## CASE REPORT

# Ahmad B Kumo Manko Muhammad Habib Balarabe



# Peg pin in the duodenum of a four year old child: A Case report

DOI:http://dx.doi.org/10.4314/njp.v48i1.7

Accepted: 11th September 2020

Ahmad B Kumo ( ) Manko Muhammad Habib Balarabe Department of Internal Medicine, Ahmadu Bello University/Ahmadu Bello University Teaching Hospital, Zaria, Kaduna, Nigeria. Email: akbello06@gmail.com.

#### Introduction

Children are in the habit of putting objects in to their mouths and these objects are inadvertently swallowed during play. Ingested foreign body seen in medical and surgical practice include pins, needles, springs, coins, batteries, and liquids, particularly corrosive agents which can produce severe oesophageal and gastric mucosal burns. Ingestion of foreign body occurs commonly in paediatric age group between 6 months and 5 years of age.<sup>1</sup> Most ingested foreign objects pass smoothly through the oesophagus, into the stomach and are expelled from the body without complications. Up to 80% -90% of foreign body (FB) in the gastrointestinal tract are passed spontaneously without complications, 10%-20% are removed endoscopically, while 1% require open surgery because of complications.<sup>2,3</sup> Complications may arise in the form of impaction, bowel obstruction when the object is large, or bowel perforation with sharp objects. Endoscopic removal or surgical intervention becomes necessary for foreign objects causing distressing symptoms, or when these objects fail to progress through the gastrointestinal tract, or when there is anxiety or insistence on the part of the parent.

It is estimated that 40 % of foreign body ingestion in children is not witnessed, and in any case they hardly develop symptoms.<sup>[4]</sup> Symptoms may range from vomiting, dyspnoea, wheezing, restlessness, abdominal swelling and abdominal pain. Foreign bodies can be obstructed at the cricopharyngeal area, middle third of the oesophagus, lower oesophageal sphincter, at the pylorus, or at the ileocaecal valve.<sup>1</sup>

Various endoscopic retrieval devices are available for the endoscopic removal of foreign bodies. Availability of these retrieval devices, and expertise on the part of the endoscopist are the hallmark of successful foreign body removal and the absence of either may pose a great challenge for the successful removal of the FB.

Abstract: Ingestion of foreign body occurs commonly in the paediatric age group particularly between 6 months and 5 years of age.<sup>1</sup> Most ingested foreign objects pass smoothly through the oesophagus, into the stomach and are expelled from the body without complications. However, 10%-20% will require endoscopic removal to avoid complications<sup>2,3</sup> We present the endoscopic removal of a peg pin in the duodenum of a four-year-old child.

**Key words:** Child, Foreign body, Peg pin, Endoscopic removal, Duodenum.

We therefore present a case of a cloth peg pin found in the duodenal bulb of a four year old boy.

#### **Case report**

An anxious parent presented a 4 year old boy to the Emergency Room with complaint that his child had swallowed a cloth peg pin while playing with it in school about four hours prior to presentation. The child had history of a few bouts of vomiting, refusal of feeds and pain in the throat immediately after the FB ingestion, but all of those resolved after a while. There was mild difficulty in breathing, and restlessness, shortly after the incidence, but no haematemesis, abdominal pain, or abdominal swelling.

At presentation the child was restless, but was not in respiratory, or painful distress. He was neither pale nor dehydrated. The respiratory rate was 18 cycles/min, with resonant percussion notes in all lung fields and vesicular breath sounds,  $SpO_2$  was 99% in room air. Abdominal and cardiovascular examinations were unremarkable. Routine laboratory tests such as Complete Blood Count, and Urea/Electrolyte/Creatinine yielded normal results. Plain radiograph of the chest showed a radio-opaque object in the stomach with its open pointed tip pointing superolaterally (Figure 1).

He was referred by the attending Emergency Room team to the gastroenterologist for endoscopic removal. On review we found that the child had been fed after the initial bout of vomiting before leaving for hospital, which subsequently delayed the procedure by a few hours to allow for six hour fast.

Informed parental consent for endoscopy was obtained. The mode of anaesthesia preferred by the anaesthetist and endoscopist was: intravenous (IV) midazolam 0.5mg/kg with ketamine 1 mg/kg and Pentazocin 0.5mg/ kg. The procedure was performed with the patient in his left lateral position. With a plastic dental guard held firmly in the patient's mouth by the assisting endoscopy nurse, the gastroscope was gently introduced under vision in to oropharynx to examine the oesophagus, stomach, and duodenum of the patient. Endoscopy showed lower oesophageal erosions with pre-pyloric erosions and the foreigh body (peg pin) was found lodged in the duodenal bulb (figure 2a). There was no evidence of duodenal ulceration or perforation. Using a simple pair of biopsy forceps (being the only accessory available to us), to grip the fixed middle part of the pin, a gentle and cautious pull of the scope together with the forceps enblock was maintained with the sharp-pointed free ends trailing, back in to the stomach. Thereafter, with continuous insufflation the gastroscope together with the biopsy forceps grasping the peg pin were gently maneuvered through the gastroesophageal junction in to the oesophagus and out with the sharp ends trailing. The pin was sucessfully extracted in one attempt (figure 2b). The scope was re-introduced to examine the oesophageal mucosa for injury during extraction but no fresh injuries were noted. The patient was subsequently discharged having been followed up for few hours without reporting any compliant.

Fig 1: Plain radiograph of the chest showing a radioopaque object in the stomach



Fig 2: a) Extracted metal peg pin withdrawn together with the scope



#### Fig 2: b) Extracted Peg pin



### Discussion

In skilled hands, endoscopic retrieval of ingested foreign body (FB) is a safe and reliable procedure, with a high success rate and low morbidity and mortality.<sup>[5]</sup> It is preferable to use appropriate sized endoscopes in infants and children, but standard adult endoscopes are generally safe in children weighing more than 25 kg where paediatric sized endoscopes are not available.<sup>6</sup> Ingested foreign bodies generally traverse the digestive tract and are passed out. Occasionally however, impaction may occur in the oesophagus, commonly at the mid third, or at the lower oesophageal sphincter. Affected children present with drooling, hyperventilation, dysphagia, odynophagia, and refusal of feeds. Some patients remain asymptomatic for weeks and may later present with intestinal perforation, or fistula formation. In the index case, there was initial difficulty breathing, refusal of feeds and vomiting, shortly after the ingestion of the FB, before resolution of symptoms at presentation. This is similar to a finding by Onotai et al<sup>7</sup> who reported cases of peg pin in the oesophagus of two children. Sharad et al<sup>8</sup> also reported a case of a two month old child who presented with refusal to breastfeed, vomiting, and cough after ingesting a metal zipper which was impacted in the oesophagus. The initial symptoms in the index case must have been as a result of a transient impaction of the metal peg pin in the oesophagus before it negotiated the lower oesophageal sphincter to drop in to the stomach. The symptoms apparently resolved at that point in congruence with the radiographic finding of the foreign body in the stomach (Fig 1). Other areas potential of FB impaction are the pylorus, duodenal curve and the ileo-caecal valve.

Endoscopy in the index case revealed mucosal erosions which were noted in the oesophago-gastric junction and the pyloric mucosa (gastroduodenal junction) caused by the FB while negotiating the openings. Even though the FB had already passed through the oesophageal and gastric openings with minimal mucosal injury, there remained a risk of being trapped at the ileocaecal valve and causing perforation of small intestine. The ileocecal region is the most common site for intestinal perforation but perforations have been reported also in the oesophagus, pylorus, at the junction between the first and second parts of the duodenum and also in the colon 'Endoscopy guidelines of the European Society of Gastrointestinal Endoscopy (ESGE) revealed that sharp pointed objects in the stomach may pass without incident, however the risk of complication is as high as 35%. The North American Society for Pediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN) and the European Society of Gastrointestinal Endoscopy (ESGE) and European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN)<sup>[9-11]</sup> therefore advise immediate endoscopic removal of sharp foreign bodies in the oesophagus, the stomach and intestines in symptomatic patients, and urgent (within 24 hours) removal if located in the stomach and intestines in asymptomatic patients.

The most appropriate retrieval devices to be used are a retrieval forceps; such as a rat-tooth, or an alligator forceps, because of their large jaws and firm grip, together with a latex rubber hood or an over tube to protect the oesophageal and pharyngeal mucosa from injury. These devices were not available for use in the index case, so we resorted to the use of a simple biopsy forceps which was the only available device that was theoretically a poor choice because of its small opening width and poor grasping ability. However, extra care was taken to hold firmly to the peg pin at its middle, with the sharp pointed ends trailing. This was to satisfy the recommendation of the ESGE that sharp foreign body should be grasped in such a position that the sharp or pointed end

#### References

- 1. Ji Hyuk Lee.Foreign Body Ingestion in Children. *Clin Endosc* 2018; 51:2:129–136.
- Jiraporn Khorana, Yaowaret Tantivit, Chanistsara Phiuphong, Sarachana Pattapong and Suparat Siripan. Foreign Body Ingestion in Paediatrics: Distribution, Management and Complications Medicina (Kaunas) 2019;55:10:686. Published online 2019 Oct 14.
- Seo JK. Endoscopic management of gastrointestinal foreign bodies in children. *Indian J Paediatr. 1999;66:75-80*
- Wright C C, Closson F T. Updates in paediatric gastrointestinal foreign bodies. *Pediatr Clin North Am 2013;60:1221-1239.*

- Cheng W, Tam PK. Foreignbody ingestion in children: experience with 1,265 cases. J Paediatr Surg. 1999;34:1472– 1476.
- Ko Hin Hin, Enns Roberts. Review of food bolus management. Can J Gastroenterol. 2008;22:10:805-808.
- ASGE Standards of Practice Committee Jennifer R Lightdale, Reuben Acosta, Amandeep K Shergill, Vinay Chandrasekhara, Krishnavel Chathadi, Dayna Early et al. Modification in Endoscopic Practice for Patients. Gastrointes Endosco 2014;79:5:699-710.
- Onotai L.O, Nwogbo A.C, Uyawanne N, Peterside A. Foreign body (peg pin) in the upper oesophagus of Nigerian children: Report of two cases. Int J Med Med Sci 2016;6:5:327-331.

No complication was recorded during follow-up visits, in consonance with a high success rate reported in a retrospective study by Yu-Hui Chiu et al.<sup>12</sup> The authors who found that endoscopic FB extraction was successful in 96.9% of cases, while surgery was required in only 3.1% of the 159 patients: the complication rate was 6.9%, in the form of mucosal laceration and suspected perforation, all of which were successfully managed conservatively.<sup>12</sup>

#### Conclusion

Endoscopic retrieval of ingested foreign body is generally reliable and safe and rarely associated with complications. In resource constraint countries, improvised accessories can safely be used to retrieve foreign bodies in safe hands instead of subjecting both child and parent to the anxiety of possible impaction and its consequence while expectantly waiting for expulsion of the foreign body, as well as the financial and psychological stress of open surgery if it does impact or perforates.

Conflicts of Interest: None Funding: None

- 9. Sharad Hernot, Samar Pal Singh Yadav, Bhushan Kathuria, and Madhuri Kaintura. An uncommon oesophageal foreign body in a neonate. *BMJ Case Rep* 2015. doi:10.1136/bcr-2014-208719
- Michael Birk, Peter Bauerfeind, Pierre H. Deprez, Michael Hafner, Dirk Hartmann, Cesare Hassan et al. Removal of foreign bodies in the upper gastrointestinal tract in adults: European Society of Gastrointestinal Endoscopy (ESGE) Clinical Guideline. Endoscopy 2016; 48: 1–8

- 11. Thomson, Mike; Tringali, Andrea; Dumonceau, Jean-Marc; Tavares, Marta; Tabbers, Merit M.; Furlano, Raoul; Spaander, Manon et al. Paediatric Gastrointestinal Endoscopy European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) and European Society of Gastrointestinal Endoscopy (ESGE) Guidelines. J Paediatric Gastroenterol Nutri: 2017;64:1:133-153.
- 12. Kramer RE, Lerner DG, Lin T, Manfredi M, Shah M, Stephen TC, et al. North American Society for Paediatric Gastroenterology, Hepatology, and Nutrition Endoscopy Committee. Management of ingested foreign bodies in children: a clinical report of the NASPGHAN Endoscopy Committee. J Paediatr Gastroenterol Nutr. 2015;60:562– 574.
- 13. Chiu Yu-Hui, Chorng-Kuang How, Wei-Fong Kao, David Hung-Tsang Yen, Mu-Shun Huang, Sau-Chin Chen, et al. Diagnosis and Endoscopic Management of Upper Gastrointestinal Foreign Bodies. *Am J Med Sci 2012;* 343:3:192–195