

Original Research Article

A two-year institutional review of esophageal foreign body cases in the pediatric age group

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Abstract

This retrospective study evaluated the clinical features, radiological findings, and management of esophageal foreign bodies in pediatric patients. A total of 66 cases were analyzed between 2023 and 2025. Coins were the most common foreign body (56%), with the esophagus involved in 57% of cases, predominantly at the cricopharyngeal level. Most incidents occurred in children aged 1–5 years. The main presenting symptoms were dysphagia (45%), vomiting (29%), and drooling of saliva (26%). Rigid esophagoscopy under general anesthesia was performed in selected cases and proved safe and effective. Rigid esophagoscopy remains the preferred method for diagnosis and management of pediatricoesophageal foreign bodies.

Key words

Foreign body, Esophagus, Rigid endoscopy, Pediatric.

Introduction

Foreign body ingestion is a frequent pediatric emergency encountered in otorhinolaryngology practice. The esophagus is the most common site of impaction after the nose and ear, with nearly 80% of cases occurring in this region. Most

foreign bodies become lodged at the cricopharyngeal sphincter. The annual incidence of foreign body ingestion is approximately 13 per 100,000 population, with the highest incidence between six months and six years of age. Coins are the most commonly ingested objects, while other items such as meat boluses, marbles, safety

pins, hair clips, and batteries are also reported. This study aims to evaluate the frequency, type, and site of impaction, as well as the methods of removal of esophageal foreign bodies in pediatric patients presenting with aero-digestive tract foreign body ingestion.

Materials and methods

A retrospective study was conducted in the Department of ENT, SVS Medical College and Hospital, from 2023 to 2025. Informed consent was obtained from all patients or their guardians prior to inclusion, in accordance with ethical guidelines. The study included patients above six months of age with a definite history or radiological evidence of foreign body ingestion. Patients below six months of age, those in whom the foreign body had passed spontaneously into the stomach, and those unfit for anesthesia were excluded.

Demographic data including name, age, and gender were recorded. Detailed history was taken with emphasis on the type, duration, and symptoms related to foreign body ingestion. Baseline investigations such as hemoglobin, bleeding time, clotting time, and radiographs (anteroposterior and lateral views) were performed in all cases to confirm the presence and site of the foreign body.

Rigid esophagoscopy under general anesthesia was performed for removal of the foreign body. Patients were monitored postoperatively and discharged the next day if no complications occurred. Those with complications or poor fitness were managed accordingly. The type and site of the removed foreign body were documented (**Figure – 1 to 3**).

Results

66 patients were taken in this study. The age of patients varied from 6 months to 8 years. The most common age was 1 to 5 years (56%). There were 40 (60.6%) male patients while female patients were 26 (39.4%) in the study. Among the 66 patients who presented with aerodigestive

foreign bodies, 37 (57%) patients had foreign body in the esophagus. Among these 37 patients, the foreign body was lodged at the level of cricopharyngeal sphincter in 24 patients while below cricopharyngeal sphincter in 13 patients. Among 66 patients, 29 (43%) patients had foreign body impaction at other sites (including oral cavity, pharynx and tracheobronchial tree) (**Table – 1**).

Figure – 1: Lead battery removed from 4 years old boy.



Figure – 2: Coin removed from 8 years old female.



Figure – 3: Mutton bone removed from 6 years old male.

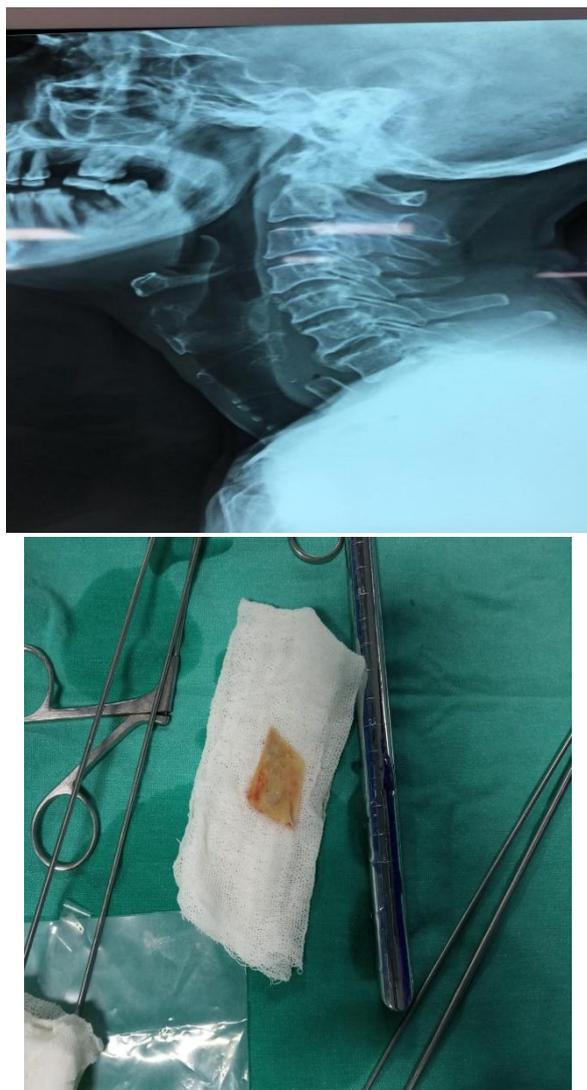


Table – 1: Anatomical location.

Anatomical location	Number of patients	Percentage
Esophagus	37	57
Cricopharyngeal sphincter	24	36.3
Below cricopharyngeal sphincter	13	19.6
Others	29	43
Pharynx	19	28.7
Oral cavity	5	7.5
Tracheobronchial tree	5	7.5

The most common type of foreign body esophagus was coin, 40 patients (60%) followed by other objects. The most common method for removal of foreign body esophagus was rigid esophagoscopy in 64 (97%) patients while flexible in 2 patients (3%).

Distribution of patients by age is depicted in **Chart – 1**. Gender distribution, site of impaction and method of removal is depicted in **Chart – 2**.

Discussion

Esophageal foreign body (EFB) ingestion is among the most common emergencies in the pediatric population, particularly in children aged six months to six years. This is primarily attributed to their tendency to explore their environment orally and lack of awareness of potential hazards. Majority of the patients in our study who ingested the foreign bodies were children i.e. 66 which is consistent with other studies in the world.

Giordano, et al. (1981) [1] highlighted that foreign body ingestion represents a frequent otolaryngologic emergency requiring prompt recognition and intervention to prevent serious complications.

There were 40(60.6%) male and 26 (39.4%) female patients in our study and the female to male ratio was 1:1.5. In a study by Gilyoma, et al. [2], males outnumbered females by a ratio of 1.1:1. Like our study, most of the studies confirm that foreign bodies are common among males.

In our study, the frequency of foreign body in esophagus was 57% while 43% at other sites. These findings were comparable to the study done by Gilyoma, et al. [2]" which showed that majority of the foreign bodies were in the Esophagus i.e. 54%.

The type of foreign body varies with cultural and environmental factors. Coins are the most commonly encountered objects, followed by button batteries, toy parts, bones, and food

boluses. In their thirteen-year retrospective study, Rybak, et al. (2012) [3] found that coins were the predominant esophageal foreign bodies among pediatric patients, while button batteries posed the highest risk due to their potential to cause

rapid mucosal burns and perforations. Our results are also consistent with these studies with coin being the most common esophageal foreign body in pediatric age group.

Chart – 1: Distribution of patients by age.

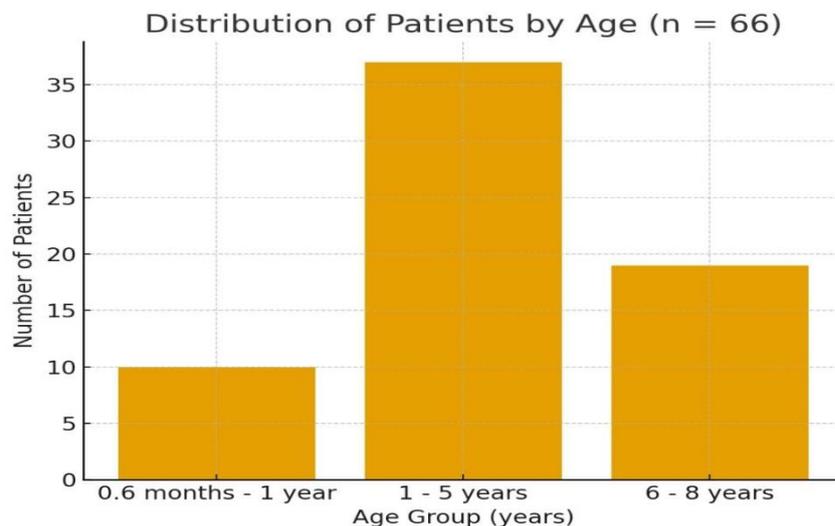
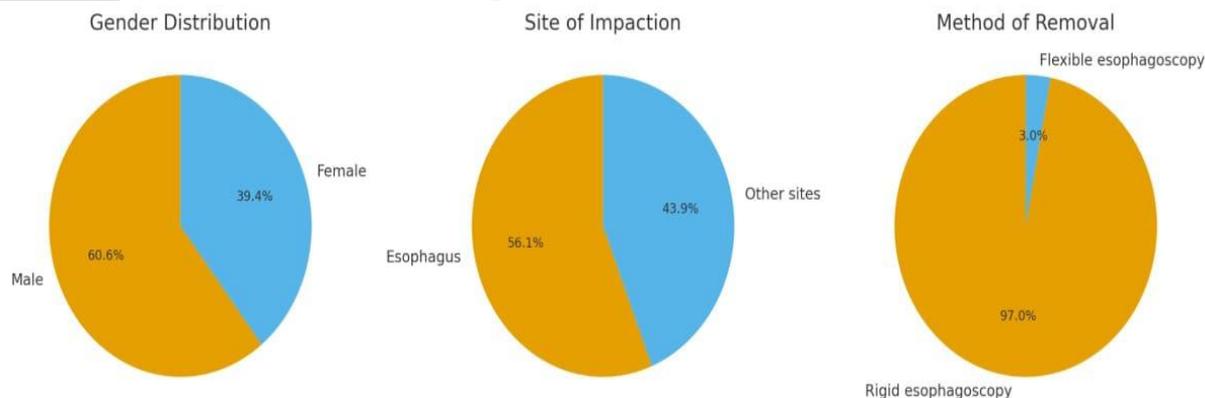


Chart – 2: Gender distribution, site of impaction and method of removal.



Mandal, et al. (2022) [4] similarly reported that the cricopharyngeal junction is the most frequent site of impaction, reflecting its anatomical narrowness and physiological constriction. Similar findings seen in our study with FB at Cricopharyngeal sphincter seen in 36.3%.

suspicion, especially when ingestion is unwitnessed or when symptoms mimic respiratory infections. The diagnosis is primarily radiological, with plain X-rays of the neck and chest serving as the initial investigation. However, radiolucent objects may necessitate contrast studies or direct visualization by endoscopy.

Clinically, patients may present with dysphagia, drooling, vomiting, or refusal to eat, while some exhibit respiratory symptoms such as cough, stridor, or wheezing due to airway compression. Akhtar and Haq (2008) [5] emphasized the importance of maintaining a high index of

Management of esophageal foreign bodies depends on the type, size, and location of the object, as well as the duration since ingestion. Rigid esophagoscopy remains the gold standard

for removal, especially for large or sharp foreign bodies. Akhtar and Haq (2008) [5] demonstrated that rigid esophagoscopy under general anesthesia offers direct visualization, precise control, and a high success rate with minimal complications. On the other hand, flexible endoscopy is gaining popularity due to reduced mucosal trauma and the ability to inspect the entire esophagus and stomach. In our study, rigid endoscopy was used in 64 (97%) patients followed by flexible endoscopy 2 patients (3%), surgery and Foley's catheter was not performed in our study.

Chen, et al. (2022) [6] in their ten-year retrospective analysis reported excellent success rates and low complication rates with timely endoscopic retrieval, particularly when performed within 24 hours of ingestion.

Delayed diagnosis or improper management may lead to serious complications such as esophageal perforation, mediastinitis, stricture formation, or tracheoesophageal fistula. Kissberg and Lee (2007) [7] highlighted that prompt removal and appropriate postoperative monitoring significantly reduce these risks. In our study no esophageal perforation was reported.

Prevention remains the most effective strategy in reducing morbidity. Nikakhlagh, et al. (2007) [8] emphasized the critical role of parental supervision and education about keeping small objects, coins, and batteries out of children's reach. Public health initiatives and safety labeling on toys and batteries have also contributed to decreasing incidence rates in some regions.

Esophageal foreign body ingestion in children is a preventable yet potentially life-threatening condition. Early diagnosis, timely removal, and preventive education are essential to ensure favorable outcomes and minimize complications.

Conclusion

All children with a history of foreign body ingestion should undergo prompt radiological evaluation, including plain chest and cervical X-rays, to confirm or exclude the presence of an esophageal foreign body. Although radiological findings are useful, false-negative results may occur. Rigid esophagoscopy under general anesthesia remains the gold standard for both diagnosis and removal of esophageal foreign bodies in pediatric patients. It is a safe and effective procedure when performed by experienced clinicians. Early diagnosis and timely endoscopic removal are essential to prevent serious, potentially life-threatening complications.

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