



EMERGENCY ENT SURGICAL MANAGEMENT OF FOREIGN BODIES IN THE AERODIGESTIVE TRACT: A RETROSPECTIVE CASE SERIES

ENT

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ABSTRACT

Background: Foreign body ingestion and aspiration are common ENT emergencies, predominantly affecting young children, and carry significant risk of life-threatening complications if not managed promptly. **Objective:** To evaluate the clinical profiles, anatomical distribution, diagnostic approaches, and outcomes of emergency ENT interventions for aerodigestive foreign bodies. **Methods:** A retrospective review of 31 consecutive patients who underwent emergency ENT management for aerodigestive foreign bodies at a tertiary care institution was conducted. **Results:** Among 31 patients, 67.7% were male and 64.5% were children. Coins were the commonest foreign body (35.5%), followed by fish bones and button batteries. Rigid oesophagoscopy with direct laryngoscopy was performed in 74.2% of cases. Endoscopic removal was successful in 90.3%, with only one patient requiring laparotomy. **Conclusion:** Rigid endoscopy is safe and effective as first-line management for aerodigestive foreign bodies. Button batteries and sharp objects demand expedited intervention. Preventive parental education is essential.

KEYWORDS

Aerodigestive Tract; Foreign Body; Oesophagoscopy; Button Battery

INTRODUCTION

Foreign body ingestion and aspiration are common and potentially life-threatening ENT emergencies, especially in children younger than six years. Children are more susceptible due to oral exploratory behaviour and immature swallowing reflexes. Commonly encountered objects in children include coins, button batteries and safety pins whereas in adults, food boluses such as fish and mutton bones predominate (Jayachandra & Eslick, 2013; Higo et al., 2003).

The clinical presentation is determined by the size, shape, composition and site of impaction. Dysphagia, drooling, respiratory distress and stridor require immediate assessment. Delayed diagnosis may lead to perforation, mediastinitis and aspiration pneumonia. Plain radiography and computed tomography (CT) are used to help with localisation, with rigid endoscopy still being the cornerstone of management (Sink et al., 2016).

Data from tertiary centres in India are still institution specific. The aim of this case series is to document the clinical presentations, diagnostic findings, surgical interventions and outcomes at our centre to improve our local management protocols.

MATERIALS AND METHODS

Study Setting: The retrospective observational case series was conducted in a tertiary care setting in India during the study period. We included all patients of any age with confirmed or suspected aerodigestive foreign bodies who had undergone endoscopic or surgical intervention under anaesthesia and who had adequate medical records. Incomplete documentation, isolated nasal or aural foreign bodies or those managed conservatively without intervention were excluded.

Retrospective data were collected from patient case records, operative registers and imaging archives; The variables analyzed were demographic details, type and location of the foreign body, imaging findings, surgical approach, intraoperative findings, postoperative complications and duration of hospital stay. All procedures were done under general anaesthesia by qualified otorhinolaryngology surgeons. Ethical clearance was obtained from the relevant Ethics Committee and the need for individual informed consent was waived as this was a retrospective and anonymised study.

RESULTS

Demographic Profile

A total of 31 patients were included: 21 males (67.7%) and 10 females (32.3%), yielding a male-to-female ratio of approximately 2:1.

Paediatric patients (≤ 15 years) accounted for 20 cases (64.5%), with the 4–7-year age group most frequently affected (15 cases, 48.4%). Full demographic data are presented in Table 1.

Table 1 Demographic Profile of Study Participants (n = 31)

Parameter	Frequency (n)	Percent (%)
Total cases	31	100%
Male	21	67.7%
Female	10	32.3%
Paediatric (≤ 15 years)	20	64.5%
Adult (> 15 years)	11	35.5%
Most affected sub-group (4–7 years)	15	48.4%

Note. Data expressed as frequency and percentage of total (n = 31).

Foreign Body Types and Distribution

The most common foreign body was coins (35.5% or 11 cases), especially in the paediatric group. Second were fish bones (4 cases, 12.9%), mostly in adults. 3 cases (9.7%) each were due to button batteries and mutton bones. Safety pins were found in 2 patients (6.5%). Isolated cases were a beer bottle lid, a whistle and an ear-ring with an open post (3.2% each). All cases were in children, and were treated urgently due to the risk of electrochemical injury (Litovitz et al, 2010). Distribution is in Table 2.

Table 2 Distribution of Foreign Body Types (n = 31)

Foreign Body	Frequency (n)	Percent (%)	Age Group
Coin	11	35.5	Paediatric
Fish bone	4	12.9	Adult
Button battery	3	9.7	Paediatric
Mutton bone	3	9.7	Adult
Safety pin	2	6.5	Paediatric
Beer bottle lid	1	3.2	Adult
Whistle	1	3.2	Paediatric
Earring with open post	1	3.2	Paediatric

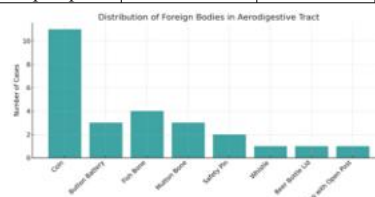


Figure 1. Distribution of Different Types of Foreign Bodies

Identified Among Patients with Aerodigestive Foreign Body Presentation.

Treatment Modalities and Outcomes

Rigid oesophagoscopy with direct laryngoscopy (DLS) was performed in 23 cases (74.2%) with successful retrieval of coins, button batteries, fish bones, mutton bones and the beer bottle lid. Rigid bronchoscopy was utilized for 3 cases (9.7%) of tracheobronchial foreign bodies. One case of an open post earring in a four-year-old child was resistant to endoscopic retrieval and was advanced into the stomach and subsequently removed via laparotomy by the paediatric surgery team. The overall endoscopic success rate was 90.3%. Treatment modalities are summarised in Table 3.

Table 3 Treatment Modalities and Outcomes (n = 31)

Procedure	Frequency (n)	Percent (%)	Foreign Bodies Managed
Oesophagoscopy with DLS	23	74.2	Coins, button batteries, fish bones, mutton bones, beer bottle lid
Rigid bronchoscopy	3	9.7	Safety pins, whistle
Laparotomy (paediatric surgery)	1	3.2	Earring with open post

DLS = Direct Laryngoscopy. All procedures performed under general anaesthesia.

DISCUSSION

Male predominance (67.7%) and paediatric preponderance (64.5%) in this series are consistent with published literature from comparable settings (Sink et al., 2016; Jayachandra & Eslick, 2013; Yadav et al., 2007). The highest incidence in the 4–7-year age group reflects developmental characteristics—heightened curiosity, oral exploration, and incomplete protective reflexes. Coins were the dominant foreign body (35.5%), mirroring Indian and Asian series where small-denomination coins remain readily accessible to children (Higo et al., 2003; Ciftci et al., 2003).

Special mention should be made of button batteries that, although accounting for only 9.7% of cases, can cause mucosal necrosis within 2 hours of oesophageal impaction by low-voltage electrolysis. A 20 mm lithium disc cell can cause life-threatening injury in this time frame, according to Litovitz et al. (2010), emphasizing the necessity for prompt endoscopic removal. The adults consisted mainly of fish and mutton bones, reflecting the local diet.

The 90.3% endoscopic success rate is in line with global standards for mixed-age populations, which range from 87 to 98% (ASGE Standards of Practice Committee, 2011). According to recognized criteria for nonextractable sharp oesophageal foreign bodies that suggest distal advancement into the stomach and surgical extraction, one patient required a laparotomy for an open-post earring that could not be handled endoscopically (Birk et al., 2016). The significance of close ENT-pediatric surgical coordination is further demonstrated by this example.

The most common sites of oesophageal impaction are at anatomical constrictions, namely the cricopharyngeal sphincter and the lower oesophageal sphincter, which correlates with the operative findings in this series. From a preventive point of view, the best way to reduce preventable morbidity is to keep small objects, button batteries and sharp items out of children's reach and refer them early to the specialist (Ciftci et al., 2003).

Limitations include retrospective design, possible missing documentation, lack of long-term follow-up data, and a single-center setting limiting generalizability. Standardised data protocols in prospective multicentre studies would strengthen the evidence base.

CONCLUSION

Aerodigestive foreign bodies constitute a major ENT emergency and mainly affect young children. Rigid endoscopy – oesophagoscopy with DLS and rigid bronchoscopy – was successful in >90 % of cases and should be the first line of treatment. Button batteries and sharp foreign bodies are emergencies. In difficult cases, multidisciplinary collaboration is essential, and the greatest long-term public health impact is preventive parental education.



Figure 2. Beer Bottle Lid Retrieved Via Rigid Oesophagoscopy From the Cricopharyngeal Region in a 28-year-old Male.



Figure 3. Fish Bone Impacted at the Cricopharynx, Retrieved in a 45-year-old Male.



Figure 4. Button Battery (20 Mm Lithium Disc) From the Upper Oesophagus in a 3-year-old; Note Peripheral Mucosal Erythema Indicating Electrochemical Injury.



Figure 5. Safety Pin Retrieved Via Rigid Bronchoscopy From the Right Main Bronchus in a 5-year-old.

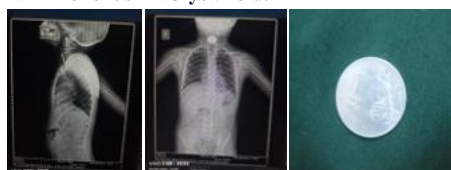


Figure 6. One-rupee Coin Retrieved From the Cricopharyngeal Region Via Direct Laryngoscopy in a 6-year-old.



Figure 7. Earring Without Post, Retrieved Endoscopically From the Upper Oesophagus.



Figure 8. Earring with Open Post — Irregular Morphology

Necessitated Laparotomy After Failed Endoscopic Retrieval in a 4-year-old.

Abbreviations

CT: Computed Tomography
DLS: Direct Laryngoscopy
ENT: Ear, Nose and Throat.

Ethical Considerations

This study was conducted in accordance with the Declaration of Helsinki (2013 revision). Individual informed consent was waived for retrospective anonymised record review. No patient identifiers are included; intraoperative images contain no identifying information.

Conflict of Interest and Funding

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