

FOREIGN BODIES OF THE ESOPHAGUS: A TWO-YEAR PROSPECTIVE STUDY

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Foreign body (FB) impaction of the upper digestive tract is a common problem in both children and adults. The estimated annual incidence of foreign body ingestion in the United States is about 120 per million population, with approximately 1500 deaths each year.¹ Typically, two types of FBs are encountered—true FB (e.g., coins, buttons) and food-related FB. The three common areas for esophageal FB impaction are just below the cricopharyngeal muscle (70%), the site where the aortic arch crosses the anteromedial wall of the esophagus (20%), and at the gastroesophageal junction (10%). In most cases, an impacted esophageal FB is an urgent medical situation, but not a life-threatening one.^{2,3}

This study was aimed at establishing the pattern of ingested FBs, their symptomatology, presentation, techniques of removal and the possible associated complications.

Subjects and Methods

A prospective study for suspected impacted esophageal FB was carried out in the ENT Department at King Fahd Hospital of the University (KFHU), Al-Khobar, Saudi Arabia, from January 1995 to August 1997. The study involved 26 patients admitted to the ENT ward with a history of impacted FB. They comprised 23 adults (88%) and three children (12%). Four other children were excluded from the study because the FB had passed spontaneously down the esophagus during the observation period.

The age of the patients ranged from 2 to 71 years (mean 35 years), and the male to female ratio was 14:12. Fourteen patients (54%) were Saudis and 12 (46%) were non-Saudis. Twenty-five of the patients (96%) were admitted through the Emergency Department for urgent esophagoscopy, while the other one was admitted through the Outpatient Department—an Indian female who presented with dysphagia and odynophagia after a meal of chicken three days prior to presentation. The details of the patients, including age, sex, nationality, source of admission,

urgency of the procedure, types of FB found, the status of the esophagus if no FB were found, complications, and the duration of the hospital stay, were analyzed, and are discussed below.

Results

The summary of the presenting symptoms of the disease (Table 1) shows that dysphagia (22 cases) and odynophagia (21 cases) were the most common presenting symptoms. X-ray findings were positive in only seven cases (27%), in which the foreign bodies involved were three coins, two fish bones, a meat bone and a chicken bone. The clinical history and patients' symptoms were found to be the most accurate indicators of impacted esophageal FB. All the patients were admitted to the hospital, and the removal of the FB was accomplished under general anesthesia with endotracheal intubation, using the rigid esophagoscopy technique. The types of FB found were fish bone (seven cases, 27%); meat bone (six cases, 23%); coins (three cases, 12%); chicken bone (one case, 4%); meat bolus (one case, 4%); and pigeon bone (one case, 4%).

All three children in our study had coins lodged in the cervical esophagus. These were removed by the use of grasping forceps. In seven patients (27%), no FB was found during the procedure. A normal-looking esophageal mucosa was found in three patients (12%), mucosal laceration was found in two patients (8%), and mucosal erythema or redness was found in another two patients (8%). The patients' hospital stays ranged from one to 13 days, with an average of two days.

One patient had a post-esophagoscopy complication. He was a 36-year-old male, and a known case of panhypopituitarism, hypocalcemia, esophageal motility disorder and mental subnormality, who presented to the Emergency Department with increasing symptoms of

TABLE ...1. *The presenting symptoms.*

Symptom	Number of patients	%
Dysphagia	22	85
Odynophagia	21	81
Sensation FB throat	5	20
Excessive salivation	4	16
History of FB ingestion	3	12
Neck pain	2	8
Vomiting	1	4
Retrosternal chest pain	1	4

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dysphagia and a feeling of choking after ingestion of meat. Emergency esophagoscopy was performed, and a large meat bolus was found just below the cricopharyngeal sphincter, obstructing the esophageal lumen. This was removed in pieces. After the esophagoscopy, the patient developed esophageal perforation with mediastinitis and left pleural effusion.

Discussion

Symptoms produced by the impact of FBs in the esophagus usually alarm patients, causing them to seek immediate medical help. Symptoms, clinical history, and radiographic studies help the physician to decide whether or not to admit the patient for endoscopy.^{4,5} In our experience, presenting symptoms have been the most accurate indicators of FB impaction.⁶ There is no doubt about the efficiency of plain x-ray if an opaque FB is suspected, as is frequently observed in children. However, in adults in whom opaque FB is not suspected, its accuracy is low.^{4,6}

In our study, only 27% showed a positive x-ray finding, a similar result to the published literature.⁷ The most popular technique for the removal of impacted esophageal FB is rigid esophagoscopy. Others include flexible fiberoptic esophagoscopy, Foley catheter technique, and esophageal bougienage.⁸⁻¹⁰ We found rigid esophagoscopy to be a safe, quick, easy and reliable technique for removing FB, and with an advantage over blind techniques.^{10,11} It permits a direct visualization, full judgment of the FB and esophageal mucosa, and allows removal of the FB without damaging the mucosa. Flexible fiberoptic esophagoscopy has been found to have the same advantages as the rigid technique.¹³

Objects that have been impacted for more than a few hours, such as sharp objects, buttons, batteries and objects that are not smooth or inert, can be removed safely by flexible endoscope.^{13,14} However, the procedure is costly and must be performed by a skilled endoscopist. In selected cases, FB removal may be accomplished using a balloon-tipped catheter. Contraindications to this procedure include acute distress, complete obstruction, impaction for more than 24 hours, unknown FB, known esophageal disease and impaction of objects that are not inert or smooth.¹⁴

The technique of pushing the FB into the stomach with a bougie has also been advocated.¹² Those advocating balloon catheter or bougienage technique cite the following advantages over esophagoscopy: avoidance of hospitalization, avoidance of the risks of general anesthesia and endotracheal intubation, and avoidance of the risks of esophagoscopy.¹⁵ We think that any FB that can be removed by a Foley catheter or a bougie can be removed as easily and perhaps more safely under direct vision with rigid esophagoscopy. In our study negative esophagoscopy was found in 27%.

In the series of Nandi and Ong, FB were found in only 844 of the 2236 patients (37.7%) who underwent rigid esophagoscopy.⁴ Perforation and rupture of the esophagus

are still associated with high morbidity and mortality. The outcome depends on several factors, but essentially on early diagnosis and treatment, the location of the perforation and the age of the patient. The incidence of esophageal perforation with rigid esophagoscope has been reported as varying from 0.1% to 1.9%, with a tendency to higher incidence in sharp impacted FB, with non-experienced hand and in failed maneuvers.^{13,15}

In our study, only one patient with panhypopituitarism, hypocalcemia, abnormal esophageal motility and impacted FB had an esophageal perforation, and was managed surgically by thoracotomy and closure of the perforation. When flexible fiberoptic esophagoscopy was used, the incidence of perforation dropped to the range of 0.007% to 0.15%.^{15,16}

The management of a perforation in a cervical esophagus is complex. Some authors recommend primary conservative treatment, with an expected recovery rate of 80%, while in 20% a cervical abscess is formed which requires drainage.¹⁷ The fundamental principles in the management of perforation or rupture of the intrathoracic esophagus are early diagnosis and surgical intervention.

The clinical history and presenting symptoms are the most valuable elements in deciding whether or not a patient suspected of having a foreign body impaction should have an esophagoscopy. We found that rigid esophagoscopy is the technique of choice for esophageal foreign body removal. Direct visualization, the possibility of FB manipulation, the chance of re-exploration, and minimum complications are the main advantages over the blind removal technique.

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