



## ENDOSCOPIC MANAGEMENT OF FOREIGN BODIES IN UPPER GASTROINTESTINAL TRACT.

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### ABSTRACT

**Background:** Foreign body ingestion is one of the commonest indication for emergency endoscopy. Removal of FBs has always been a challenge for an endoscopist. The aim of this study is to assess the magnitude and spectrum of FBs among patients admitted in our Gastroenterology units. **Methods:** A hospital based retrospective study was conducted at Medical Trust Hospital Kochi- Kerala, one of the tertiary care referral centre, in South India over a period of 2 years. We reviewed all patients' files with full notations on age, sex, type of FB and its anatomical location, treatments, and outcomes (complications, success rates, and mortalities). Patients with incomplete files and those with FBs not identified at the endoscopic examination were excluded. **Results:** A total of 57 patients were identified. Their ages ranged from 6 months to 85 years. Slight male predominance was noticed (52.6%). The most frequent presentation was a history of FB ingestion without any associated manifestations (52.6%). Fish bones were the most commonly encountered FBs 43.8% (25/57) and majority of FBs 43.8% were removed within 6-12 hours. Upper esophagus was the most common site of trapping 38.5% (22/57). The overall success rate was 96.4% (55/57). Upper endoscopy successfully resolved the problem by either FB removal 78.9% (45/57) or dislodgment of the impacted fleshy meat bolus to the stomach 21% (12/57). The rate of complications was 3.5%. Furthermore, no mortalities due to FB ingestion or removal had been reported throughout the study. **Conclusion:** Our experience with FB removal emphasizes its importance and ease when performed by experienced hands, at well-equipped endoscopy units and under conscious sedation in most cases, with high success rates and minor complications.

**KEYWORDS:** upper endoscopy, Fish bones, FB (Foreign body), fleshy meat, forceps.

### INTRODUCTION

Foreign bodies (FBs) in the gastrointestinal tract (GIT) are considered an important cause of morbidity and even mortality, especially in children and the elderly and pose diagnostic and sometimes therapeutic challenges.<sup>[1]</sup> The symptoms and signs produced depend upon the nature, size, location and time since lodgment of the FB in the GIT. The majority of swallowed FBs pass harmlessly and spontaneously through the GIT.<sup>[2]</sup> A large FB occluding the upper GIT may lead to severe symptoms and even death, whereas a small FB may present without symptoms, apart from a history of FB ingestion. FBs lodged in the esophagus for a long time may be associated with complications such as mucosal ulceration, esophageal obstruction, perforation, intrinsic stenosis and esophageal diverticulum. FBs lodged in the pylorus or duodenum may lead to obstruction, perforation and peritonitis.<sup>[2-5]</sup> The aim of this study was to describe our experience in a 2 year period in dealing with FBs in the upper GIT using upper endoscopy.

### MATERIALS AND METHODS

A Hospital based, retrospective study was conducted at Gastroenterology Department, Medical Trust hospital, a tertiary referral centre, in Kochi –Kerala over a 2 -year period from September 2014 to October 2016, following its approval by the Institutional Review Board and ethical committee. All cases to be scoped were reviewed by a resident after verbal and written consents had been obtained from each patient. The study subjects included male and female patients of all ages who were admitted in our Gastroenterology units with a suspected or confirmed ingested FB. Patients with incomplete files and those with a history of FB ingestion but with none identified at endoscopic examination were excluded from the study. All patients with a history of FB ingestion in GIT were subjected to endoscopic examination. We reviewed all patients' files with full notations on the following data: age, sex, type of FB, anatomical location of the FB, treatments, and outcomes (complications, success rates and mortalities).

## RESULTS

### Study patients

During the study, 85 patients were identified. Patients with incomplete files (n=7) and those with FBs not identified at endoscopic examination (n=21) were excluded. 57 patients were included in the final analysis. Their ages ranged from 6 months to 85 years (mean 32.5±27 years) and the median age was 28 years. The most common age group, however, was 18–60 years and slight male predominance was noticed (52.6%). The

most frequent presentation in this study was the history of FB ingestion without any associated manifestations (52.6%). Dysphagia and a sense of a lump behind the sternum were the second common category, associated with salivation, drooling and nausea. Majority 25/57 (43.8%) patients were scoped within 6-12 hours, followed by 17/57 (29.8) within 0-6 hours. while the remaining patients were scoped at different time intervals from the time of suspected FB ingestion, from 0-48 hours. (Table1).

**Table 1: Demographic characteristics of patients with foreign body ingestion**

| Age ( years )              | Number of patients | Percentage (%) |
|----------------------------|--------------------|----------------|
| < 10                       | 8                  | 14.0           |
| 10 -18                     | 10                 | 17.5           |
| 18- 60                     | 25                 | 43.8           |
| >60                        | 14                 | 24.5           |
| <b>Sex</b>                 |                    |                |
| Male                       | 30                 | 52.6           |
| Female                     | 27                 | 47.3           |
| <b>Presenting symptoms</b> |                    |                |
| H/o Foreign body           | 30                 | 52.6           |
| Sense of lump              | 15                 | 26.3           |
| Dysphagia                  | 12                 | 21.0           |
| <b>Time to EGD (hours)</b> |                    |                |
| 0 - 6                      | 17                 | 29.8           |
| 6-12                       | 25                 | 43.8           |
| 12-24                      | 12                 | 21.0           |
| 24-48                      | 2                  | 3.5            |
| >48                        | 1                  | 1.7            |

### Nature of ingested foreign bodies

Fish bones were the most commonly encountered FB in this study 43.8% (25/57), followed by lodged food bolus, mainly fleshy meat bolus 26.3 (15/57). In Infants &

childrens, the most common foreign bodies seen are coins 10.5% (7/57), batteries 5.2% and Seed /pea in 3.5% childrens. (Table 2).

**Table 2: Types of foreign bodies ingested**

| Type        | Number | Percentage (%) |
|-------------|--------|----------------|
| Fish bone   | 25     | 43.8           |
| Meat bolus  | 15     | 26.3           |
| Coin        | 6      | 10.5           |
| Denture     | 3      | 5.2            |
| Battery     | 3      | 5.2            |
| Pin /Needle | 1      | 1.7            |
| Seed / Pea  | 2      | 3.5            |
| Others      | 2      | 3.5            |



1. Yellow arrow indicate site of Fish bone location, Figure



2. X Ray neck (AP View) showing Coin in upper esophagus.

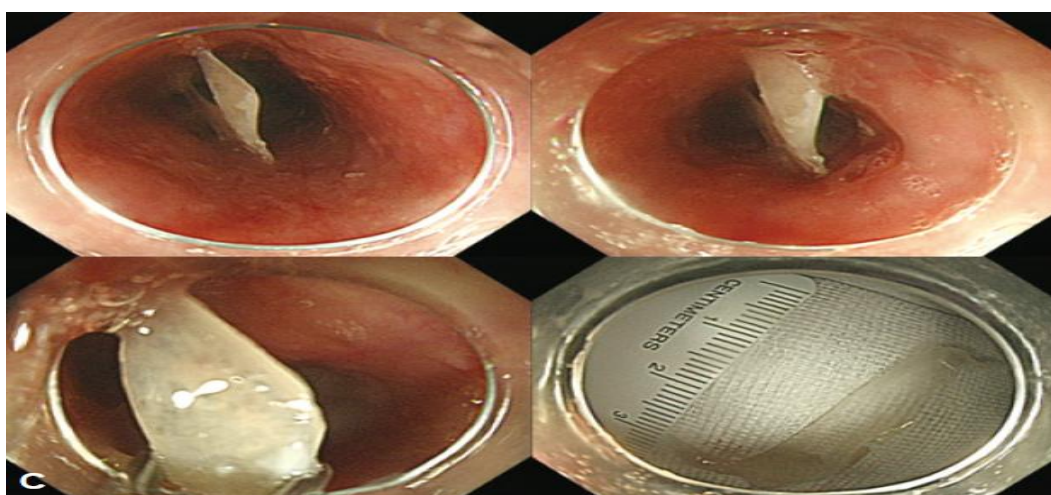


Figure A & B - showing Fish bone impacted in upper Esophagus. Figure C, Fish bone was removed using cap-fitted endoscopy.

#### Sites of impaction

Esophagus was the most common site of FBs trapping (44/57) followed by Oropharynx. In esophagus, most common sites were upper esophagus, 38.5% followed by

Middle esophagus 24.5%. (Table 3). Diagnosis of FB trapping was made using patients' history and witnesses of FB ingestion in most cases. However, X-ray was required to determine the exact location in all cases.

Table 3- Anatomic location of foreign bodies

| Site             | Number | Percentage (%) |
|------------------|--------|----------------|
| Oropharynx       | 11     | 19.2           |
| Esophagus        |        |                |
| Upper esophagus  | 22     | 38.5           |
| Middle esophagus | 14     | 24.5           |
| Lower Esophagus  | 8      | 14.0           |
| Stomach          | 2      | 3.5            |
| Duodenum Bulb    | 0      | 0              |

#### Treatment outcomes

The overall success rate in our study was 96.4% (55/57), Endoscopic retrieval of upper GI foreign bodies was successfully done in 78.9% (45/57 and dislodgment of the impacted fleshy meat bolus to the stomach in 21% (12/57). Two cases were referred for surgical intervention in view of esophageal perforation (Table 4).

Several instruments were used in FB removal, including FB forceps 49.1% (28/57), a Dormia basket (15/57) and a polypectomy snare in (12/57). Dislodgment of the fleshy meat bolus from the esophagus was achieved by

gentle pressure with the endoscope on the center of the bolus.

The rate of complication was 3.5%. Superficial esophageal mucosal injuries with minute bleeding were seen in (28/57) during the retrieval of impacted fish bones. Furthermore, no mortalities due to FB ingestion or removal had been reported throughout the study.

It was safe to remove FBs from the upper GIT under conscious sedation, even in children in 78.9% (45/57). However, general anesthesia with tracheal intubation was

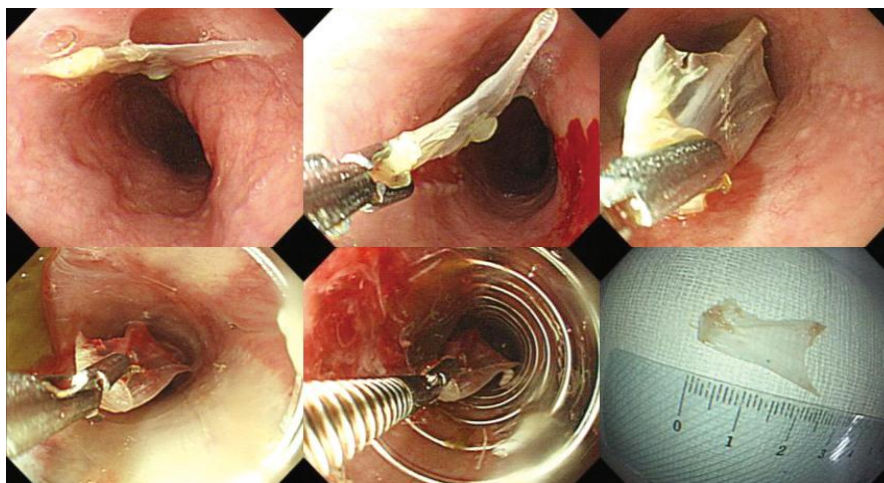
needed in 21% (12/57) especially in infants and when the FB was sharp and needed to be removed with extreme caution. The biopsy result was available for only one

patient who had annular infiltrating esophageal carcinoma and fleshy meat bolus impaction.

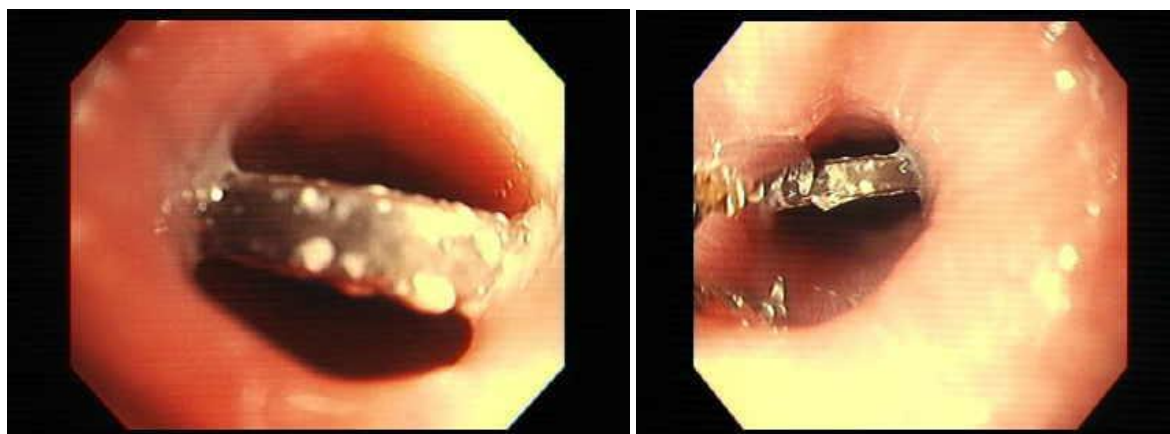
**Table 4. Treatment Outcomes**

|                        | Number | Percentage (%) |
|------------------------|--------|----------------|
| <b>Treatment</b>       |        |                |
| Extraction             | 45     | 78.9           |
| Dislodgment            | 12     | 21.0           |
| <b>Instrument Used</b> |        |                |
| Forcep                 | 28     | 49.1           |
| Dormia Basket          | 15     | 26.3           |
| Snare                  | 12     | 21.0           |
| <b>Anesthesia</b>      |        |                |

|                                |    |      |
|--------------------------------|----|------|
| General anesthesia             | 12 | 21.0 |
| Conscious Sedation             | 45 | 78.9 |
| <b>Complications</b>           |    |      |
| Mucosal injury & mild bleeding | 28 | 49.1 |
| Perforation                    | 2  | 3.5  |
| <b>Success</b>                 |    |      |
| Success rate                   | 55 | 96.4 |
| Failure                        | 2  | 3.5  |



(A-F) Serial endoscopic photos of fish bone removal, using an overtube. Using an overtube not only protects the upper esophageal mucosa from laceration, but also helps protect the airway from aspiration.



Figures - Endoscopic view of coin in UES.

Endoscopic retrieval of coin by forcep.

## DISCUSSION

Endoscopic management is a safe and highly effective procedure for extracting ingested foreign bodies and food bolus impaction. Prompt endoscopic interventions may increase the chance of successful foreign bodies' detection.

Consequently endoscopic societies have set guidelines for safe endoscopic removals.<sup>[5]</sup> Experienced endoscopists and well-equipped theaters are required to perform these maneuvers. Our endoscopy units fulfill both requirements and this is reflected by the high rate of success in this study (96.4%), which is similar to other studies.<sup>[6,7]</sup>

In our study, the most common Foreign body was Fish bone, which was seen in 43.8% (25/57). Most of the ingested foreign bodies were located in the esophagus (77%), especially in the upper esophagus. This finding is consistent with previous studies<sup>[8-11]</sup> and was probably because the ingested foreign objects commonly lodged in areas of the GI tract where the lumen was physiologically or pathologically narrow. The esophagus has four physically narrow areas which include the upper esophageal sphincter, the level of the aortic arch, the crossing of the main stem bronchus and the lower esophageal sphincter<sup>[12]</sup> and majority of them, 43.8% were endoscopically retrieved within 6-12 hours followed by 29.8% (17/57) within 0-6 hours. Two fish bone (2/57) ingestion incidents needed surgical intervention due to penetration of the esophageal wall.

The State kerala (Popularly known as Gods own Country) in South india, is an island surrounded by lot of Seas, with an abundant supply of fish and it forms a major component of the daily diet of local inhabitants. Locals are accustomed to eating fish without removing the bones and the latter are commonly present in broths or soups; this is likely to increase the chance of fish bone ingestion.

FB ingestion can affect individuals of any age, but it bears particular importance in very young patients due to matters related to the complete obstruction of the aerodigestive tract, 1 and also in the elderly.<sup>[6]</sup> Our results were somewhat similar to these findings. Although the most common age group was 18-60 years, the second most common age group was > 60 years. When patients with suspected FB ingestion were presented, several points needed to be addressed. The first issue concerned the ideal time to intervene, because Fish bones, sharp objects and large FBs needed emergency endoscopy. In our study majority of the foreign bodies 43.8% (25/57) were removed within 6-12 hours, followed by 29.8% (17/57) within 0-6 hours, while rest of the foreign bodies were removed within 12 - 48 hours. The second parameter was the proper instrument to use, which depended on the nature and site of the trapped FBs. Fish bones and Coins were easily removed by grasping with forceps, fleshy meat could be effectively

removed using a basket and pins penetrating the bowel wall were snared. Complications reported in this study were directly related with FB impaction. Many other studies documented low complications in relation to FB removal, which, as in our study, were associated with sharp and impacted FBs.<sup>[6,13]</sup>

It is very important to protect the airway passage,<sup>[5]</sup> especially when FBs are trapped in the upper GIT and the likelihood of FB aspiration is high. That is why we used general anesthesia in selected cases. However, the majority of cases in this study, as in other studies, 1,6 were scoped under conscious sedation.

However, this study makes two new contributions. First, to the best of our knowledge, it is the first published study from Kochi -Kerala, south India to address endoscopic retrieval of upper GI foreign bodies and second, it elicits the impact of Fish which forms a major component of the daily diet of local inhabitant on FB trapping. In conclusion, our experience with FB removal emphasizes its importance and ease when performed by experienced hands, at well-equipped endoscopy units and under conscious sedation in most cases, with high success rates and minor complications.

## Disclosure

The authors report no conflicts of interest in this work.

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