“Improvisation Under Pressure: Managing Airway Foreign Bodies Without Specialist Equipment”

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Introduction:

Foreign body (FB) aspiration is a major cause of preventable morbidity and mortality in children, particularly those under five years of age. The combination of a naturally curious temperament, immature protective airway reflexes, and the tendency to explore objects orally places young children at heightened risk. The most commonly aspirated materials include nuts, seeds, small toys, and household items. Clinical presentation can range from subtle coughing or wheezing to life-threatening airway obstruction. Prompt recognition and timely intervention are essential to prevent hypoxia, pneumonitis, or fatal asphyxia. In high-income settings, rigid bronchoscopy under general anaesthesia remains the gold standard for diagnosis and removal. However, in resource-limited environments where specialised equipment and anaesthetic expertise may be unavailable, clinicians must rely on early detection, basic airway manoeuvres, and creative adaptation of existing tools. This review looks at a small case series and the approach a rural hospital in Zambia manages paediatric cases presenting with airway obstruction secondary to aspirated foreign bodies. (1).

Methods:

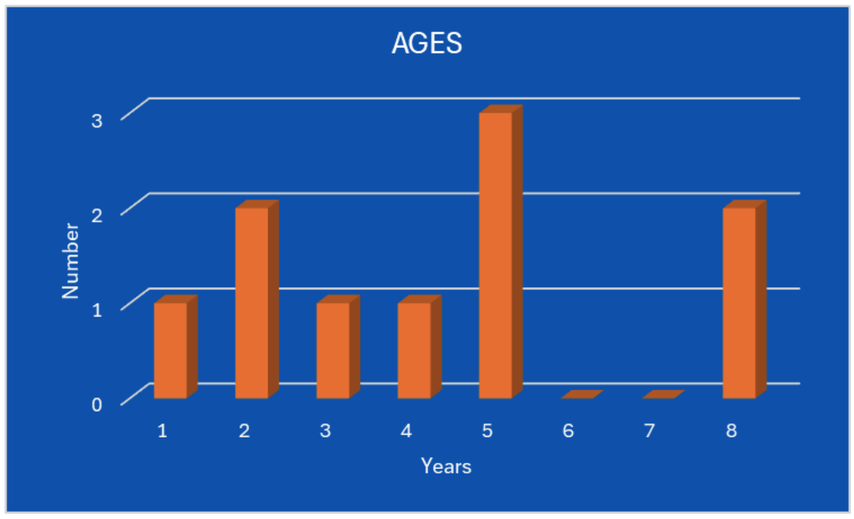
A retrospective review was conducted of all paediatric cases presenting with suspected airway foreign body aspiration at Chitokoloki Mission Hospital, Zambia, between January 2017 and October 2025. Patient records were identified from the theatre and anaesthetic logbooks using procedure codes and case notes. Data collected included patient demographics (age, gender), type of foreign body, date of presentation, and anaesthetic technique used. Only cases with confirmed or strongly suspected airway foreign bodies requiring operative intervention were included. Cases with oesophageal foreign bodies were excluded.

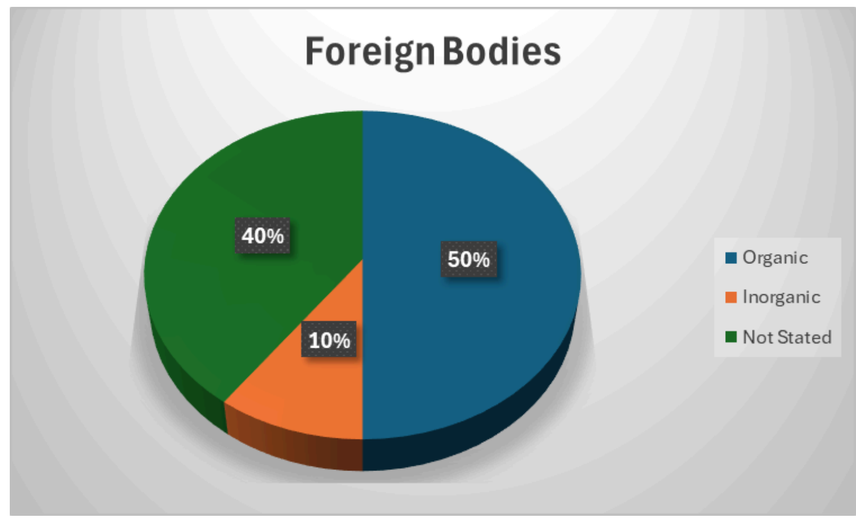
Results:

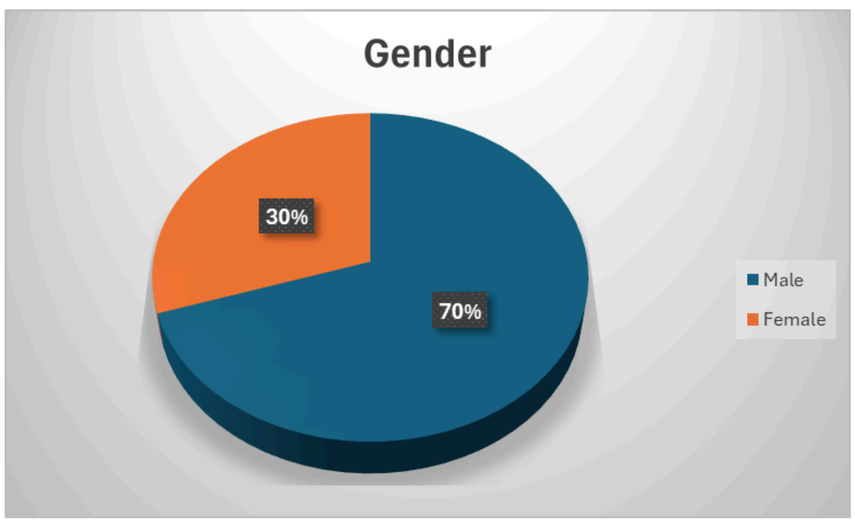
A total of 10 paediatric patients presented with suspected airway foreign body aspiration between 2017 and 2025. The mean age was 4.3 years (range 1–8 years), with a male predominance (7 males, 3 females).

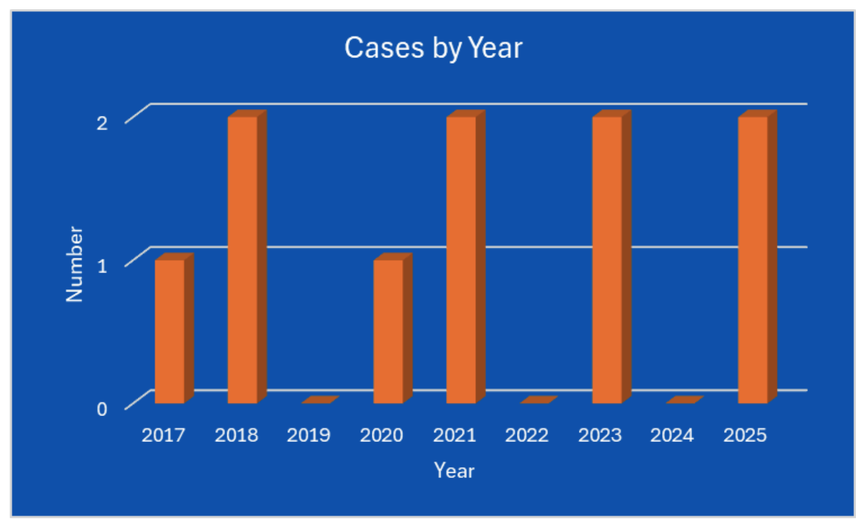
The most common foreign bodies were organic materials, including peanuts (2 cases), seeds (2 cases), and maize (1 case). Beads accounted for one case, while in four cases the type of foreign body was not stated in the records.All patients underwent foreign body removal under general anaesthesia (GA). There were no recorded mortalities, and all procedures were completed successfully.

The distribution of cases shows a consistent pattern of early childhood predominance, aligning with established epidemiological data on paediatric airway foreign body aspiration (1).



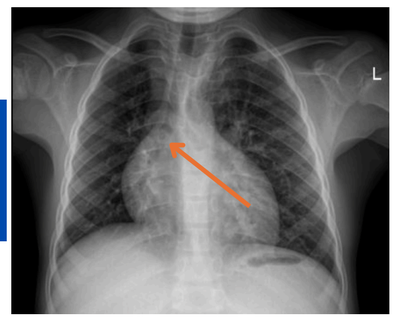




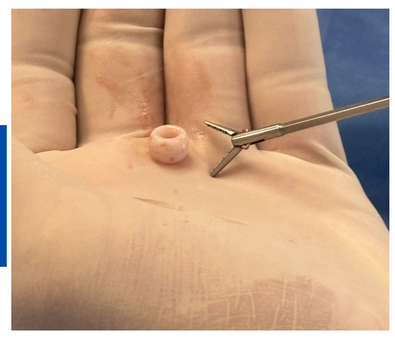


Images:

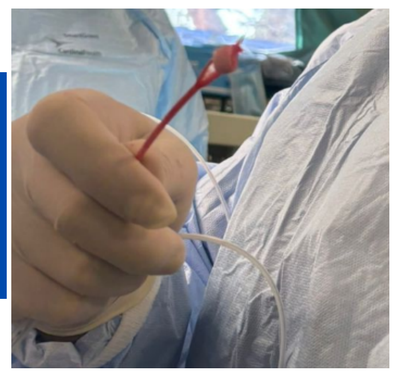
Chest X-ray Demonstrating Foreign Body in Right Main Bronchus



Foreign Body (Bead) Demonstrated with grasper used to remove



Fogarty catheter with balloon inflated demonstrating how foreign body can be dislodged if unable to use grasper



Procedure:

On initial presentation following a limited examination and history patients are transferred immediately to theatre in preparation of potential for deterioration. Mother/Guardian remains with the patient until induction of anaesthetic to limit agitation. Monitoring is implemented with 2 pulse oximeters and ECG monitoring as fail safes should the child remove one or one be faulty. If stable, CXR is performed.

The procedure then progresses as per the flowchart.

Following initial dissection for tracheostomy, suxamethonium is administered prior to entering the trachea to reduce movement and facilitate extraction of the FB.

If possible, FB is isolated above the tracheostomy. Following insertion, oxygenation is optimised prior to removing the tracheostomy tube and inserting rigid cystoscope and grasper parallel to each other and FB being removed. If FB is unable to be grasped then it is bypassed with a fogarty embolectomy catheter, balloon inflated and withdrawn to level of tracheostomy to facilitate removal.

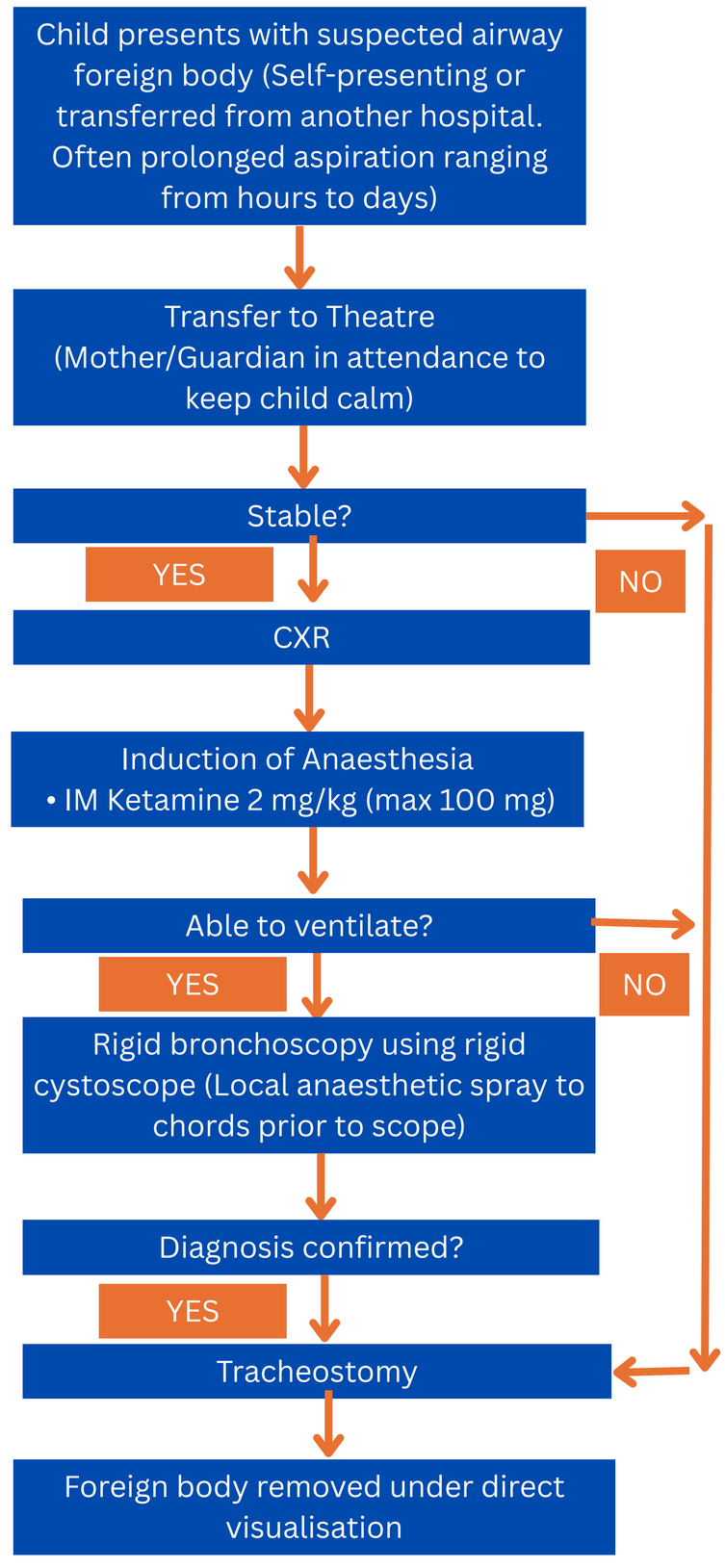
Following FB removal, tracheostomy is secured, IV antibiotics are commenced and patient is transferred to ICU for close monitoring.

Tracheostomy is de-cannulated within 1 week and the patient is discharged if remains stable.

Challenges:

- Delayed presentation
- Diagnostic uncertainty
- No access to rigid or flexible bronchoscopy
- Lack of paediatric-sized airway instruments
- Limited specialist anaesthetic support

Flowchart:



Lesson Learned:

- Keeping the child calm is essential prior to procedure
- Preparation-ensure all equipment that may be required is available and staff that know where equipment is are also available
- Make a plan prior to commencing
- Be flexible-be willing to adapt the plan depending on the situation.

Conclusion:

Paediatric airway foreign bodies will continue to present as emergencies. This unit’s approach to managing them with equipment available and tracheostomy to both secure and access the patient’s airway has proven successful to date. Care must continue to be taken in post operative management of tracheostomy on the ward. Although a step by step process is in place, this may have to be adapted depending on equipment availability and staffing.

References:

Fidkowski CW, Zheng H, Firth PG: The anesthetic considerations of tracheobronchial foreign bodies in children: a literature review. Paediatr Anaesth. 2010, 20:611-620.