

Oesophageal Foreign Bodies at the University Hospital of the West Indies

EW Williams¹, D Chambers¹, H Ashman¹, J Williams-Johnson¹, P Singh¹, AH McDonald¹,
M Reid², B Brown³

ABSTRACT

A retrospective study was conducted of 97 patients with oesophageal foreign bodies (EFB). The patients were admitted to assess characteristics of EFB, modes of presentation and radiological and endoscopic findings. The patients were from the University Hospital of the West Indies and most (42%) were over the fourth decade of life. The commonest EFB were bones. A negative radiological finding was not a reliable means to select patients for endoscopy. Oesophagoscopy is a reliable method in the treatment of EFB impaction. There were no major complications or deaths.

Cuerpos Extraños Esofágicos en el Hospital Universitario de West Indies

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RESUMEN

Se realizó un estudio retrospectivo a 97 pacientes con cuerpos extraños esofágicos (CEE). Los pacientes fueron ingresados para evaluar las características de los CEE, los modos de presentación, así como los hallazgos radiológicos y endoscópicos. Los pacientes provenían del Hospital Universitario de West Indies, y la mayoría (42%) sobrepasaba la cuarta década de vida. Los CEE más comunes eran huesos. Un hallazgo radiológico negativo no era un medio fiable para seleccionar los pacientes para endoscopia. La esofagoscopia es un método fiable en el tratamiento de impacción de CEE. No hubo complicaciones mayores ni muertes.

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INTRODUCTION

Ingestion of foreign body (FB) is a common occurrence (1). Fortunately, most of them passed through the gastrointestinal (GI) tract harmlessly (2). However, 10-20% will require non-operative intervention and only 1% or less need surgery (3). Diagnosis is often difficult especially when the radiographic findings are negative (1).

Interestingly, controlled prospective studies in the management of gastrointestinal FB have not been conducted because of the many uncontrollable variables that affect and influence the care of the patients (4). These include: location, size, shape and duration of impaction in the gastro-

intestinal tract; experience of the caregiver; availability of flexible and/or rigid endoscopy. As a result, most journal articles reflect the author's or institution's experience in managing gastrointestinal FB (4).

The problem of FBs in the oesophagus differs from that of foreign bodies more distal in the GI tract. This portion of the GI tract is a rather passive and relatively unadaptable area with peristalsis often not strong enough to prevent retention of swallowed objects (4). The cricopharyngeus is the narrowest part of the GI tract (with the exception of the appendix) and impaction with perforation is often in this area. In addition, perforation in the thoracic oesophagus has significant risk of mediastinitis and death. Oesophageal foreign body (EFB) and the risk for perforation are real concerns.

The objectives of this study were to evaluate patients with swallowed oesophageal FB with respect to the types of objects swallowed, their clinical presentation and to determine the usefulness of cervical radiographs to select patients for endoscopy and the role and safety of the latter.

From: Department of Surgery, Radiology, Anaesthesia and Intensive Care¹ and Tropical Medicine Research Institute², The University Hospital of the West Indies, Kingston 7, Jamaica, West Indies and Bustamante Hospital for Children³.

Correspondence: Dr EW Williams, Emergency Medicine Division, Department of Surgery, Radiology, Anaesthesia and Intensive Care and Tropical Medicine Research Institute The University Hospital of the West Indies, Kingston 7, Jamaica, West Indies. Fax: (876) 927-2101, e-mail: ver3us@yahoo.com.

MATERIALS AND METHODS

Over a period of six years (1996–2002), a total of 97 patients with presentations suggestive of swallowed FBs were seen and admitted to the Ear, Nose and Throat (ENT) ward *via* the emergency room, the University Hospital of the West Indies (UHWI). The charts were analyzed for each patient's age, time of ingestion to presentation, presenting symptoms, type of FB and treatment. Patients who arrived in the emergency room and were by then symptom free with a normal cervical X-ray were discharged after ENT consultation and hence excluded from this study. Foreign bodies in the oropharynx or distal to the oesophagus (*eg* stomach) were also excluded. Both anteroposterior and lateral cervical radiographs were done in all patients. An abnormal cervical radiograph was identified by one or more of the following: presence of a radio-opaque FB, widening of the prevertebral space, loss of the normal lordosis, air in the oesophagus, free air consistent with surgical emphysema. In addition, chest and abdominal radiographs were done in few selected patients. A diagnosis or possible diagnosis of an oesophageal FB was made on a combination of history, examination and radiological findings. All patients were admitted to the ENT ward for further management.

RESULTS

Over a six-year period (1996–2002), 97 patients with swallowed EFBs were seen in the Accident and Emergency Department of the UHWI. Most of these patients had symptoms of dysphagia and/or odynophagia. The male to female ratio was 3:1 and the age range was 13 months to 99 years with a median age of 52 years. Forty-one patients (42.3%) were over the fourth decade of life. Nearly all of this group had impacted bones of one sort or another. Fourteen patients (14.4%) of the study population were below age ten. The time interval to presentation varied. Forty-six patients (47.4%) presented within six hours of ingestion of FB whereas 28 (28.9%) presented between six and 24 hours (Table 1).

In general, most of the FBs were bones from fish, chicken and mutton. Ten (10.3%) patients, all children, had swallowed coins. Other interesting foreign bodies include toothpicks, straws and “dumpling”. There was one case of a swallowed denture.

In approximately 50 symptomatic patients (51.5%), there were no positive radiological abnormalities (Table 2). Of this group, 13(26%) actually had FBs identified and removed with endoscopy (Table 2). Thirty-nine patients in the study had radio-opaque FBs directly identified within the oesophagus mostly in the cervical portion.

Rigid endoscopy was the definitive treatment in 78 (80.4 %) of the total patients (Table 2). Of these, 31 (39.7%) had successful removal of the FB. As expected, in those patients who had endoscopy, there was an association between the presence of FB and cervical X-ray diagnosis with significantly less frequency of foreign body being

Table 1: Clinical characteristics of patients with oesophageal FB

Clinical characteristics	Number of cases (%) n = 97
Gender	
Males	73 (75)
Females	24 (25)
Age (Years)	
Median	52
Range	13 months -99
Time interval to presentation (hours)	
6	46 (47.4)
6-24	28 (28.9)
> 24	14 (14.4)
Unrecorded	9 (9.2)
Types of FB	
Bones (fish >chicken>mutton)	79 (81.4)
Coins	10 (10.3)
Others	8 (8.3)

Table 2: Relationship between endoscopy and cervical X-rays

	Endoscopy (n = 78)		No endoscopy	Total
	FB removed	FB not seen		
Abnormal cervical X-ray	18	10	19	47
Normal cervical X-ray	13	37	–	50
Total	31	47	19	97

FB = Foreign body. In those patients who had endoscopy there was an association between cervical X-ray diagnosis and discovery of FB on endoscopy, $\chi^2 = 10.9, df(1), p < 0.001$

discovered when the cervical X-ray was normal ($\chi^2 = 10.9, df(1), p < 0.001$). Thus 47 symptomatic patients (48.4%) had no FB identified with endoscopy. However most of these patients (39%) had inflammatory changes demonstrated by endoscopy indicating post-traumatic spontaneous passage of the FBs.

The general approach to impacted FB in the oesophagus at this institution was rigid endoscopy. Seventy-eight (80.4%) patients had this procedure; 19 (19.6%) patients had a conservative approach. Most of the latter settled in hospital with spontaneous passage of FB while awaiting endoscopy. Such FBs included coins, small pins and bone fragments. They were followed-up on the ward or

as out-patients. There was no surgical intervention in the study. No deaths or major complications were noted.

DISCUSSION

Three groups of patients appear to be particularly at risk for impacted oesophageal FB (4). Oesophageal disease and poor oral sensitivity from dental prosthesis predispose elderly edentulous patients to food bolus impaction. Psychiatric patients comprised the second group. Lastly, paediatric patients account for approximately 75% to 80% of oesophageal foreign bodies in many studies, with a preponderance of children aged 18 to 48 months (5).

Paediatric patients with their natural oral curiosity inadvertently ingest a variety of objects (*eg* coins, toys). In this age group, congenital oesophageal anomalies increase the risk of blunt FB impaction as well. Unusual or multiple FBs in children may be the result of child abuse (6). In our study, only 14 (14.4%) patients were below age ten years and all ingested coins. All of these patients had endoscopic removal. This low number is attributed to the fact that the majority of paediatric cases of swallowed foreign bodies in general is seen at an adjacent specialist hospital for children (Bustamante Hospital for Children). A review done at that institution during the same study period revealed 269 patient admissions for foreign bodies. All received oesophagoscopy. The most common FB was ten-dollar coins.

The majority of adult patients was over the fourth decade of life and most presented because of bones stuck in the throat, especially fish bones. Adults may present with food boluses lodged in the oesophagus accidentally in the act of eating (7). No oesophageal pathology was identified in this group. However it is essential that patients who have recurrent bolus impaction or previous dysphagic symptoms be investigated to rule out an underlying pathology.

Significant localized tenderness over the cervical oesophagus and persistent drooling were strongly linked to the presence of a foreign body in the oesophagus. These findings warrant oesophagoscopy despite negative radiographs. The main symptoms in our study were dysphagia and odynophagia. A significant number (47.4%) of patients presented within six hours after ingestion of the FB. One patient presented with a two-week history of an impacted fish bone which was removed endoscopically. There was no complication.

The main diagnostic technique was the use of cervical radiographs to either directly identify radio-opaque FB or to increase the clinical suspicion by the presence of other radiological abnormalities. Each patient in our study received both anteroposterior and lateral radiographs of the neck. Patients who arrived symptom free with a normal cervical X-ray were excluded from the study. None of the patients from this category re-presented to this institution during the study period. However, they may have presented to another institution thereafter with an initial missed detection, and as such it would be too difficult for follow-up

to be done. In 50 patients (51.6%), no radiological evidence of a FB was identified. A significant number of 39 FBs (40.2%) were identified in the region of the oropharynx – upper oesophagus. It is well documented that most impactions of FB in adults do so at the upper third of the oesophagus (cervical oesophagus) at the lower border of the cricopharyngeus muscle (7, 8). This is the narrowest part of the oesophagus. Other constrictive areas are at the point where the oesophagus crosses the aortic arch and at the gastroesophageal junction.

Of the 50 symptomatic cases with negative radiographs, 13 (26%) had identification and removal of impacted FBs and 37 (74%) had negative endoscopic findings. Therefore negative X-ray findings in symptomatic patients should be followed by endoscopy. In addition, one should be aware that not all FBs are radio-opaque. The radio-opacity of fish bones for example will vary (9). Cod is readily visible whereas snapper is more difficult to see. Herring and salmon are usually not visible (9).

Radiographic evaluation is generally recommended in every patient in whom an oesophageal FB is suspected. Lateral neck films are particularly important in demonstrating small bone fragments in the cervical oesophagus. In posteroanterior projection, they may overlie the cervical spine and thus be missed. Foreign bodies such as coins in the paediatric age group are usually oriented in the sagittal plane if they are in the trachea and the frontal plane if they are in the oesophagus. Plain films should be carefully surveyed for air in the subcutaneous tissues, mediastinum and beneath the diaphragm. This would indicate perforation.

Chicken or fish bones are often poorly visualized because of their partial calcification, although the degree of calcification is different in different species of fish. Only 29% to 50% of endoscopically proven bones are seen in plain films (10). Computed tomography for fish or chicken bones has been found to be superior to plain films for identifying the FB in 67% to 83% of patients with stuck bones where plain films had been negative (4). No patient in the present study had any other investigation but plain radiography.

Even with extensive investigations, most of the patients who complained of FB sensation would have no finding (4). This may delay the definitive intervention, endoscopy, while incurring expenses for the radiographs, which, if positive result in endoscopy anyway. We recommend endoscopy for all symptomatic patients in whom an oesophageal FB is suspected, irrespective of normal radiographs.

Endoscopy was the definitive method of treatment in our study. Not only is it used to extract impacted FB but also as a means to assess the anatomy of the oesophagus in particular to the presence of strictures or tumour predisposing to impactions. Also, it allows safe and quick discharges from hospitals. Seventy-eight (80.4%) patients had the procedure with 31 (39.7%) successful removal of FB (Table 2). Forty-seven (60.2%) of the endoscoped patients

had no FB present in the esophagus. The high incidence of failure to find the FB in the oesophagus may be related to the spontaneous progression into the stomach before or during endoscopy. There may be a significant delay between admission and endoscopy. Being a retrospective study, we were not able to accurately quantify this period. Odynophagia may also result from marked abrasions and may not mean that the FB was impacted resulting in a high incidence of negative endoscopy in symptomatic patients.

The success rate for endoscopic removal of sharp objects is good, with results ranging from 94% to 100% (11). The rigid oesophagoscope also allows use of the optical forceps which may be necessary to extract deeply embedded objects.

All patients underwent oesophagoscopy in the operating room under general endotracheal anaesthesia. The rigid endoscope, in the hands of an expert, is as safe as the flexible instrument (12). Morbidity rates are well below 1% with both types (1). Rigid scope with its large lumen often allows removal of FB through the scope with less trauma to the oesophagus. It is also a less expensive instrument but the advantages of the flexible endoscope are numerous (12). These include being safer in average hands; it results in less post procedural discomfort; it does not usually require general anaesthesia; it has built-in air insufflation and suction, as well as magnifying optics; it makes possible examination of the stomach and at least part of the duodenum, and it is more cost effective (12).

Other alternatives such as various mechanical methods of treating impacted oesophageal foreign bodies (*eg* Bougie, foley-catheters) are generally not routinely utilized at our institution. Blind procedures are not recommended and have the risk of aspiration of FB into the trachea. There were no major complications or death in the present study.

In summary, a significant number of patients with FBs in the oesophagus were over the fourth decade of life. The commonest FB impacted were bones of fish, chicken and mutton in that order. A negative radiological finding is not a reliable screening test to select symptomatic patients for endoscopy. Foreign bodies in the oesophagus are an emergency and all patients should be referred to the ENT service even when the radiological findings are normal. Endoscopy is a safe and reliable means for diagnostic and definitive treatment.

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