

Foreign bodies in the upper aero-digestive tract

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أجسام غريبة في أعلى السبيل الهضمي التنفسي

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الملخص: الأجسام الغريبة في أعلى السبيل الهضمي التنفسي تفرض تحدياً لأخصائي الأنف والأذن والحنجرة في التشخيص والعلاج. الأجسام الغريبة المرشوفة والمأكولة غالباً ما تكون حالات طارئة، وقد تؤدي إلى تقويم ناقص ونقص في تحضير المريض ومحاولات رفعها. نعرض هنا تجربتنا مع ٥٨ مريضاً عمانياً في إحدى المراكز الصحية، مع توضيح بعض الحالات الحرجة والاختلافات الإجتماعية في المنطقة.

ABSTRACT. Foreign bodies in the upper aero-digestive tract pose major challenges to the otolaryngologist in both diagnosis and management. Aspirated and ingested foreign bodies are often emergencies, leading to inadequate study and poorly prepared, improper attempts at removal. The authors share their experience in managing upper aero-digestive tract foreign bodies in Omani population at a district hospital, present a statistical review of 58 cases, and highlight certain critical scenarios as well as cultural variations specific to the region.

Keywords: foreign body, aero-digestive tract, bronchoscopy, oesophagoscopy, Oman

ASPIRATION AND INGESTION OF FOREIGN BODIES INTO the upper aero-digestive tract, either accidentally or deliberately, often constitute otolaryngologic emergencies. The type of the foreign body and the site of obstruction depend on various factors. Foreign body aspiration is commonly seen in children. The cases present with a wide spectrum of clinical problems. In general the treatment of a foreign body in the upper aero-digestive tract is a reasonably prompt endoscopic removal under conditions of maximum safety and minimum trauma.¹ The authors, working in a district level hospital, retrospectively reviewed cases of 58 patients who underwent peroral endoscopy under general anaesthesia for the retrieval of foreign bodies for alleged aspiration or swallowing, from June 1, 1995 to May 31, 2000. The findings of the review are tabulated in Tables 1-3. From among these, the more challenging cases and culturally specific ones are highlighted below.

- Two cases involved sharp and irregular foreign bodies detected below the cricopharyngeus—a glass piece and a thick bone—which could not be negotiated through sphincter because of their size, shape and possible trauma

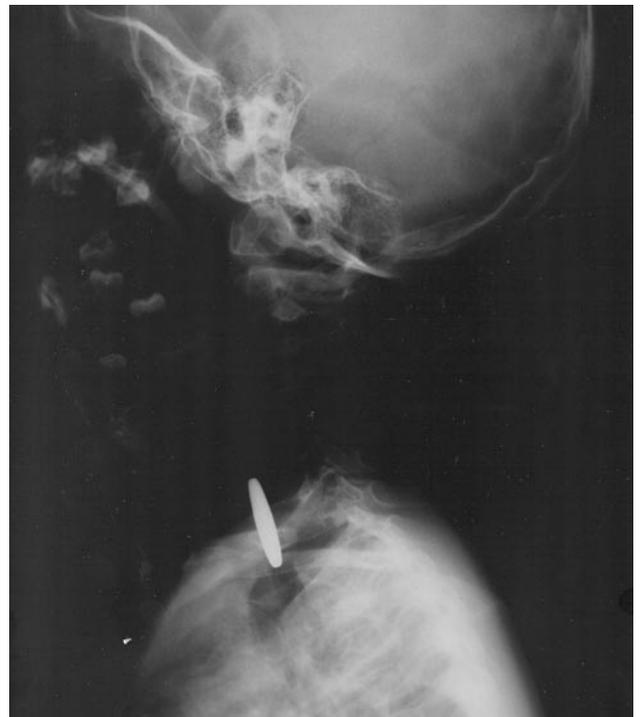


Figure 1. Radiograph showing a coin in the food passage.

to the mucosa. Since shears were not available, the authors took the decision to push these objects under vision into the stomach. They were able to do this without untoward complication.

- Another case where the right equipment was not available was that of a two-year-old boy. At neonatal stage, the child had undergone repair of a tracheo-oesophageal fistula, which now presented with bolus obstruction in the oesophagus over an acquired stricture at the site of repair. A 6 mm bronchoscope, for want of an oesophagoscope, was passed and the bolus was removed piecemeal from the oesophagus.
- A one-year-old child was admitted with complaints of dysphagia and change in the voice since 3 days. As there was no history of foreign body aspiration, she was treated conservatively with antibiotics and steroids. Non-response to medications prompted the authors to conduct an endoscopic examination that revealed a pistachio shell seed in the postcricoid area. It was removed.
- A 3-year-old child was admitted with recurrent lower respiratory tract infections. Clinical and radiological examination confirmed a right-sided lung collapse. Bronchoscopy under general anaesthesia showed a watermelon seed in the right main bronchus, which was successfully removed.
- Among the cases involving adults was that of an expatriate, a known diabetic, who presented with a fishbone impaction in the hypopharynx, associated with a retropharyngeal abscess. The abscess was drained endoscopically and the foreign body removed. Four days after the operation he had a re-collection in the retropharyngeal space, necessitating a repeat endoscopic drainage.
- In another adult case, a 50-year-old woman was brought in cyanosed. Immediate resuscitation was attempted. Laryngoscopy showed a mutton bone impaction in the hypopharynx, which was removed. The patient subsequently developed pulmonary oedema and was intubated and put on ventilator. She was slowly weaned off the ventilator and extubated.

Table 1. The location of foreign bodies and ages of patients

| Age in years | Airway | Food Passage | Total |
|--------------|--------|--------------|-------|
| 0–10 | 07 | 21 | 28 |
| 11–20 | 07 | 05 | 12 |
| 21–30 | - | 05 | 05 |
| 31–40 | - | 03 | 03 |
| > 41 | - | 10 | 10 |
| Total | 14 | 44 | 58 |

- Ingestion of scarf pins, used to keep head-scarves in place, is peculiar to the region. Eight cases of scarf pins (7 in the airway and one in the stomach) were encountered in this study [Figures 1 and 2]. In one case the radiography showed the presence of the pin in the trachea. Bronchoscopy and oesophagoscopy did not show any foreign body. On the table, c-arm exposure revealed the scarf pin to be in the stomach, and it successfully went through the digestive tract.

GENERAL FINDINGS

Tracheobronchial foreign bodies were commonly seen in children whereas the food passage hosted foreign bodies in all the age groups. The right bronchus was more likely to have a foreign body than the left. Scarf pins were the commonest. Oesophagus had more foreign bodies than the hypopharynx. One out of 14 bronchoscopies (7.14%) and 5/44 oesophagoscopies (11.36%) were negative for the presence of foreign bodies. Foreign body related complications such as retropharyngeal abscess, pulmonary oedema and lung collapse were seen in three patients (5.2%). No complications accountable to endoscopy were encountered.

DISCUSSION

Foreign bodies cause problems if the site of their impaction is at the narrowest regions such as the glottis and the

Table 2. Types of foreign bodies ingested

| Airway | | Food Passage | |
|--------------|-----------|-----------------|-----------|
| Metallic | 2 | Mutton Bones | 13 |
| Scarf Pins | 7 | Fish bones | 9 |
| Melon seeds | 3 | Coins | 9 |
| Peanut | 1 | Metallic | 4 |
| No FB | 1 | No foreign body | 5 |
| | | Chicken bones | 2 |
| | | Disc Battery | 1 |
| | | Glass Piece | 1 |
| Total | 14 | Total | 44 |

Table 3. Sites of impaction

| Airway | | Food Passage | |
|----------------|-----------|----------------------------|-----------|
| Right bronchus | 7 | Oesophagus | 23 |
| Left bronchus | 4 | Hypopharynx & cricopharynx | 14 |
| Trachea | 2 | Vallecula | 2 |
| Total | 13 | Total | 39 |

cricopharyngeal sphincter. Aspirated and ingested foreign bodies can lead to potential complications because of their shape, size and site of impaction. As we encountered ourselves, foreign body aspiration is much more common in children, with a peak incidence in the third year. Oesophageal foreign bodies are more likely in adults. Both males and females are equally affected.²

Various factors can be responsible for the aspiration or swallowing of foreign bodies. The increased incidence in small children could be due to their natural propensity to gain knowledge by putting things in the mouth, inability to masticate well and inadequate control of deglutition, as well as the tendency to cry, shout, laugh or play during eating. Psychological factors like mental retardation, behavioural disorders, anxiety neurosis and hyperkinetic syndrome also can compound the problem.³ The maturity of an adult larynx may account for the relatively lower incidence of tracheobronchial foreign bodies, but possibly increases their chance of slipping into the oesophagus. Significantly, 10/44 of our patients with oesophageal foreign bodies were aged >40. Edentulousness and poor masticating habits are also predisposing factors.

RESPIRATORY TRACT

Foreign body aspiration is the most common cause of home deaths in children under the age of 6. The highest incidence of aspiration occurs between 1–3 years.⁴ The patients often present to the emergency room with acute

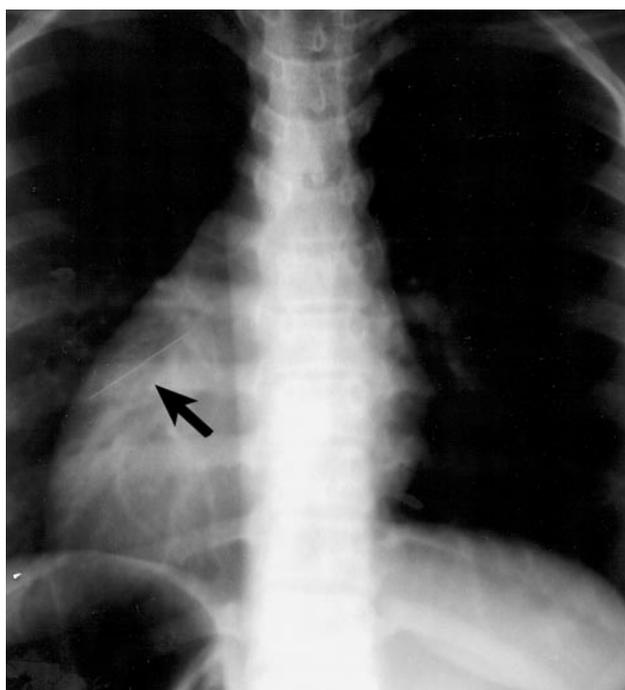


Figure 2. Radiograph showing a scarf pin in the left main bronchus.

respiratory distress or even in a cyanosed state. At the other end of the spectrum is the patient who walks in with nothing more than a history of aspiration and on investigation is found to have a foreign body in the bronchus. In between are a whole range of patients with persistent cough, pneumonitis or non-resolving lung pathology.

The authors removed a range of foreign bodies from the airway, such as nuts, seeds, whistles and metallic objects. Scarf pins were rather unusual foreign bodies—and specific to the region—to be found in the tracheobronchial tree.⁵ Small and smooth-walled objects tend to pass into trachea and bronchi whereas larger ones can cause acute laryngeal obstruction.⁶ The symptoms and the course of illness depends grossly on the type of the object and the length of its stay at the site of obstruction. Most foreign bodies are found on the right side since the right main bronchus is wider, shorter and straighter than the left, and also because the interbronchial septum projects to the left.⁷ Hassan et al opined that anatomical and aerodynamic considerations determine the site of final impaction.⁷ Our Clinical experience was an equal incidence in the right and left sides of the airway.

A positive history, detailed clinical examination and radiographic search often lead to a diagnosis, while negative history and/or normal chest radiographs can be misleading. Successful retrieval of foreign bodies requires excellent teamwork between the endoscopist, anaesthetist and the nursing staff because the airway of the patient is tended by all these personnel. A well ventilated, unconscious and relaxed patient affords the best prospects for the successful removal of a foreign body from the airway. Rigid bronchoscopy using ventilation bronchoscopes offers good visualization and is the preferred mode of treatment. As reported, flexible fibre-optic bronchoscopes also have good rate of success.⁸ The authors, however, have not used these.

FOOD PASSAGE

Foreign bodies can be impacted in the pharynx and the oesophagus mainly because of their size, shape and anatomical narrow segments. The oesophagus is a passive and unadaptable organ and its peristalsis is not strong enough to prevent its retaining certain types of swallowed objects.¹⁰ More adults than children tend to have impaction of bones in the pharynx and oesophagus. Impacted coins, however, were more seen in children in this study. Ingestion of dentures due to poor masticatory habits is usually seen in old age. Patients usually present with history of swallowing a foreign body, dysphagia and/or odynophagia. Plain radiographs of neck, chest and abdomen identify radio-opaque

foreign bodies, while fluoroscopy using thin barium may be required to delineate non radio-opaque objects.

Potential complications include oesophageal perforation, mediastinitis, cervical or mediastinal abscess, emphysema, oesophago-tracheal fistula and septic complications.¹⁰ However, the authors did not encounter any of these.

Because the pharyngeal constrictors are usually strong enough to propel an object through the sphincter, and the oesophageal muscles are relatively weaker at pushing it downwards, foreign bodies usually impact below the cricopharyngeal sphincter. Predisposing factors such as stricture, neuromuscular disturbance,¹¹ hiatus hernia, peptic strictures, achalasia cardia or carcinoma oesophagus can often present with foreign body impaction as their first symptom. There was a child in this series who had a stricture formed after the correction of a tracheo-oesophageal fistula. Endoscopic removal of the foreign body to prevent complications is the first step in such cases. An impacted foreign body should be removed as soon as the diagnosis is made, because: (i) the chance of spontaneous passage is less for an impacted object, (ii) oedema due to local trauma tends to grip the object more firmly, making later manipulation increasingly difficult, and (iii) perforation of the oesophagus is much more serious and dangerous complication.

CONCLUSION

From their experience, the authors recommend that no foreign body in the upper aero-digestive tract should be left alone with the hope that it will come out spontaneously. All the impacted foreign bodies should be removed via peroral endoscopy as soon as possible. For the trauma and dangers caused by the foreign bodies can be minimised if

parents are made aware of the risks and taught paediatric home care. A successful example is that of Israel, where an intensive educational campaign through the media and community paediatric care, reduced foreign body aspiration by 35%.¹²

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