Management of Foreign Bodies of Upper Digestive Tract

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Abstract The objective of this study was to determine the management of rigid esophagoscopy for extraction of foreign bodies (FBs) upper digestive tract in a tertiary care hospital. This descriptive study was conducted at the Department of ENT, Head and Neck Surgery, Postgraduate Medical Institute, Lady Reading Hospital Peshawar from January 2008 to December 2010. This study included 380 patients. After taking detailed history, thorough examination and investigations, a well informed consent was obtained. Rigid esophagoscopy was performed under general anesthesia. The data was analyzed using the statistical program for social sciences (SPSS version 17). Our study with total duration of 3 years included 380 cases constituting 227 male and 153 female, with male:female ratio of 1.48:1. The age of the patients ranged from 1 to 80 years with mean age of $39.39 \pm SD 6.81$ years. The clinical features of these patients were mainly dysphagia for solids (72.89%) followed by throat pain (18.15%). Site of impaction of FBs was that in 303 cases (79.73%) cricopharynx, in 61 cases (16.05%) mid-esophagus and in 16 cases (4.21%) pyriform fossa was involved. Rigid esophagoscopy was performed in all cases and a variety of FB was extracted from upper digestive tract. The commonest FB was coin 58.42% followed by meat bolus 17.10%. It is concluded from this study that the commonest FB upper digestive tract in children is coin while in adults is meat

bolus in this part of the world. Rigid esophagoscopy is still the technique of choice for its extraction and its complication can be minimized if performed by expert hands.

Keywords Foreign body · Upper digestive tract · Rigid esophagoscopy

Introduction

Ingested foreign bodies (FBs) are a common problem encountered in otolaryngological practice. More than 100,000 cases of foreign body ingestion are reported each year in the US [1]. The majority of FB ingestions occur in children between the ages of 6 months and 3 years because infants put almost everything into their mouths, and toddlers eat just about anything, whereas in adults FB ingestions occur more commonly among those with psychiatric disorders, or mental retardation, prisoners, alcoholics and edentulous elders [2]. However, the relative frequency of ingestion has been on the rise over the last two decades due to increased accessibility to electronic gadgets and toys [3]. Approximately 90% of ingested FBs are passed spontaneously and without complications. However, 10–20% will require non-operative intervention and only 1% will need surgery [2, 4]. Frequently ingested items include small metal, plastic toys, coin, button batteries, fish bones, safety pin, thumbtacks, needles, wire, wood or glass objects, denture, bolus meat and razor blade [5]. Its presentation may be varied include odynophagia, dysphagia or choking. It is usually related to the types of FBs [6]. The most common locations of FB lodgment are the three areas of normal physiologic esophageal narrowing. The first and most common location is the proximal esophagus at the level of the junction between the neck and thorax, the second location is the mid-

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esophagus at the level of carina and aortic arch and the third location is the distal esophagus, slightly proximal to gastroesophageal junction [3, 6]. Complications of FB ingestion however, include perforation, migration to the liver and pancreas, development of gastric varices, splenic artery pseudo-aneurysm [7]. Current strategies for the removal of retained FBs upper digestive tract include endoscopy, observation, rigid esophagoscopy, foley catheter extraction, lower esophagus sphincter relaxant, or surgery [8]. Nevertheless, big and sharp edge FB has higher possibilities to cause complication such as abscess and esophageal perforation. Therefore, impacted FB requires urgent surgical attention and rigid esophagoscopy is the procedure of choice to remove the FB under control environment [5, 9].

The aim of this study was to present our experience of rigid esophagoscopy for extraction of FBs upper digestive tract.

Materials and Methods

This descriptive study was conducted at the Department of Ear, Nose, Throat, Head and Neck Surgery, Postgraduate Medical Institute, Lady Reading Hospital Peshawar from January 2008 to December 2010 (3 years). This study included 380 patients. All the patients of any age and either sex who were subjected to rigid endoscopy and FB were retrieved from upper digestive tract were included in this study. The patients with repeat esophagoscopy, those who were subjected to esophagoscopy in other hospitals and those patients where no FB were extracted from upper digestive tract were excluded from the study. The diagnostic criteria for FB upper digestive tract were history of FB ingestion, complemented with radiological investigations. All these patients were admitted into E.N.T ward. A detailed history regarding FB ingestion was taken and thorough examination was performed. Base line investigations and if needed specific investigations were carried out. A well informed consent was taken from patients/relatives explaining the procedure, its risks, and benefits and associated complications and the study was approved by the hospital ethical committee. Rigid esophagoscopy was performed under general anesthesia. Post-operative chest X-rays (CXR) was done in all cases and if stable patient was discharge on second day. All these patients were followed up to 1 month. The data was collected on a preformed proforma and statistical analysis was performed using the statistical program for social sciences (SPSS version 17).

Results

Our study with total duration of 3 years included 380 cases constituting 227 male and 153 female, with male:female

Table 1 Age-wise distribution of patients ($n = 380$)

Age group (years)	No of cases	Percentage	Mean age (years)	SD (years)
01–20	225	59.21	9.87	5.50
21–40	93	24.47	29.45	7.82
41–60	46	12.10	49.02	7.64
61–80	16	4.21	69.25	6.29

Table 2 Source of patients admission into ENT ward ($n = 380$)

Source of admission	No. of cases	Percentage
Casualty	191	50.26
OPD	85	22.36
Paeds ward	39	10.26
Peripheral hospitals	58	15.26
Private hospitals	7	1.84

ratio of 1.48:1. The age of the patients ranged from 1 to 80 years with mean age of $39.39 \pm \text{SD } 6.81$ years. Most of the patients presented in the age range of 1–20 years (Table 1). Among these patients 200 cases (52.63%) were children while 180 cases (47.36%) were adults. These patients were admitted into ENT ward through casualty or OPD and some of the patients were referred from other wards or hospitals (Table 2). The clinical features of these patients were mainly dysphagia for solids (72.89%) followed by throat pain (18.15%) (Table 3). Site of impaction of FBs was that in 303 cases (79.73%) cricopharynx, in 61 cases (16.05%) mid-esophagus and in 16 cases (4.21%) pyriform fossa was involved. Rigid esophagoscopy was performed in all cases and a variety of FB was extracted from upper digestive tract. The commonest FB was coin 58.42% followed by meat bolus 17.10% (Table 4). Post-operative CXR were carried out in all cases (100%) and these were normal in majority of patients (97.84%, $n = 227$). In two cases (0.5%) esophageal perforation occurred after extraction of dentures and no other complication was experienced.

Table 3 Clinical features of the patients ($n = 380$)

Clinical feature	No. of cases (%)
Dysphagia for solids	277 (72.89)
Absolute dysphagia	18 (4.73)
Throat pain	69 (18.15)
Difficulty in breathing	11 (2.89)
Fever	5 (1.31)

Table 4 Types of foreign bodies retrieved on rigid esophagoscopy ($n = 380$)

Type of foreign body	No. of cases	Percentage
Coins	222	58.42
Meat bolus	65	17.10
Dentures	39	10.26
Chicken bones	25	6.57
Fish bones	16	4.21
Battery cells	06	1.57
Plastic pieces	01	0.26
Stone	01	0.26
Screw	01	0.26
Metallic piece	01	0.26
Coat button	01	0.26
Neck lace	01	0.26
Wood piece	01	0.26

Discussion

FB ingestion is a common problem. Mostly it is accidental but sometimes individuals ingest certain materials to conceal it. The most frequently swallowed FBs in children include coins, metallic FBs while meat bones (chicken bone/fish bone/mutton/buff) are common in adults and elderly [10]. Children between the ages of 6 months and 3 years are the most commonly affected. In our study 52.63% cases belonged to the group of patients with age less than 20 years which is also reported by Gmeiner et al. [11]. In our study FB ingestion was more common in male (1.48:1) which is comparable to other studies [12, 13] but in some of the reports there was no gender difference [14]. The patients with ingested FB usually present with dysphagia but some patient may be asymptomatic depending on the size and nature of the FB. In our study the main complain of patient was dysphagia for solids (72.89%), followed by throat pain in 18.15% which in keeping with study of Shaariyah [15], who reported dysphagia in 82.8% patients and only 10% patients were asymptomatic. FBs frequently occur in the cricopharyngeal and esophageal regions. In this study FB was impacted mainly in cricopharynx (79.73%) while pyriform fossa was the site of least involvement (4.21%). Similarly in study of Shaariyah [15] cricopharyngeal involvement was 70.8%, Zhao-Shen et al. study [16] 52.93% while in study of Ahmad et al. [17] it was 83%. Cricopharynx is the narrowest part of upper digestive tract that's why it is the commonest region for FB lodgment. In 61 cases (16.05%) FB was found in mid-esophagus which is also reported by others [12]. In all these cases (100%) FB was retrieved through rigid esophagoscopy which is also comparable to the study of Adhikari

et al. [18] and Hussain et al. [19] who also removed FB upper digestive tract with rigid esophagoscopy. A variety of FB can be extracted from upper digestive tract. In my study commonest finding was coin 58.42% in children and among the adults meat bolus was found in 65 cases (17.10%) and dentures in 10.26%. This in accordance to study of Hussain et al. [19] who reported coins (55.6%), meat bolus (20.75%), dentures (7.07%), while Hameed et al. [20] found coins (60%) and meat bolus (10%). Rigid esophagoscopy has complication, however in our study esophageal perforation occurred in two cases (0.5%) after extraction of dentures which is also reported in national [17] and international studies [15].

Conclusion

It is concluded from this study that the commonest FB upper digestive tract in children is coin while in adults is meat bolus in this part of the world. Rigid esophagoscopy is still the technique of choice for its extraction and its complication can be minimized if performed by expert hands.

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