

An Unusual Spectrum of Upper Gastrointestinal Tract Foreign Bodies: A 4-Year Prospective Endoscopic Study

Shabir Shiekh¹, Asif Iqbal², Bilal Khan³, Showkat A. Kadla⁴, Nisar Shah⁵, Zeeshan Wani⁶

ABSTRACT

Introduction: Ingestion of a foreign body (FB) is a common occurrence in day to day clinical practice; however, few studies have been reported from Northern India. The aim of this study was to study the spectrum and management outcome of patients with FBs in their gastro intestinal tracts (GIT) presenting to gastroenterology unit in a tertiary care referral hospital.

Material and methods: Data were collected from all consecutive patients with history of FB ingestion admitted to our endoscopy centre from January 2015 to December 2018. The demographic data, clinical presentations, and endoscopic management was reviewed and analyzed.

Results: A total of 204 patients with suspected FB ingestion underwent endoscopic management. 211 FBs were found in 204 patients with suspected FB. Scarf pin was most common (57.3%) followed by knitting needle in twenty-six (12.3%) cases. Most of the FBs were located in the stomach (72.6%). The majority of patients (95.2%) were successfully removed with flexible endoscopy with the addition of suitable accessories without any serious procedure-related complications.

Conclusion: In this part of the world the pattern and types of Upper gastrointestinal tract foreign bodies is unique not seen elsewhere across the globe. Endoscopic management was found to be highly safe and efficacious.

Keywords: Spectrum, Upper Gastrointestinal Tract, Endoscopic Study

INTRODUCTION

The ingestion of a foreign body (FB) is a common emergency seen in gastroenterology clinics. In fact it's the second most common endoscopic emergency secondary to gastrointestinal bleed.¹ The majority of foreign bodies in the GI tract will pass spontaneously. However, 10% to 20% of the cases will require nonoperative intervention, and 1% or less will require surgical procedures.² Of more than 100,000 cases of foreign body ingestion reported each year in the United States, 80 percent occur in children.³

An estimated 1500 people in the United States die annually from foreign bodies in the upper-gastrointestinal (GI) tract.⁴ Ingestion of foreign body into the gastrointestinal tract is mostly accidental but can be intentional in psychiatric patients and intoxicated individuals and among body packers. Management of GIT FBs depends on the facilities and local expertise available at a particular centre. Flexible endoscopy has become the diagnostic and therapeutic approach of choice in the management of FBs in the upper GI tract, in both the pediatric and adult population. Clinical presentations vary among different geographical areas because of diversity in

culture, lifestyle and dietary habits. Data about this problem is scant from this part of the country.

Here we aimed to analyze the characteristics of FB ingestion presenting to an endoscopy centre and their subsequent management in a tertiary care hospital setting.

MATERIAL AND METHODS

This was a prospective observational study carried out in the Department of Gastroenterology at Superspeciality hospital which is a tertiary care hospital associated with Government Medical College Srinagar over a period of four years between January 2015 to December 2018. The endoscopy unit of the hospital receives referrals from the associated hospitals of the medical college as well from peripheral hospital across the Kashmir valley. The hospital runs 24 x 7 emergency endoscopy services with round the clock availability of an experienced endoscopy staff.

All patients of suspected foreign body were subjected to x-ray neck, chest and abdomen to assess the presence, location, size, configuration, and number of ingested objects. Furthermore, complications such as aspiration, free mediastinal/peritoneal air, or subcutaneous emphysema can be detected. CT scan was done in few selected cases. All the patients were subjected to EGD irrespective of the results of the imaging studies within six hours of presentation. Patients in whom no consent was given for endoscopic procedure were excluded.

All EGDs included in the analysis were performed by experienced gastroenterologists. Informed consent for endoscopy was obtained by the endoscopy staff before the procedure. EGD was performed per-orally in a standard manner with the patient in the left lateral position after topical xylocaine spray/jelly. Majority of the procedures were done

¹Consultants, Department of Gastroenterology, ²Consultants, Department of Gastroenterology, ³Consultants, Department of Gastroenterology, ⁴Professor and Head, Department of Gastroenterology, ⁵Associate Professor, Department of Gastroenterology, ⁶Consultants, Department of Gastroenterology, Government Medical College, Srinagar, Kashmir, India

Corresponding author: Dr. Shabir Ahmad Shiekh, Department of Gastroenterology and Hepatology | 2nd Floor, Superspeciality Block, Government Medical College, Srinagar, Kashmir, India.

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using intravenous midazolam. Intravenous propofol was used in few cases.

Video endoscope used was GIF Q 150 Olympus optical Co., Ltd., Tokyo, Japan were used. Accessories used for FB retrieval included FB forceps, Dormia baskets, polypectomy snares, Roth net. Post-procedure patients were kept in recovery ward for observation.

Data extracted from their records included gender, age, indication for the procedure, endoscopic diagnosis.

STATISTICAL ANALYSIS

Collected data was compiled and entered in spread sheet Microsoft excel and exported to Data editor of SPSS computer software, version 20 (SPSS Inc., Chicago, IL, USA). Continuous variables were expressed as mean \pm standard deviation and categorical variables were summarized as frequency and percentage.

RESULTS

Patients' Demographic Characteristics

Of the 204 cases with suspected FB ingestion, 169 patients were females (82.8%). Majority of the cases belonged to rural background 64.7%. Mean age at diagnosis was approximately 20 years, with a range of 8 months to 103 years.

Type and Location of FB

A total of 211 FBs were diagnosed in 204 cases with suspected FB ingestion. Four patients (2%) had multiple FBs, mostly scarf pins. FBs were not found in 10 patients (5.0%) on endoscopy. FB had already passed beyond duodenum. All these patients passed the FB in stool and subsequent X-ray examination were normal.

The types of FBs were diverse (table 1 and figure 1) 57.3% were scarf pins (121 cases), 12.3% were knitting needle (26 cases), and 6.1% were coins (13 cases). Button battery was seen in 6 cases (2.8%). Other FBs included nails, bone chips, screws, plastic FB, food bolus, denture. Sharp metallic FBs were the most common types of FBs.



Figure-1: Spectrum of FBs retrieved



Figure-2: Coin impacted in esophagus

Anatomically, FBs were mostly retrieved from stomach (72.6%) followed by duodenum 21 (10.5%) (table 2).

Clinical presentation

Majority of the cases presented with just the history of foreign body ingestion. Throat pain /odynophagia was seen in cases of bone impaction at cricopharynx. All the cases were accidental in nature. However children with FB impaction in the esophagus presented with irritability and/or refusal to feed.

Type of FBs	Frequency	Percent
Nail	10	4.76
Pin scarf	121	57.3
Coin	13	6.1
Needle (knitting)	26	12.3
Screw	5	2.37
Safety pin curved	4	1.9
Bone chip	7	3.3
Denture	2	.94
Bottle cap	1	.47
Bolus	3	1.4
Plastic toys	5	2.37
Button battery	6	2.8
Plastic spoon	1	.47
Pencil battery	1	.47
Metallic ear ring	1	.47
Metallic chain (neck)	1	.47
Metallic T-boult	2	.94
Leather piece	1	.47
Plastic brooj	1	.47
Total	211	100.0

Table-1: Diverse variety of foreign bodies seen in our patients

Site of FBs retrieved	Frequency n(%)
Cricopharynx	8 (3.98)
Esophagus	26 (12.93)
Stomach	146 (72.63)
Duodenum	18 (8.95%)
Post bulbar	3 (1.49%)

Table-2: Site of FBs as seen on endoscopy

Age group	Frequency	Percent
0-15 years	81	39.70%
16-30 years	105	51.47%
31-50 years	9	4.41%
Above 50 years	9	4.41%

Table-3: Frequency of foreign bodies among various age groups

Number of FBs	Frequency	Percent
Retrieved	201	95.2
Not Retrieved	10	4.8
Total	211	100.0

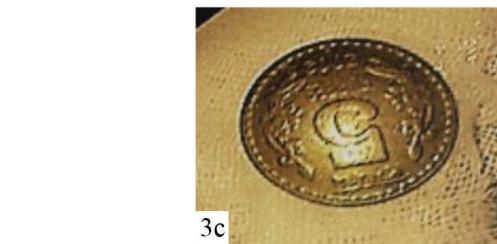
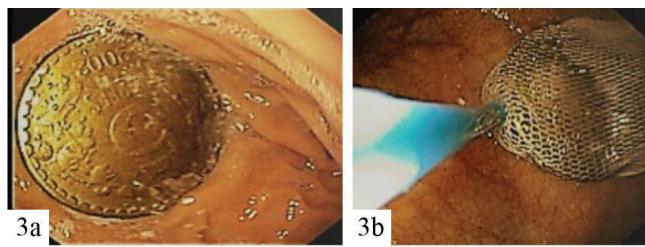
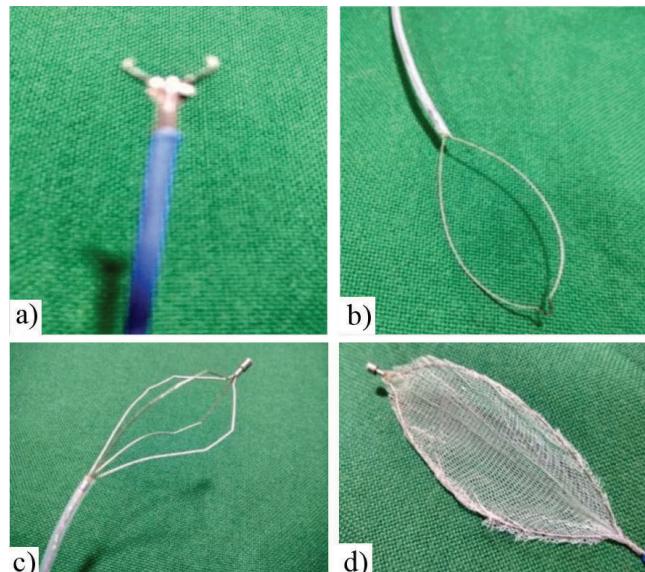
Table-4: Result of FB retrieval on Endoscopy

Nature of FB	Site	When to remove
Battery/Sharp pointed/Food bolus with obstruction	Esophagus	Emergently
Magnet/Blunt object upto 5 cms	Esophagus	Urgently
Battery/Sharp pointed/ Magnet/Blunt more than 5 cms size	Stomach/small bowel	Urgently
Blunt object upto 5 cms	Stomach/small bowel	Non-urgent

Table-5: Timing of endoscopic intervention

	Present study N =204	S.Zhang South China N =561	S Mosca Italy N =414	Gupta Y India N =228
Design	Prospective	Retrospective	Retrospective	Retrospective
Male: Female	17: 83	45:55	56 : 34	65 : 35
Mean age (Range) years	19.8 (8 months -103 years)	46 (2month to 102 years)	40.6 (6-84)	NA (1-60)
Type of FB (MC)	Scarf pin 57% Knitting needle 12% Coin 6%	Fish bone 78% Food bolus 8%	Food bolus 53% Bone Dental prosthesis Fish bone	Coin 67% Button battery 8% Bone7%
Siteof FB (MC)	Stomach 72.6% Duodenum 10% Esophagus 12.9%	Esophagus 84% Stomach 8% Pharynx 3%	Esophagus 75% Stomach 16% Pharynx 6%	Cricopharynx 86% Esophagus 12%

MC : most common

Table-6: Comparing the results of our study with some other studies:**Figure-3:** (a) Coin in stomach; (b) Coin caught in Roth net and removed (c)**Figure-5:** (a-d) Accessories utilized for removal of FBs. (a) FB removal forceps; (b) Snare; (c) Roth net; (d) Basket

upper GI scope. All these FBs were ultimately passed with feces uneventfully.

DISCUSSION

Gastrointestinal tract FB ingestion is a common clinical emergency with significant morbidity although low mortality. Management guidelines have been put forward for this problem. But the pattern and management of FB ingestion varies with the geography of the area, local culture and the facilities at a particular centre which vary as per the infrastructure, equipment, manpower and availability of round the clock emergency services.

Timing of endoscopic intervention in foreign body ingestions as per has been defined by European society of

gastrointestinal endoscopy (ESGE)⁵ (table-5) as:

- Emergent** is preferably within 2 hours, but at latest within 6 hours;
- Urgent**, within 24 hours;
- Non-urgent**, within 72 hours.

We observed a disproportionately higher percentage of females (83 approx%) in our study. Most of the studies reported higher frequency of male^{6,7,8,9,10} patients although one study from South China revealed female predominance.¹¹ The mean age in our study was about 20 years.

The above facts can be explained to the basis of the type of the most common FB found in our study that is scarf pin which reflects our religio-cultural setup to wear head cover known locally as scarf. Each scarf remains attached to hair of these young females by many pins. These females use around 8-12 pins for tying each scarf (head cover) and while tying the head cover, these young girls keep many pins under their teeth and if something untoward happens during this time such as sneezing, coughing, someone else pushing from behind or frightening you, there is every chance that these pins may either be swallowed or aspirated. Secondly our study also included the pediatric age group patients. Mean age in various studies has been 46 years¹¹, 32 ± 27 years,⁹ 26 ± 11 years.⁷

Majority cases of FB ingestion in our study were asymptomatic as majority of them were found in stomach. Only those patients who had ingestion of bone chip (n=7, 3.3%), bolus (n=3, 1.4%), denture (n=2, 1%) and button battery (n=6, 2.8%) were symptomatic with features of dysphagia, throat pain, foreign body sensation throat and odynophagia.

Site of finding a FB on endoscopy depends upon the FB characteristics, structural and functional abnormalities of GI tract like diverticula, webs, rings, strictures, achalasia, tumors, duodenal ulcer sequelae, hernia, and postgastrectomy status. Majority of the studies have shown esophagus or cricopharynx as the most common site of impaction. The most common site of FB in our study was stomach (72.6%) followed by esophagus. Duodenum was site of FB in 10% cases. Only a few were seen at cricopharynx.

The most common FB in our study was scarf pin (57.3%) followed by knitting needle (12.3%). Other common types were coin (6%), nail (4.7%) bone chip (3.3%) and button battery (2.8%). We did not encounter any case of magnet ingestion or body packers.

We compared our results with other studies as shown in table 6.

We believe that the traditional concept that 80-90% of the ingested foreign bodies need not to undergo endoscopic removal needs to be adjusted, as per the spectrum as the most common foreign bodies are long sharp pointed metallic objects like scarf pin and knitting needle. Similar point was discussed in (6) as most common type of foreign body prevalent in China is fish bone.

These FBs even if asymptomatic can have potentially dangerous complications.

In addition other studies, including those from 2 groups in

Korea and Italy, reported that higher percentages of patients with foreign bodies were treated endoscopically.^{8,12} Besides our centre has 24 x 7 availability of experienced endoscopy staff available, and the foreign bodies were always extracted once they are observed by endoscopists.

CONCLUSION

We have presented our data about GI tract foreign bodies which has a very unusual spectrum with predominantly long thin sharp objects scarf pin and knitting needle. Majority of them were lodged in the stomach. We have found endoscopy a safe and highly efficacious management modality for these upper gi tract FBs. We recommend early UGI endoscopy in managing these patients.

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