

## RADIOLOGIC MANAGEMENT OF IMPACTED COIN IN THE OESOPHAGUS – A CASE REPORT

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### ABSTRACT

The incidence of swallowed foreign body is high in children and young adults<sup>1</sup>. The common age of occurrence is below 10 years of age. It is a well known paediatric emergency often requiring urgent oesophagoscopy. Majority of swallowed foreign bodies (FBs) are impacted at sites known conventionally as constrictions<sup>4</sup>. The commonest FB swallowed by children is coins; by adults – bones, fish bones and large bolus of meat, and in the older age group - dentures.

The most common presenting symptoms are drooling of saliva, dysphagia and odynophagia. The anatomic proximity of the upper airway and oesophagus permit the development of respiratory symptoms like cough and stridor. Long standing foreign body impaction with weight loss, consolidated lungs and failure to thrive are documented presentations of FB in the oesophagus<sup>5</sup>.

We present a case of a 20 year old male who inadvertently swallowed a coin which got impacted at the thoracic inlet – one of the conventional areas of constriction. He presented late with cough, stridor, odynophagia and weight loss. The presentation of weight loss that could arise from unduely prolonged odynophagia rather than from complications like fistula, empyema thoracis or ominous predisposing lesions like malignancy was noted. The case highlighted the oddity of an adult swallowing a coin, its impaction in the oesophagus of an apparently healthy adult and the non-surgical retrieval of the FB by fluoroscopic guidance.

**Key Words:** Foreign body, odynophagia, stridor, fluoroscopic-guidance, retrieval.

### INTRODUCTION:

Foreign bodies (FBs) in the oesophagus with its attendant complications occur less frequently in young adults than in the paediatric age group. A search through literature shows a wide variety of objects which are accidentally swallowed. Majority of these FBs pass through the gastrointestinal tract without problems hence the commonly practiced management strategy of "Home observation" adopted by some centres especially for asymptomatic cases<sup>6</sup>. Sometimes the swallowed objects get impacted or arrested in the oesophagus necessitating emergency extraction. The commonest foreign body swallowed by children is coins; bones, fish-bone and large bolus of meat are found commonly in adults, while dentures are more encountered in the older age group.<sup>2</sup> Less commonly encountered objects are pins, buttons, nails and pieces of plastics. These are accidentally swallowed as a result of placing these unsuitable objects in the mouth<sup>7</sup>.

This case report is aimed at drawing attention to the peculiarity of an adult swallowing a coin, and the role of radiology in enabling precise localization and non-invasive retrieval of the coin.

### Case Report:

MM is a 20 year old young adult cattle rearer who was playing with coins of (N) denominations and accidentally swallowed one. He concealed the accident from his uncle. He began coughing after one week and developed wheezing on inspiration. He had dysphagia especially to solid food. Attempts at swallowing large bolus of food to help force down the coin were not successful. He began to avoid meals, especially solid food, as he was now experiencing a lot of pain on swallowing. He subsequently noticed he was losing weight. Two weeks after swallowing the coin, the increasing discomfort, stridor and weight loss, motivated him to summon the courage to report the incident to his uncle. It was his uncle that took the right initiative of promptly escorting him to the general outpatient clinic from where he was referred to the cardiothoracic surgical unit.

Clinical examination revealed an emaciated and, short statured young boy. The chest was clinically clear. Haemoglobin was 10.5 gm. Radiological examinations done included chest x-ray and barium swallow. The chest radiograph revealed a rounded radio-opaque foreign body (coin shaped), of metallic density lodged in the thoracic oesophagus at about the level of the thoracic inlet – one of the conventional areas of constriction. There was also

slight anterior displacement of the trachea noted on the lateral chest radiograph at the level of the foreign object. There was no sign of mediastinitis or any inflammatory changes seen in the lungs (Figs. 1a & 1b).

Barium swallow (oesophagogram) using dilute barium suspension revealed smearing of the foreign body, trickling past the same and down the oesophagus distally. No evidence of tracheal spill or oesophageal ulceration was seen (Fig. 2). The location of the foreign body in the oesophagus was thus confirmed to be lodged at the level of the thoracic inlet.

Patient was admitted as a day case and extraction of the foreign body by foley's catheter technique under fluoroscopic guidance was done using size 14F foley's catheter. Patient was discharged home on oral antibiotics and vitamins. He was followed up after discharge and found to have started eating well and subsequently adding weight. He has remained well since surgery.



Fig. 1a. Plain chest radiograph (PA view) showing the rounded radiopaque foreign body (coin) in the thoracic esophagus. Note mild tracheal displacement to the right.



Fig. 1b. Lateral view showing the radiopaque coin-shaped foreign body.



Fig. 2. Dilute Barium esophagogram of the patient. This shows contrast smearing of the foreign body. Note absence of tracheal spill.

### DISCUSSION:

The incidence of swallowed foreign body (FB) is high among children and young adults<sup>1</sup> and more males than females are usually involved<sup>3</sup>. From literature, the common age of occurrence is below 10 years of age<sup>2,3</sup>.

Majority of these FBs are said to be usually impacted at sites known conventionally as 'constrictions'. These 'constrictions' have been noted in literature to have little or no anatomical basis referable to oesophageal diameters as measured in the cadavre<sup>4</sup>. The most common presenting symptoms are drooling of saliva, dysphagia or odynophagia and sometimes respiratory symptoms of cough and stridor<sup>3</sup>. Most of these were present in our patient. Available literature indicates that weight loss as a presentation in long standing impacted FB in the oesophagus is not unusual<sup>5</sup>. Odynophagia when marked may be quite troublesome in some patients and could compel patient to avoid eating. If the avoidance of food becomes unduly prolonged as in our patient, weight loss is inevitable, even in the absence of any pre-existing or underlying predisposing oesophageal disease.

The role of the radiologist thus extends beyond mere demonstration of the foreign body and the site of lodgement, to targeted ancillary radiological evaluation to rule out any occult predisposing reason for the symptoms.

The anatomic proximity of the upper airway and the oesophagus permits development of respiratory symptoms. This may result from direct mechanical expansion of the oesophagus which compresses the adjacent upper air-way, thus causing tracheal displacement at the level of the foreign body in the oesophagus. The radiological finding likely to explain the respiratory symptoms present in this case is the anterior displacement and pressure effect noted on the trachea by the FB in the lateral radiograph.

Periesophageal inflammation, abscess formation or direct extension of inflammatory process into the trachea by ulceration or fistula formation may occur<sup>8,9</sup>. Partial respiratory tract obstruction may result from a combination of the effect of the foreign body and inflammatory changes at the site of lodgement. The incidence of complications in foreign bodies in the oesophagus is low and include oesophageal perforations, mediastinitis, oesophageal erosions, empyema thoracis and bleeding<sup>3,10</sup>.

Demonstration of the foreign body by plain radiographs of the neck, chest and abdomen are usually enough for detecting any radiopaque objects. Endoscopy and barium swallow are ancillary for radiopaque but imperative for non-radiopaque foreign bodies. The role of CT and MRI in the management of swallowed FB is not usually for identification or localization but to rule out suspected complications of perforation and for proper evaluation of suspected pre-existing lesions<sup>10,11</sup>.

The management of accidentally ingested foreign body in children is not standardized<sup>12</sup>. The recommended definitive management strategy is the removal of the foreign body<sup>4,12</sup>. Rigid or flexible endoscopy remains the first choice in the management of oesophageal foreign bodies due to its low cost and low morbidity<sup>13</sup>. Paediatric patients who remain asymptomatic after coin ingestion can be conservatively managed by 'home observation'<sup>6</sup>. Connors et al in 1999 observed that though the caretakers of these children hardly accepted this management strategy, the patients did well. Only one out of the 67 cases they managed conservatively developed complications<sup>6</sup>.

Sometimes atropine or glucagon are used to induce relaxation of the oesophageal sphincter and with the adjunct therapy of swallowed gas granules, passage of the lodged FB is encouraged and achieved in some patients<sup>12</sup>. To prevent complications like oedema, oesophageal ulceration, stenosis, aspiration pneumonia and perforation, early removal is advocated<sup>12,13</sup>. Removal can be done under anaesthesia using endoscopes. Surgery is rarely required<sup>13</sup>.

Interventional radiology has however opened a new horizon in the management of these cases using newer imaging modalities like endosonography and fluoroscopy for guidance. Smooth oesophageal foreign bodies such as coins may now be removed using foley's catheter method of extraction under fluoroscopic guidance as was done in this patient. Under fluoroscopic guidance, the Foley's catheter is passed through the nose and down the oesophagus to a point just beyond the foreign body. The balloon of the catheter is inflated with contrast material. Patient is positioned in a prone oblique position with head down. The catheter is withdrawn gradually from the oesophagus applying a steady but gentle traction as

the balloon pulls the foreign body ahead of it until it falls into the mouth and is extracted. The balloon is deflated and withdrawn. This non-operative technique<sup>14,15</sup>, has saved patients the unnecessary risks of general anaesthesia and iatrogenic hazards of the use of scopes. Moreso, this technique has the advantages of being quick, easy, safe and cost-effective and has become the standard procedure for extraction of smooth foreign bodies in oesophagus. It is however contra-indicated when the FB is a sharp object.

In conclusion, a case of impacted swallowed coin in an apparently normal adult who presented with weight loss and respiratory symptoms has been presented. The role of radiology in localization and management has been discussed. Extraction by interventional method of catheter technique under fluoroscopic guidance followed by antibiotic cover produced quick resolution of the symptoms, and shortened hospital stay.

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