

A Study of Clinical Profile and Outcome in Children with Foreign Body Ingestion at a Tertiary Care Centre

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Abstract

Background: The presence of foreign bodies in the airway and food passages may be difficult to diagnose and often overlooked, as it mimics many other clinical entities. Diagnostic delay may cause an increase in mortality and morbidity.

Methodology: This cross-sectional study was taken up to analyze the clinical profile and outcome in children with foreign body ingestion. All children in the age group of 1 month to 12 years admitted to Niloufer Hospital, Hyderabad during the period from January 2019 to December 2019 with either a history of FB ingestion or clinical features suggestive of FB ingestion were included in the study. Demographic data like age, gender, clinical features (C/F) duration of illness, and type of foreign body were noted. Chest X-ray or X-ray abdomen was done for all cases. All children fulfilling the inclusion criteria were observed either for the natural passage of foreign bodies or subjected to procedural removal by endoscopy/laparotomy based on the need on a case-to-case basis. Procedure findings like the type and location of the foreign body were noted.

Results: Of the total 68 children studied 72% of cases were below the age of 3 years. 54.41% of cases were males and 45.58% were females. Common presenting symptoms were vomiting (39.70%) followed by cough (26.47%) and pain abdomen (13.23%). 17.64% of cases were presented with no symptoms other than the history of some foreign body ingestion. Among all the cases studied, 95.5% of cases were recovered without any complications. The outcome was good with no mortality.

Conclusions: Foreign body ingestion occurring in children is mostly accidental and associated with significant morbidity. The common age group is infants and toddlers. A strong suspicion among them with a presentation of sudden onset of symptoms will lead to early diagnosis and early intervention if needed, will lead to a better outcome.

Keywords: Foreign body, Endoscopy.

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Introduction

Foreign body ingestion is a problem that frequently affects children of all ages. Children frequently put things in their mouths, but very few of these things may be unintentionally ingested. Foreign body ingestion is a worldwide issue among children, which often leads to parental anxiety. [1] Between the ages of six months and three years, most foreign body ingestion occurs. [2] Most instances are submitted by parents or caregivers after an ingestion is observed. Children only accidentally consume foreign bodies, and they often ingest objects that are left lying about the house. [3] Coins, button batteries, toys, screws, needles, magnets, marbles, stones, and bones are examples of foreign objects that people frequently eat. Along with toys and button batteries, coins are the most common foreign object consumed by kids. [4, 5] Anywhere in the gastrointestinal (GI) system, from the oesophagus to the anus, inhaled foreign materials can be discovered. Different problems may be brought on by foreign bodies' lodging locations, types, sizes, and shapes. [6, 7] Drooling, nausea, vomiting, a sense of a foreign body in the stomach, chest discomfort, and difficulty swallowing are some of the clinical manifestations of foreign body ingestion. However, following consumption, 50% of children either show no symptoms or experience mild symptoms. [2] Children commonly swallow radiopaque foreign objects, such as coins, button batteries, pins, magnets, stones, or pieces of toys. The most helpful simple, cost effective investigation is a normal plain X-ray abdomen, including chest and neck. Many foreign bodies may be identified by an X-ray radiograph by their quantity, position, size, and form. [8] The clinical appearance and varying degrees of consequences are determined by the location and nature of the foreign body. The most typical oesophageal foreign body presentation in children is obstruction. Anywhere in the

digestive tract, the foreign body might lodge and produce a partial or total blockage. However, some foreign bodies have the potential to damage the intestines, which might result in perforation or foreign body migration through the digestive system. [9] The purpose of this study is to provide an estimate of the kind, location, clinical presentation, complications, and outcome of ingested foreign bodies at a Tertiary Care Hospital.

Materials and Methods

This cross-sectional study was conducted in the Emergency Department at Niloufer Hospital in Hyderabad. Institutional Ethics committee approval (IEC/OMC/2021/M.No.(08)/Acad-92) was obtained for the study. Written consent was obtained from all the parents of the cases included in the study.

Inclusion criteria

1. Children aged 1 month to 12 years with a history/Clinical feature suggestive of foreign body ingestion.
2. Children aged 1 month to 12 years with acute onset of symptoms of foreign body ingestion.

Exclusion criteria

1. Children whose parents refused to give consent for the study.
2. Children less than 1 month and above 12 years of age group.

Age, sex, the type of item, clinical characteristics, anatomical position, type of foreign body, treatment, complications, and outcome were all noted along with other demographic and clinical information. Regardless of the clinical symptoms and the time of consumption, all patients were treated with a plain X-ray of the thoracoabdominal area during the first hour of their presentation. For foreign bodies seen on imaging in the esophagus or stomach that were present in the upper digestive system, upper gastrointestinal

endoscopy was done. The children were managed in PICU after foreign body removal till stabilization and then shifted to general wards. The total duration of the hospital stays with or without complications was noted.

Statistical analysis: All the available data was uploaded on an MS Excel spreadsheet. Data collected was analyzed by using SPSS 20.0 version (SPSS Inc., Chicago, IL, USA). Qualitative data was arranged in terms of proportions. Quantitative data

was arranged in terms of Mean and variance.

Results

The total number of children with foreign body ingestion was 68. The most common age group was between 1 to 3 years, accounting for 57.35%. 16.17 % of children were between 3 to 5 years. About 11.76% were above the age of 5 years, while 14.7% were infants between 1 to 12 months of age (Table 1). The mean age of the study group was 3.2 ± 1.0 years.

Table 1: The age groups of children affected by FB ingestion.

Age Group	Number (N=68)	Percentage (%)
1 Month-1 year	10	14.7%
1 – 3 years	39	57.35%
3 – 5 years	11	16.17%
Above 5 years	08	11.76%

The gender-wise distribution of children showed that 54.41% were boys while 45.58 % were girls (Table 2).

Table 2: Gender Wise Distribution of Children with Foreign Body Ingestion.

Gender	Number(N=68)	Percentage (%)
Male	37	54.41%
Female	31	45.58%

The children with foreign body ingestion had varied clinical presentations. N=27 children corresponding to 39.7 % had presented with vomiting. The next most common presentation was cough seen in n=18 children (26.47%) followed by pain abdomen (13.2 %) and increased work of

breathing (8.8 %).17.64% of cases were presented with no symptoms other than a history of some foreign body ingestion. Choking, stridor, and seizures were uncommon presentations in our study accounting for 4.41%, 2.94%, and 2.94% respectively. (Table. 3).

Table 3: Clinical features of children with FB Ingestion

Features	Number (%)
Vomiting	27 (39.7%)
Cough	18 (26.47%)
Increased work of breathing	06 (8.8%)
Pain abdomen	09 (13.2%)
Stridor	02 (2.94%)
Choking	03 (4.41%)
Seizures	02 (2.94%)
H/O FB Ingestion (No symptoms)	12 (17.64%)

Out of a total of 68 cases, the majority (62) were inorganic in nature at 91.17 %, while

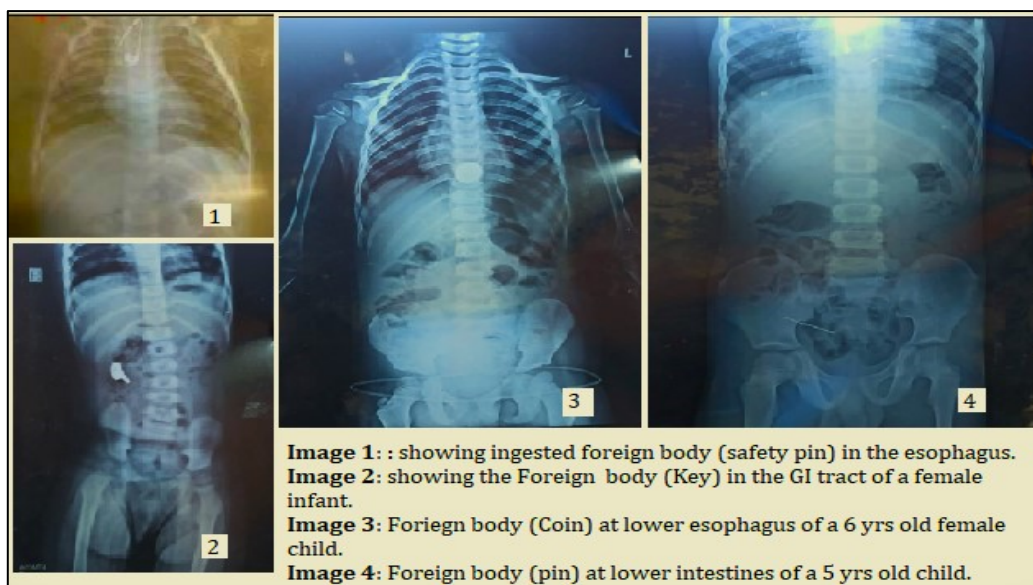
the remaining 6 cases were organic at 41.89 % (Table 4). Out of a total of 62

inorganic cases, 59 were metals, and 3 cases were plastic in nature. Coins were common among metal inorganic foreign bodies accounting for 95.16% followed by pins (20.96%), batteries (10.29%) and

rings (6.45%), and needles (6.45%). Out of the total 06 organic foreign bodies, 4 of them were peanuts, and 1 case each with tamarind seed and camphor ball. (Table 4).

Table 4: Showing the nature and type of ingested foreign body.

Type of FB	Number N=68 (%)	Percentage
Organic Foreign bodies		
Pea Nut	04	5.88
Tamarind Seed	01	1.47
Camphor Ball	01	1.47
Total	06	8.82
Inorganic Foreign bodies (Metals)		
Coins	24	35.29
Pins	13	19.11
Key	02	2.94
Screws	02	2.94
Rings	04	5.88
Battery	04	5.88
Magnet	02	2.94
Needles	04	5.88
Bolt	01	1.47
Needles	04	5.88
Total	56	82.35
Inorganic Foreign bodies (Plastic)		
Plastic	03(4.41%)	4.41
Whistle	02(3.22%)	2.94
pearls	01(1.47%)	1.47
Total	06	8.82



Total foreign body ingestion cases were n=68, natural removal occurred in n=57 cases and n=8 cases required endoscopic

removal and 3 cases required surgical removal of a foreign body by exploratory laparotomy (Table 5). Out of the total

n=68 cases, n=11 cases had chest X-rays and the remaining all cases had X-Ray abdomen. Computed tomography chest

was done in only three cases before taking for surgical laparotomy.

Table 5: showing Treatment of ingested FB cases.

Treatment	Frequency N=68	Percentage
Procedural Removal	11	16.17
Endoscopic removal	08	11.76
Open surgical laparotomy	03	4.41
Natural removal	57	83.82

Among all the cases studied, 95.58 % cases recovered without any complications. The outcome was good with no mortality (Table 6). The average duration of hospital stay ranged from 3 to 15 days for foreign body ingested cases. Two cases developed esophageal

perforation as a complication after the endoscopic removal of batteries and one case had sepsis as a complication after the surgical removal of a metallic needle. All the cases with complications recovered after 15 days of hospital stay.

Table 6: Outcome of children with FB ingestion.

Outcome	Number (N=68)	Percentage
Recovered without complications	65	95.58%
Recovered with complications (Esophageal perforation-02 Sepsis-01)	03	4.41%
Deaths	Nil	-

Discussion

Foreign body ingestions are a common occurrence among children, and their high frequency has led to them being recognized as a public health concern. These incidents primarily affect children between the ages of 6 months and 3 years. [10, 11] However, our study found that the average age of affected children was 3.2 ± 1.0 years, slightly older than what other studies have reported. Furthermore, our study observed a higher prevalence of foreign body ingestions among males, which aligns with the gender distribution patterns identified in other research findings. [12, 13] Children who had swallowed foreign bodies frequently reported experiencing stomach pain, vomiting, drooling, dysphagia, a sense of having swallowed a foreign body, coughing up foreign bodies, and a history of having swallowed foreign bodies. [14, 15] In this study, the majority of patients, 39.7% reported abdominal discomfort

which was followed by cough in 26.47%. There were no symptoms at all reported in 17.64% of patients. In this study the total foreign body ingestion cases were n=68, natural removal occurred in n=57 cases and n=8 cases required endoscopic removal, and n=3 cases required surgical removal of a foreign body by exploratory laparotomy. Studies have shown that in 90% of cases, foreign bodies pass out safely without any complications through the esophagus. However, some of them get lodged in the pylorus, duodenum, or ileocecal valve. [16] About 10 percent of foreign bodies may be impacted and retained in the intestine and require surgical removal. [16- 18] In our study we found ingestion of organic bodies in 8.82% of cases and inorganic bodies were ingested in 91.18% of cases. In the inorganic bodies, coins were commonly ingested in 35.29% of cases. For the evaluation of the child with a history of foreign body ingestion plain anteroposterior radiographs of the neck,

chest, and abdomen, along with lateral views of the neck and chest are needed. The flat surface of a coin in the esophagus is seen on the anteroposterior view and the edge on the lateral view, whereas the reverse is true for coins lodged in the trachea. It has been found in the study that most of the coins once pass through the esophagus are spontaneously passed out through the GI tract without any complications. Although some researchers have reported that the hydroxide released from the battery can cause chemical burns or sometimes electrical burns have been reported which are sometimes serious although it depends on the amount of time spent in the GI tract. [19-21]

Studies have found that 15%-35% of patients may experience problems from sharp foreign bodies like pins, needles, or screws, including esophageal ulceration and or perforation, tracheal fistula, an aorto-oesophageal fistula, peritonitis, and even mortality. [22-25] However, the difficulties brought on by ingesting sharp objects have decreased because of early detection and endoscopic removal in recent times due to the increased availability of equipment at tertiary care centers. Therefore, it is advised to remove foreign objects from the stomach or esophagus endoscopically whenever feasible. [24] Operative intervention and removal can be considered in children who are symptomatic and have had a sharp foreign body pass into the small intestine, and diligent follow-up with repeated plain X-ray radiographs is advised in asymptomatic children.[24, 25] The prognosis of foreign body ingestion in children is generally favorable, as most foreign bodies safely pass through the gastrointestinal tract without the need for surgery. The risk of mortality and complications is low, even if surgery is required. Our study found no instances of mortality, which aligns with the low mortality rates reported in other studies on foreign body ingestion.

Conclusion

Foreign body ingestion occurring in children is mostly accidental and associated with significant morbidity. The common age group is infants and toddlers. Most of these foreign bodies pass through the gastrointestinal tract without any issues. Timely identification and proper management of foreign body ingestion can help in minimizing complications and achieving favourable outcomes.

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