, retardation mental and drug or alcohol users [1, 2]. Usually, ingested FB pass spontaneously; however, approximately 10-20% of cases necessitate an endoscopic procedure, whereas, less than 1% require surgery [1].

The management of these FB represents approximately 4% of endoscopic emergencies in clinical practice [3] is approximately close to our

results. The exact incidence of ingestion of FB is unknown. It is estimated that 1,500 deaths occur each year from the ingestion of FB in the United States [2]. Food bolus impaction is the most common FB, with an estimated incidence of 16 per 100,000 people / year. Ingestion of FB occurs more frequently in men, with some studies suggesting a male / female ratio of about 1.5: 1 [4, 5].

Ingestion of FB in adulthood frequently occurs in a particular case. Indeed, prisoners, patients with psychological disorders or alcoholics are at high risk of ingestion of FB [1], in our case, the prisoners represent the most rate of intentional ingestion of FB. Accidental ingestion often affects the geriatric population and patients with edentulous teeth or dentures with a much lower frequency than in the aforementioned groups. Most food impactions (>75%) occur in adults after the fourth decade of life and the majority of them have an underlying esophageal motility disorder and / or esophageal luminal pathology (stenosis, rings, diverticula, anastomosis and cancer). Note, in young adults, there is a greater incidence of eosinophilic esophagitis present at the time of food impaction (10%) [4-6].

The most common FB swallowed by adults are: fish bones (9-45%), bones (8-40%), and dentures (4-18%). Sodium or potassium hydroxide batteries can damage the gastrointestinal mucosa by chemical burns, while lithium batteries damage tissue by causing an electric current through them. The risk of complications in the cell battery ingestion is significantly important if the size of the battery exceed 20 mm in diameter, and the ingestion time delay surpass 2 hours. Iatrogenic FB are a growing problem, as endoscopic capsules, esophageal prostheses and dental materials [4,7], in our case, the batteries and iatrogenic FB are rare.

The most classically described blockage sites are of rhino-laryngeal localization (glottis, and pharynx/ larynx), the three areas of physiological strictures of the esophagus (cricopharyngeal muscle, imprint of the aortic arch in the middle third, lower sphincter of the esophagus) and finally the pylorus [8].

Apart from the underlying psychiatric disorders, diagnosis is easy in adults and is based on questioning which specifies the time of ingestion, the type of object ingested and the existence of a history of esophageal pathologies. Symptoms regularly present as odynophagia, dysphagia, feeling of having something stuck, chest pain, and nausea / vomiting. Patients can often locate a site of discomfort; however, it is important to note that the site of discomfort does not correlate with the site of impaction in many cases [3, 7, 8]. The signs of complication to look for are fever, tachycardia, subcutaneous emphysema, cervical swelling, pulmonary auscultatory anomaly, occlusive syndrome and abdominal contracture [8].

The majority of ingested FB are radiopaque, visible on cervical, thoracic or abdominal without preparation radiography. X-rays can confirm the size, location, shape and number of FB ingested. Metallic or glass FB are most often radiopaque; they are coins, batteries, needles, pins. On the other hand, cartilage, bones, pieces of plastic, are not always radiopaque on x-ray. Food FB are most often radiolucent. A normal radiographic does not in any way exclude the diagnosis of an ingested FB if the clinic is suggestive. He should never dispense with an endoscopic examination [4, 6]. Serial X-rays can also provide information regarding the passage of FB through the gastrointestinal tract and the resulting complications [5].

If a patient is unable to provide a satisfactory history and the x-ray examinations are negative, other diagnostic modalities may be used. Computed tomography (CT) and diagnostic endoscopy are generally the preferred modalities. Non-contrast computed tomography is superior to standard x-ray and identifies FB at 80 to 100% of cases. The sensitivity of the CT scan can be improved with 3D reconstruction. It can also detect complications such as perforation, inflammatory lesions or associated abscesses [4, 9].

With recent advancements in endoscopic techniques, flexible endoscopy has been considered the preferred treatment in such circumstances due to the high success rate, excellent visualization, reduced cost, and fewer complications compared to other treatments [2]. The timing of the upper endoscopy with extraction is variable and depends on the patient's age, size, shape and location of the FB. The American Society of Gastrointestinal Endoscopy has divided removal of FB into emergent endoscopic removal, urgent endoscopic removal, and nonurgent endoscopic removal as follows [4, 8, 9].

Timing of the Endoscopic Removal of Foreign Bodies

Timing of endoscopic removal is as follows.

Emergent (immediate)

- (i) Esophageal obstruction
- (ii) Disk battery in the esophagus
- (iii) Sharp pointed objects in the esophagus

Urgent (within 24 hours)

- (i) Esophageal objects that are not sharp and pointed
- (ii) Esophageal food impaction w/o complete obstruction
- (iii) Objects > 6 cm at or above the duodenum
- (iv) Magnets within endoscopic reach

Nonurgent

- (i) Coins
- (ii) Objects in the stomach > 2.5 cm in diameter
- (iii) Disk batteries and cylindrical batteries in the stomach that can be observed up to 48 hours if asymptomatic (if longer than 48 hours, these batteries should be removed)

In general, all esophageal FB and food impactions require urgent or emergent endoscopic intervention, because the more time an FB stays in the esophagus is directly related to an increased complication rate [1, 5]. Endoscopy should be performed within 2 hours at best, within 6 hours at most, for stenosing esophageal FB, batteries or sharps FB, and within 24 hours for non-stenosing esophageal FB. The risk of major complications from an esophageal FB is multiplied by 14 beyond 24 hours [8, 9]. Otolaryngologists should be involved at an early stage in the management of FB above or at the level of the upper esophageal sphincter, using a laryngoscope and Kelly or McGill forceps [10, 11].

Endoscopy under general anesthesia with protection of the upper airways should always be considered, thus avoiding inhalation pneumonia as well as acute obstruction of the airway during extraction maneuvers [8, 11]. A flexible endoscope is important for both the diagnosis and the extraction of FB with a success rate over 95%. Flexible endoscopes are preferred over rigid endoscopes because the risk of perforation is lower. Commonly used tools include biopsy forceps, polypectomy snares, rat-tooth or alligator forceps, triprong graspers, polypectomy snares, Dormia baskets and retrieval nets. Plastic caps and possibly an overtube can be used for the extraction of sharp FB or those with a diameter of more than 2 cm. The advantages of these devices are: protection of the respiratory tract, the possibility of frequent passages of the endoscope and the protection of the gastrointestinal mucosa against lacerations [8, 11, 12]. There is no rule regarding the choice of suitable material, but rather an assessment based on personal experience [11].

Usually, objects smaller than 2 cm in size can pass through the entire gastrointestinal tract without causing complications. Extraction is considered if the objects do not pass through the pylorus after 3-4 weeks or the patient becomes symptomatic [4, 11]. For long objects, greater than 6 cm, such as toothbrushes and forks, spoons or knives, endoscopic ablation is recommended, as they are unlikely to pass through the duodenum [4, 5].

It is recommended to remove sharp objects such as needles, nails, toothpicks and pins before they enter the stomach, as the perforation rate associated with sharp objects is high; estimated at around 35%, usually near the ileocecal valve. Otherwise, they must be followed by daily x-rays to document their passage. Surgery is often necessary if the patient develops symptoms suggestive of a perforation, or if the sharp object was impacted particularly in esophagus [4, 5, 10].

For packages of narcotics (cocaine) placed in protective envelopes such as condoms, it is important not to retrieve them by endoscopy because the vital

prognosis is at stake in the event of a perforation. These patients should be hospitalized, kept under surveillance, and surgery is indicated if there is evidence of intestinal obstruction or clinical suspicion of packet rupture [4].

The success rate of endoscopic management of FB ingestions varies from 90 to 95% for a complication rate of this management <5% [8]. In our study, the rate of failure was 8% due to the elevation of incidence of the prisoners who ingested multiple, sharp or/and long objects.

For FB in the small intestine, single or double balloon enteroscopy can be used to access the small intestine and extract these FB [6].

Surgical extraction of ingested FB still has its place in rigorous indications, especially in the event of acute complications, such as perforation, occlusion or even a hemorrhagic vascular lesion. Failure of endoscopic extraction of FB, is also an indication for surgical intervention [1, 4].

Multiple non-endoscopic therapeutic approaches have been studied. Glucagon, administered in doses of 0.5 to 2.0 mg, can induce relaxation of the smooth muscle of the esophagus and lower esophageal sphincter, allowing passage of FB or impacted food. The success rate of bolus impactions with glucagon (1 mg, intravenously) as the primary treatment ranged from 12% to 58% [4, 8, 12].

The majority of FB pass through the digestive tract spontaneously without causing further damage, symptoms or requiring additional intervention. Occasionally, complications will occur and are directly related to the type and location of the FB [4]. Topographically, the esophagus is where most complications occur, with a complication rate directly proportional to the residence time in the esophagus. Potential complications include perforation, impaction, mediastinitis and fistula [2, 5]. Esophageal perforation has been reported at an incidence of 9.1% in patients with foreign body impacted in the esophagus [4].

CONCLUSION

Ingestion of a FB is a common clinical situation but often progresses favorably and without complications. Different means of extraction must be available during the procedure of extraction to be successful, which must be carried out as early as possible to avoid impaction and surgery.

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