



Impacted radio-opaque glass in the oesophagus of a child

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Abstract

Most ingested foreign bodies in the aero-digestive tracts in both children and adults are not radio-opaque, and as a result, a preoperative plain radiograph may not be helpful. However, incorporating radio-opaque markers into such potential foreign bodies like toys, beads, and dentures during manufacture (as illustrated in this case of a 6-year-old boy who ingested a piece of glass mirror which was easily seen on X-ray) would obviate this problem. While this may constitute some financial burden on manufacturers, the cost effectiveness on health management is non-negotiable. We suggest that appropriate authorities and regulatory bodies should enforce this through legislation.

Most toys and objects that stand the risk of being ingested by children are mainly non-radio-opaque. Most fish bones and dentures, which form the bulk of foreign bodies ingested by adults, are radiolucent.¹ As a result, radiological identification of such foreign bodies and their localisation, unlike the radio-opaque ones, can pose a diagnostic and management dilemma.

It is thus the aim of this paper to highlight the need to encourage inscription of common non-radio-opaque objects that stand the chance of being ingested, with radiological markers.

Case report

A 6-year-old boy presented to our Accident and Emergency (A&E) Department with a 9-hour history of ingestion of a piece of glass while playing. There was no eye witness; however his mother noticed sudden drooling of saliva and pointing at the neck. No dyspnoea, bouts of cough, haematemesis, vomiting, or swelling of the neck was observed. Academic performance and behaviour at home did not suggest attention deficit/ hyperactive disorder (ADHD).

On physical examination he was drooling saliva but not in any obvious respiratory distress (respirations: 31 per minute). There was no pallor, fever, trauma to the oral mucosa, or cervical emphysema. The complete blood count, serum electrolyte, and urea were within normal limits.

The plain radiographs of the neck and upper chest (anteroposterior and lateral views) showed a triangular radio-opaque substance (Figures 1 and 2) within the oesophagus at the level of first to third thoracic vertebrae (T₁ – T₃). The laryngo-tracheal air column appeared normal.

An emergency rigid oesophagoscopy was carried out to retrieve the foreign body (a triangular piece of glass mirror measuring 4 × 3 × 2 cm) with a reflective surface and a coated dull reverse surface (Figures 3 and 4). There was no mucosal injury noted and postoperative management was uneventful.

Figure 1. Plain radiograph anteroposterior view of the neck and upper chest. Pointer showing the triangular radio-opaque shadow



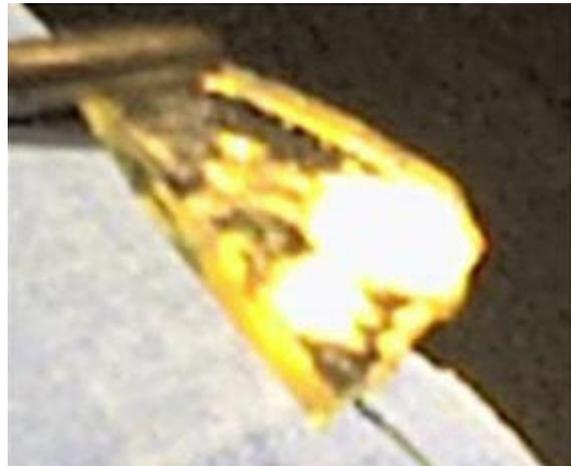
Figure 2. Lateral view plain radiograph of the neck and upper chest. Pointer shows the radio-opaque shadow between T1 and T3



Figure 3. Silvery-coated dull surface of the removed foreign body (glass mirror) containing the radio-opaque silvery compound



Figure 4. Reflective surface of the removed foreign body (glass mirror)



Discussion

Foreign body (FB) impaction in the aero-digestive system is an emergency and as such requires prompt intervention. This is more commonly seen in extreme young and elderly ages, the mentally deranged, and some disease conditions of the aero-digestive tract.^{1,2}

A variety of FBs have been documented including unusual ones. In children, little toys as well as smooth and colourful objects are regularly ingested due to the explorative nature of children resulting in probing the orifices in their bodies.³

The mentally deranged ingest limitless varieties of foreign bodies. Most often, the history of FB in the throat among children is vague especially in the absence of eyewitness account of caregivers.⁴ As such, investigations like the simple plain radiograph become invaluable in the establishment of the level of impaction, especially in the developing World where sophisticated equipment is not affordable.

Metallic coins used to be a common FB encountered in children in Nigeria but economic conditions have led to their replacement with plastic and paper money. As a result, most ingested FBs are radio-luscent⁵ which poses a diagnostic challenge to the clinician who now depends on the level of air entrapment and increased prevertebral soft-tissue shadow alone to characterise/establish the level of the FB. These features as diagnostic tool for oesophageal foreign bodies have a low specificity.⁶

Our patient was able to identify the object swallowed as a piece of glass which was confirmed by oesophagoscopy. However, common household glass is composed of 60–75% silica, 12–18% soda, and 5–12% lime⁷ and as such is radiolucent. This was why the radiopacity on the radiograph created diagnostic doubts.

A mirror is a silvery-coated household glass⁸ and in this case the silver nitrate coat acted as a “radiologic marker” thus aiding easy identification (via X-ray) of the level of impaction, and subsequent removal.

Therefore, inclusion of radio-opaque markers into objects like little toys, beads, and dentures during manufacture will aid their identification and removal when inadvertently swallowed or inhaled. This may constitute some financial burden on the manufacturers of such products; however, the health cost effectiveness is non-negotiable. We suggest that appropriate authorities and regulatory bodies should enforce this through legislation.

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