MANAGEMENT OF FOREIGN BODIES IN THE UPPER GASTROINTESTINAL TRACT WITH FLEXIBLE ENDOSCOPE

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ABSTRACT

Objective: *To evaluate the management of foreign bodies in the upper Gastrointestinal tract in a tertiary care hospital in Peshawar.*

Methodology: *In this descriptive study, conducted at Gastroenterology Department Hayatabad Medical Complex Peshawar from May 2002 to May 2009, a total of 40 consecutive patients presenting with history of foreign body ingestion were included. Radiological survey was made before endoscopy in all the patients. Flexible endoscope, esophageal over tube and other accessories were used for removal of the foreign bodies.*

Results: *Female to male ratio was 1.5:1. The mean age of the sample was 19.92±23.5. Dysphagia (n=18, 45%) was the most common symptom in the esophageal foreign bodies followed by retrosternal pain or discomfort (n=11, 27.5%). The most common foreign body was coin ingestion (n=24, 60%). Meat bolus and bone chip impaction was present in 9 (22.7%) patients. The success rate in case of esophageal foreign bodies was 93.75 %. While in the case of gastric foreign bodies, it was 100 %. There was a small perforation which occurred in only one patient with esophageal foreign body which was managed conservatively. In the case of gastric foreign bodies, no procedure related complications occurred.*

Conclusion: *Flexible endoscopy was a safe and effective technique for the management of foreign bodies in the upper gastrointestinal tract in our study.*

Key words: *Foreign body. Esophageal overtube. Flexible Endoscopy.*

INTRODUCTION

Approximately 1500 persons die each year from either swallowing or aspirating foreign bodies in the United States. This happens, either intentionally or accidentally[1]. Small toys are common in children, but coins clearly account for most accidental ingestions[2].

Patients with poor vision, or alcohol intoxicated adults, may accidentally swallow foreign bodies[3,4]. Such items may be articles that are frequently placed in the mouth, such as toothbrushes, dental prostheses, or nails. Intentional ingestion of a foreign body is likely in patients with dementia or those with psychological disease, but those with bulimia may inadvertently swallow objects while trying to induce emesis[5-7]. Criminals may swallow objects for secondary gain (hospitalization), whereas drug traffickers may be "body-packers," who intentionally ingest small packets of illicit drugs[3,8].

About 10-20% of the foreign bodies get impacted in the upper gastrointestinal tract and require removal[2]. Esophagus is the most common site of foreign body impaction in the gastrointestinal (GI) tract[2]. About 28-68% of gastrointestinal foreign bodies are found in the esophagous[9].

Majority of foreign bodies traverse the stomach without causing gastric symptoms; symptoms induced by a gastric foreign body suggest mucosal penetration or perforation, peritonitis, or obstruction[3, 5]. Mucosal tears, ulceration, perforation, abscess formation, hemorrhage, and fistula formation may all develop as a result of a retained foreign object[3, 4]. Objects more than 2 cm in diameter or 5 cm in length

should strongly be considered for removal because such items may lead to duodenal obstruction[10]. We measured the size of the foreign body with the help of the scope. Due to the risk of perforation, sharp objects should also be removed promptly. If a sharp object is too large to reasonably retrieve endoscopically, a laparoscopic gastrostomy or other surgical methods may be necessary[11]. Although there is some risk of perforation, a protective overtube may be placed in the esophagus for sharp or difficult-to-grab objects to prevent the possibility of aspiration or esophagopharyngeal trauma[12,13].

Using commercially available forceps, snares, baskets, and nets, endoscopic retrieval of foreign bodies is successful in 94%–98% of cases[14,15]. Immediate removal by endoscopy is recommended in cases of batteries lodged within the esophagus. In cases of batteries in the stomach endoscopic removal is warranted if the battery remains even at 48 hours, if it is greater than 15 mm in diameter, if it is a mercury-based battery, or if the patient is symptomatic with localized abdominal pain, hematemesis, or melena[16].

The purpose of our study was to describe our local experience of management of foreign bodies i n the upper gastrointestinal tract.

METHODOLOGY

This study was carried out in the Gastroenterology Department, Hayat Abad Medial Complex, Peshawar, during the period from May 2002 to May 2009. A total of 40 consecutive patients presenting with history of foreign body ingestion were included in the study. All the information regarding the patients was recorded on a structured questionnaire. Detailed history was taken from all these patients. The questionnaire contained a few sections. Like the section on personal details such as name, age, gender, hospital ID number and address. Another section was regarding the information about the details of patients presentation, time and type of the foreign body ingested, possible causes of ingestion, physical signs if any. Also, information about the radiological investigations, site of impaction, type of instruments and accessories used for removal of the foreign bodies, complications of the procedure and the final patient outcome, was recorded on the questionnaire. The statistical analysis was carried out using SPSS version 11.0.

RESULTS

In our study, total number of patients was fourty. Female to male ratio was 1.5:1.The age range of the patients was 4 years to 75 years. Mean age was 19.925± 23.5 years. Out of the fourty patients, 27(67.5%) were of the age below 12 years. Six (15%) patients were in an age range of twelve to twenty five years. In our study, there were no patients in the age range of 25 years to 60 years. Seven (17.5%) patients were in the age range of sixty one to seventy five years (Table 1). Out of the total fourty patients, twenty seven (67.5%) were female patients while the remaining thirteen (32.5%) were males.

Seven (17.5%) patients in our study were in the age range of 61 to 75 years. Out of them four (10%) had dysphagia while three (7.5%) had retrosternal pain in the lower esophageal region. All these four patients who had dysphagia were having food bolus impacted in the lower esophageous. The food boluses were cut into pieces with biopsy forcep and were successfully pushed down to the stomach. Three (7.5%) of them were having benign peptic stritures and were dilated with the Savary Gilliard dilators while one (2.5%) of them had malignant stricture and was referred to thoraic surgeon after dilatation. Out of the three (7.5%) patients, who had retrosternal pain in the lower esophageal region, two were having bone chips impacted in the lower esophagous and one had chicken bone impacted in the mid esophagus. Out of these three patients, one was having Parkinson disease. These bone chips were removed in one patient successfully without any complications. While in the other patient (2.5%) small esophageal perforatoion occurred, which was managed conservatively. In the third (2.5%) patient, the chicken bone could not be retrieved endoscopically and was referred to surgeon.

Twenty seven (67.5%) patients were of the age below 12 years. In all these patients the ingestion of the foreign bodies was accidental. The most common foreign body was coin ingestion. It was ingested accidentally by 24(60%) children. Out of these 24 children, fourteen (35%) patients were having dysphgia. Six (15%) of them had retrosternal discomfort and the remaining four (10%) were having nausea and vomiting. These coins were detected on radiological survey of the thorax and upper abdomen. The average time of presentation in these children was 26 hours. Only two of them had coins in the antrum while in the remaining 22 patients the coins were impacted in the distal esophagous. We removed these coins with the use of snares and protective endoscopy overtube.

One (2.5%), out of the remaining three patients in the age range below 12 years, was having bone chip impacted in the distal esophageous. It was sharp and the child was brought with in six hours to the hospital. He was having pain in the retrostertnal and epigastric area. He had no signs of perforation on clinical

Table 1: Age distribution of the patients included in our study.

Age in years	No. of patients	Mean age with SD	Percentage
Below 12	27	7.25 ± 2.14	67.5%
12 to 25	6	19.67 ± 4.76	15%
26-60	0	0	0%
61 to 75	7	69 ± 5.067	17.5%
Total	40	19.925 ± 23.2	100%

Table 2: Types of foreign bodies ingested

Types of foreign body	No. of patients	Percentage
Coins	24	60
Bone chips	5	12.5
Meat bolus	4	10
Battery cell	1	2.5
Fountain pen	1	2.5
Sewing needles	1	2.5
Safety pins	1	2.5
Finger ring	1	2.5
Pen cap	1	2.5
Nail	1	2.5

examination and radiological survey. The foreign body was successfully removed with use of snare and protective endosopy overtube. In the remaining two children, one (2.5%) had a battery cell lodged in the distal esophagous. He was brought with in two hours to the hospital with nausea and vomiting. The battery was removed with the help of balloon insertion, under direct visualization, past the foreign body. The balloon, battery, and endoscope were then removed as one unit. The other one (2.5%) patient had fountain pen ingestion. He presented with nausea and vomiting. It was lying in the mid body of the stomach. The pen was successfully removed with the help of a snare and protective overtube use.

Six (15%) patients were in the age range of 12 to 25 years. Three of them were having history of psychiatric illness. They also had history of repeated foreign bodies' ingestion.

One (2.5%) of them had sewing needles in her stomach and was removed with the help of snare and protective overtube. One (2.5%) had ingested safety pins which were also removed with snare, and the other one (2.5%) ingested a ring. The ring was removed with the use of retrieval basket. In the remaining three patients in this age group foreign body ingestion was accidental. One of them had bone chip impacted in the distal esophgous with retrosternal discomfort. It could not be retrieved endoscopically. He was referred to surgeon. One had ingested pen cap which was successfully removed with the help of a snare and endoscopic overtube. One patient had ingestion of nail which was stucked in the pyloric channel. It was removed with the help of snare and protective overtube (Table 2).

DISCUSSION

Foreign body ingestion is more common in children then in adults. It is almost always accidental in children, and is particularly common in the age range below twelve years. Majority of the patients in our study (27/67.5%) were below twelve years of age. Almost similar findings were noted in different studies done in various parts of the world. In a study done by Maroof Aziz Khan, Azhar Hameed and Abdul Jamil Choudry in Lahore, 66% of the pateints were children below 12 years of age[17]. Erbes and Babbit have reported an incidence of 80%[18]. Hawkins reported an incidence of 74%[19]. Twenty seven (67.5%) were female patients while the remaining thirteen (32.5%) were males in our study. While in studies done by McPherson et al and Morrow et al male patients were dominating the study population[20,21].

Foreign body ingestion can present with different symptoms. Many older children and adults are able to recognize the impaction when it occurs, and a history of prior impaction is common [2]. Esophagus was the most common site of foreign body impaction in our study. Very similar findings have also been found regarding the common sit of lodgement of the foreign bodies [23]. In esophageal foreign bodies' impaction, dysphagia is the most common symptom and, if the esophagus is obstructed, odynophagia, choking, or drooling can

be present[22]. In our study dysphagia was the most common symptom in the esophageal foreign bodies. It was present in 18 (45%) patients. The next main presenting complaint was retrosternal pain or discomfort which was present in eleven (27.5%) patients. Almost 50% of these patients were having bone chips impacted in the distal esophagus. Sharp foreign body impaction usually produces retrosternal pain and odynopohagia[22]. Six (15%) of the patients had nausea and vomiting. In a study done by Nijhawan S, Shimpi L, Mathur A et al, gastric and duodenal foreign bodies produced no symptoms[23]. In our study out of the eight (20%) patients, who were having foreign body in the stomach, only three had nausea and vomiting while the remaining five had no symptoms.

In the paediatric population, the most commonly reported foreign body is coin[24]. Sixty percent of our patients were having coin ingestion. Coins can be removed with either a grasping forceps, net, or retrieval basket, depending on the size and whether the coin has a ridge[25,26]. We used grasping forceps in the majority of the cases for coin removal. While in a very few cases we also used retrieval baskets.

Meat bolus is the most common foreign body in adults in most series[2,28]. Adults with food impaction often have an underlying structural esophageal disorder such as a peptic stricture or Schatzki ring[27]. Food impaction in the distal esophagus is either extracted or cleared by gently advancing the bolus under direct endoscopic vision into the stomach. We cleared the food boluses by gently pushing it into the stomach under direct vision. After the food boluses were cleared three (7.5%) of our patients showed benign peptic strictures that were dilated with the Savary Gilliard dilators while one (2.5%) of them had malignant stricture and was referred to thoracic surgeon after dilatation. The food bolus impaction in our study was fond in 10% of the patients. In a study done in Lahore the food bolus impaction was found in 7.5 % of the cases[17]. Patients experiencing meat bolus impaction have esophageal pathology in about 78 to 97 % of the cases[9]. Benign strictures are the most common pathology in this group of patients[28]. In our study 100 % of the patients with meat bolus impaction had esophageal pathology and, 75 % of these patients were having benign esophageal strictures. In the study we done, meat bolus impaction in combination with bone chip impaction accounted for 22.5 %. Almost similar findings have been noted in other series as well[17].

Battery cell ingestion was found in just one of our patients. For disk batteries, sharp objects, and objects lodged in the proximal esophagus, immediate intervention is required [29]. This patient was brought to the hospital with in two hours with nausea and vomiting. It was lodged in the distal esophagus. Although disc batteries or other round objects are captured in a net[30], we the removed the battery with the help of balloon insertion, under direct visualization, past the foreign body. The balloon, battery, and endoscope were then removed as one unit. Similar technique has been mentioned by Eisen GM, Baron TH, Dominitz JA, et al [31].

Sharp and pointed foreign bodies, as well as elongated materials in the stomach, can be very challenging and difficult to manage by endoscopy. Long and sharp foreign bodies should be removed immediately before they pass from the stomach to the intestine, as 15% to 35% of them will cause intestinal perforation[32]. Elongated materials such as toothbrushes, toothpicks, and bones are the most common foreign bodies in the stomach that require surgery for their removal[33,34]. One of our patients had ingestion of the fountain pen. He presented to us with nausea and vomiting. We removed this fountain pen with the use of polypectomy snare and a protetive esophageal over tube. Different endoscopists have their own experience and recommendations for the removal of the elongated foreign bodies form the stomach. Like Yong *et al*. removed a dinner fork from the stomach by using a double snare method to align the axis of the objects and facilitate its withdrawal[35], while Wishner *et al.* recommended laparoscopy assisted removal via gastrostomy to remove a swallowed toothbrush[36].

Patients with psychological disease are most likely to intentionally ingest a foreign body, but patients with bulimia may inadvertently swallow objects while trying to induce emesis[4-6]. In our study three [7.5%] patients were having history of psychiatric illness and were having repeated intentional ingestion of the foreign bodies. We referred them to psychiatrist after removing the foreign bodies successfully.

As for as the management of esophageal foreign bodies is concerned, flexible endoscopy performed by a trained endoscopist is the mainstay of therapy with a success rate of up to 98% and very low morbidity[2,14,15,31,37,38].

In cases of gastric foreign bodies endoscopic retrieval is successful in 94%–98% of cases[14, 15].

The success rate in case of esophageal foreign bodies in our study was 93.75 %. While in the case of gastric foreign bodies it was 100 %. In this study we had just eight patients having gastric foreign bodies and probably this small sample size

was the reason of 100 percent success.

In our study, we had a complication rate of just 3.125%. This was a small perforation which occurred in one patient with esophageal foreign body. It was managed conservatively. In the case of gastric foreign bodies no procedure related complications occurred.

CONCLUSION

Flexible endoscopy was a safe and effective technique for the management of foreign bodies in the upper gastrointestinal tract in this study.

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