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### After Foreign Body Ingestion: Waiting is not Always Disastrous

Seth Jotham<sup>1\*</sup>, Rahabu Morro<sup>1</sup>, Theresia Karuhanga<sup>1</sup> & Annastazia Ndalo<sup>2</sup>

<sup>1</sup> St. Francis University College of Health and Allied Sciences, P. O. Box 175, Ifakara, Tanzania.

<sup>2</sup> Ifakara Health Institute, P. O. Box 74, Bagamoyo, Tanzania.

\*Author for Correspondence ORCID ID: <https://orcid.org/0009-0004-6839-3426>; Email: [jothamambele@gmail.com](mailto:jothamambele@gmail.com)

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#### Keywords:

Foreign Body,  
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Watchful Waiting,  
Case Report.

**Background:** Foreign bodies are objects with both organic and inorganic nature which originate from outside the human body. Due to ingestion, the gastrointestinal tract has become more prone mostly affecting paediatrics as compared to the adult population. Children with gastro-intestinal abnormalities including stenotic lesions and a history of Tracheoesophageal fistula are at increased risk of both occurrence and complications. The type, size, chemical properties of the object and the site of lodgment; all determine the clinical presentations. A history surrounding the circumstances, clinical presentations and radiological investigations are the pillars for diagnosis formulation. Besides the expectant and minimally invasive treatments, invasive modalities can also be employed especially in the presence of complications. **Case presentation:** A 3-year-old boy was brought to our hospital with a history of retching, hyper-salivation and inability to tolerate oral feeding as preceded by circumstances pointing towards gastrointestinal foreign body ingestion. An X-ray was suggestive of a gastrointestinal circular radio-opaque foreign body more likely at the level of duodenum in keeping with the coin. As he had no mechanical obstructive features, expectant management was done of which four days later he had a simultaneous passage of a 200 Tanzanian shilling's coin on defecation. **Conclusion:** Early diagnosis, determining the surrounding circumstances and type of the foreign body ingested are the cornerstones for management modalities and outcomes. Both minimal and invasive approaches can be used, but the power of watchful waiting should not be underestimated as it can well be guided by the nature of the objects and the patient's clinical presentations.

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## INTRODUCTION

Ingestion of foreign objects is among the most etiological patterns for the aero-digestive foreign bodies in the pediatric population. Children are more affected especially from the age of 6 months to 6 years as they start to explore their surroundings by taking advantage of the staged developmental milestones [1]. It can also be seen in adults and elderly populations as pronounced among those with psychiatric conditions, alcohol or drug abusers and those with vision impairment who confuse small objects with their routine pills. Coins are among the inorganic foreign materials whose history, presentation and complications after ingestion highly depends on their sizes and site of lodgment during diagnosis. Other considerations are unto the objects that are more than 6 cm in length and 2cm in width, such objects are too difficult to pass through the pylorus and hence warrant an immediate extraction [2]. Any foreign body lodging at any part of the gastrointestinal tract may have little to significant effects that are not limited to pain, bleeding, scarring and obstruction as the manifestation of the local inflammation, furthermore; its migration along the gastrointestinal tract can lead to unpleasant surgical complications like mediastinitis, peritonitis and even aortic damage that can culminate into aortoenteric fistula [1,2]. We hereby present a case of a 3-year-old boy who was brought to our hospital after gastrointestinal foreign body ingestion which was later identified to be a 200 Tanzanian shilling coin.

## CASE PRESENTATION

A 3-year-old male child was brought to the hospital by his mother as he presented with a history of retching accompanied by hypersalivation and failure to tolerate feeding. Furthermore, 2 episodes of watery vomiting were reported as preceded by hiccups. After 3 hours of being at home, the child had significant symptomatic improvements with persistent intermittent hiccups. On the fourth-hour post onset of these presentations, the mother noted that one of her 200 Tanzania shilling coins was missing from the purse her child was playing with, confirming her suspicions on the possibility of it being ingested by the patient. The decision to bring him to the hospital was instantly made.

On arrival, the child was alert and active, afebrile, not cyanosed with a normal respiratory pattern, the airways were patent and all lung fields were clear on auscultation except on the right inframammary region where fine crepitations were heard (subjecting aspiration). Both the Nervous and Cardiovascular systems were stable with non-eventful findings per abdominal examination. These attracted further diagnostic investigations whereby a chest-abdominal plane radiograph was ordered. The X-ray showed a uniformly radio-opaque circular foreign body "likely at the duodenal level" that is in keeping with a coin (**Figure 1**).

The decision was made to manage him expectantly by watchful waiting. The enteral metronidazole was also given to prevent sequela due to aspiration impression. Furthermore, along with the danger signs to monitor, the mother was inculcated the danger signs to watch including vomiting, fever,

abdominal distension, tenderness and constipation. She was instructed to inspect the stool after each motion for the presence of a coin.

A week later during a scheduled outpatient follow-up, the mother reported the baby to have a spontaneous passage of the 200 Tanzanian shilling coin with the stool on day 4 after its ingestion. On examination; the baby was alert and active, not cyanosed with a normal respiratory rate of 20 breaths/minute and a pulse rate of 88 cycles/minute. The abdomen was moving with respiration and it was non-tender on both deep and superficial palpation. Other systems were fine and he was scheduled off the surgical outpatient clinic.

**Figure 1: A plane radiographic image (X-ray) showing a radio-opaque circular foreign body “likely in the duodenum” that is in keeping with a coin**



## DISCUSSION





A foreign body is an object which originates from outside the human body that not only causes mechanical obstruction but also biological reactions depending on the subjected body's responses. The patient's immediate presentation will depend upon the type, size and the extent of the mechanical

impediments caused by the object [3]. They can be classified as being organic (for example impacted food bolus) or non-organic, Metallic or of plastic origin. Non-organic foreign bodies can further be classified as Blunt (for example round objects such as coins and button batteries), sharp pointed objects such as strings, toothbrushes, spoons and ballpoint pens. Objects like button batteries are normally given a special discernment as their biochemical reactions are dreaded more than their counter-mechanical obstructive predicaments [3,4].

The failure for spontaneous passage of ingested objects is influenced by the anatomical orientation of the Gastrointestinal tract. The oesophagus is the common site for material - lodging, this is due to the anatomical points of constrictions such as the upper oesophageal sphincter, aortic arch, at the point of intersection with the left main bronchus and the lower oesophageal sphincter. The pylorus can also become a potential point once it enters the stomach, and the likelihood of spontaneous expulsion increases even further once it passes the ileocecal valve [3,5].

Coins are among the most pronounced gastro-intestinal foreign bodies and they are said to account for about 61.7 % of all ingested foreign bodies in most of the studies. In Tanzania, the situation is more the same with the clinical spectrum that highly depends upon the size of the coin ingested [6,7]. Our patient ingested a 200 Tanzania shilling coin which is the second in size among the other three currently in the market (Table 1) [8].

Table 1: Tanzanian coins’ description

			
<b>Value:</b> 50/=	<b>Value:</b> 100/=	<b>Value:</b> 200/=	<b>Value:</b> 500/=
<b>Diameter:</b> 22 mm	<b>Diameter:</b> 24.5 mm	<b>Diameter:</b> 26.8 mm	<b>Diameter:</b> 27.5 mm
<b>Composition:</b> Brass-plated steel	<b>Composition:</b> Brass-plated steel	<b>Composition:</b> Copper, Nickel and Zinc	<b>Composition:</b> Nickel-plated steel

The gastrointestinal foreign bodies ingestion has no sex predilection; children are said to be affected more than adults, especially from the age of 6 months to 6 years as per their motor and cognitive development, this is when they start to explore their surroundings, however; In the elderly group, it is reported to occur among those who are mentally disabled, alcohol or substance abusers and vision impaired who confuses small objects for a pill. Younger children may sometimes be fed foreign bodies by their fellow older peers depicting abuse. Special concerns should also be raised among psychiatric patients with eating disorders (such as bulimia) and self-harming behaviours [1,9 -11].

Its presentation is dictated by different factors including the size of the foreign body, shape and more importantly the site of lodgment [1]. The long, sharp and large-sized objects are more prone to lodge along the upper tract, especially in the esophagus resulting in potential damages with perforations culminating in spillage of contents to the mediastinum, and even if these objects reach the stomach; immediate endoscopic removal is warranted as the probability is higher for it to lodge in the duodenum because of its curvature. Button batteries can cause severe tissue damage including burns and hence diagnoses always imply an immediate course of retrieval [1,12).

For the oesophageal dislodgement: - patients commonly present with dysphagia and foreign body sensation. Others are hyper-salivation, hiccups, regurgitations, gagging-like reflexes and retrosternal fullness as objectively seen in adults. The presence of odynophagia almost always requires ruling out serious complications like perforations [13]. In the pediatric population, poor feeding and irritability are normally seen, additionally; Some proximal oesophageal foreign bodies might compress the trachea giving upper airway obstruction-associated presentations. In addition, foreign bodies that reach the lower gastrointestinal tract may present with signs and symptoms of intestinal obstruction often with complications like peritonitis [1,13].

Chest X-rays (often with the need for neck and abdominal X-rays) are always enough to reach the diagnosis for the radio-opaque foreign bodies having a detection rate of 53 % [11]. “Halo or double ring sign” is an X-ray feature that can differentiate an ingested button battery from coins and coin-like objects by 80 % [13]. Computed tomographic (CT) scan is not only useful in the diagnosis of both radio-opaque and non-radio-opaque objects but also to delineate complications that may be associated with the latter diagnosis such as perforation. But moreover, if the object is



suspected to be more proximal and higher in the oesophagus with nothing shown on a standard chest X-ray; an endoscopy should then be done for both diagnostic and definitive treatment bases [1,14].

As with presentations, the modality of management is virtually determined by the type, size and shape of the foreign body, whether the object is chemically inert, duration and the site of dislodgement provided that most of the objects that have reached the level of the stomach can be managed expectantly [9,15]. Endoscopy is employed in most of the circumstances as its success is more than 90% in both emergency, urgent and non-urgent settings. Sharp pointed objects, oesophageal disk batteries with the inability to handle secretions warranty for emergency endoscopy. Coins in the esophagus, multiple magnets, sharp pointed objects in the stomach or duodenum and objects greater than 6 cm in length above the duodenum, are all warranties for an urgent (12 – 24 hours) extraction. Objects greater than 2.5 cm in diameter and other blunt objects lodging in the stomach for 3-4 weeks without a mechanical clinical presentation can safely be approached as non-urgent [1,13]. In resource-limited centres without endoscopes; - a Foley catheter and a magnet-attached Levin tube can be used as an alternative to serve the purpose [2]. Other approaches are laparoscopic, laparo-endoscopic, Video Assisted Thoracoscopic Surgery (VATS), thoracotomy and laparotomy. They can all be used as guided by the level, presentations and presence of complications including perforations with or without mediastinitis or peritonitis [1,14].

The gastrointestinal foreign bodies can present with different complications as dictated by the anatomical site of lodgment or dislodgement. At the level of oesophagus; complications involve Mucosal abrasion, retropharyngeal access and oesophageal strictures [16]. In the case of esophageal perforations; mediastinitis, pneumomediastinum and pneumothorax have been mentioned to occur in some patients, migration to

the major vessels pronounced the aorta may produce aortoenteric fistula which is an aggressive impediment with higher complication rate [17]. The stomach and other lower foreign bodies can complicate mucosal abrasion and intestinal obstruction that may lead to peritonitis and systemic sepsis. Button batteries can present with a serious mucosal injury secondary to alkaline burn in less than two hours while the swallowed magnet in the intestinal lumen can attract other ingested metallic foreign bodies even via a mucosal tissue culminating in ulceration and even fistula [18-20].

Following up on patients in expectant management is an important entity. Parents or caregivers should be informed of the dangerous symptoms and signs that can alert them to return to the hospital for necessary interventions [21]. In the presence of symptoms, patients with a button battery foreign body that lodges into the stomach for more than four days should be taken as the candidate for removal. It should always be remembered that serial radiographs to assess for the transition of the foreign body along the gastrointestinal lumen is not necessary and those children who will require removal procedures should always be considered for transfer to well-equipped facilities with both supportive infrastructures and expertise [22,23].

Parents and caregivers should make sure that; foreign bodies that are susceptible to ingestion by children are kept out of the reach, especially at later ages. Furthermore, whenever foreign body ingestion is suspected, investigating it is the paramount importance not only for clearing doubts but also for setting precedents for the forthcoming modality of management [16].

## CONCLUSION

Foreign body ingestion is a worldwide problem that is more pronounced in the pediatric population as compared to adults. Early diagnosis dictates the management modality to be employed by taking into account the foreign body's nature, type, size and location within the gastrointestinal tract. Since

waiting is not always disastrous; expectant management can well be used for the majority of chemically inert objects having no or negligible mechanical effects.

### Ethical Consideration

Informed assent was obtained from the patient's parent and the publication of this case report was approved by the relevant Joint Institutional Research Review Board of the University College and the Hospital.

**Conflict of Interest:** All authors declare no conflict of interest exists.

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### Author's Contributions

SJ conceptualize the original work. SJ, RM, TK and AN participated in the preparation of the manuscript, all authors reviewed and approved the work for its final submission.

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