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CASE REPORT

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Successful endoscopic retrieval of an accidentally ingested toothbrush in a 95-year-old male : a clinical case report

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Abstract

Background Accidental foreign body ingestion in the paediatric age group is a common presentation to the Emergency department, with most objects being small and round. Accidental ingestion of non-organic, long, and rigid foreign bodies in adults is relatively rare, and is usually seen in patients with an underlying psychiatric illness. Such foreign bodies are unlikely to pass through the entirety of the gastrointestinal tract owing to their length and rigidity, and are therefore associated with the risk of pressure ulcers, necrosis, and perforation, which necessitates their prompt removal.

Case presentation We report the case of a 95-year-old male with Parkinson's disease, who presented to the Emergency Department with alleged history of having swallowed his toothbrush an hour prior to arrival. The patient was hemodynamically stable. An X-ray of the abdomen confirmed the presence of the toothbrush with the radio-opaque bristle end seen in the left upper quadrant. The Gastroenterologist was involved, and an endoscopic retrieval of the toothbrush was planned immediately. There were challenges encountered in the endoscopic removal owing to the smooth surface of the toothbrush. However, successful retrieval was accomplished, and patient was discharged the following day with no complications.

Conclusion Accidental ingestion of toothbrush in adults is extremely rare. Owing to its length and structure, the tooth brush is unlikely to be naturally expelled from the rectum, and therefore associated with risk of complications like perforation, which necessitates prompt removal.

Keywords Toothbrush, Accidental swallowing, Foreign body ingestion, Endoscopic removal

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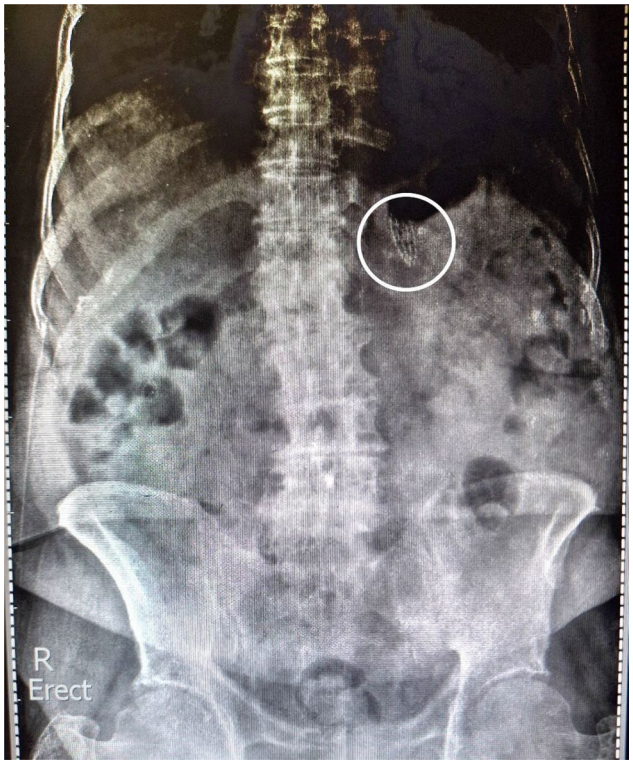

Fig. 1 : Xray of abdomen showing radio-opaque bristled end of tooth brush (circled)

Introduction

Accidental foreign body ingestions are a common occurrence in the paediatric age group, with the ingested objects typically being small, short, and round. Coins are the most ingested foreign bodies in the paediatric age group, seen in the oesophagus [1].

Foreign body ingestion when seen in adults, usually entails accidental food bolus impaction, with the most common anatomical location being the oesophagus [2]. Most commonly ingested foreign bodies in adults are found to be fish bones and chicken bones [3]. In 80% of the cases, the ingested foreign body passes through the gastrointestinal tract (GIT) uneventfully [3]. Endoscopy is performed in 20% of cases, while surgical intervention is required in less than 1% of the cases [3].

Long and rigid foreign bodies are unlikely to pass through the entirety of the GIT due to its inherent anatomy which includes constrictions and curvatures. These are likely to be impacted and therefore associated with a risk of pressure ulcers, necrosis, and perforation. Prompt removal of these foreign bodies is imperative to avoid complications like bowel obstruction, perforation, or fistula formation. With advances in minimally invasive procedures, an endoscopic retrieval is the preferred modality of treatment, however it comes with inherent challenges.

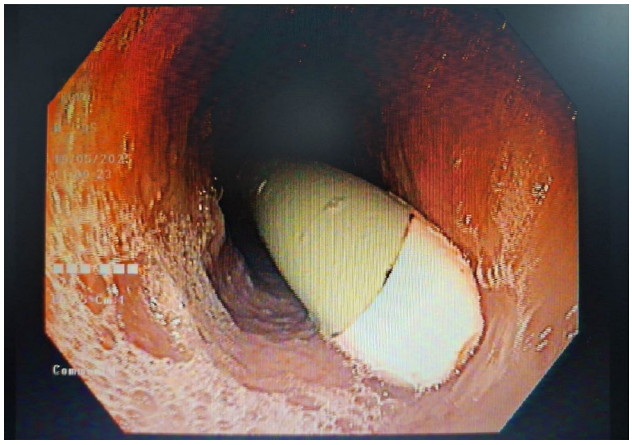

Fig. 2 : Smooth end of toothbrush as seen during endoscopy

Case presentation

A 95-year-old male, known case of Parkinson's disease presented to the Emergency Department with alleged history of accidental ingestion of a toothbrush while he was trying to clean the posterior end of his tongue with the bristled end of the brush. He complained of odynophagia and foreign body sensation in the chest on arrival. The patient was hemodynamically stable on arrival, with Glasgow Coma Scale (GCS) of 15. He was lucid, displayed no signs of dementia, and gave the history himself which was corroborated by family members. He presented roughly one hour after the accidental toothbrush ingestion.

An X-ray of the abdomen (Fig. 1) revealed a radio-opaque shape fitting the description of the head end of the tooth brush in the left upper quadrant, thereby confirming the ingestion.

The patient was posted for endoscopic retrieval of the toothbrush within the next hour. Endoscopy revealed the smooth, tapering tail end (non-bristle end) of the toothbrush in the lower oesophagus, which was abutting the wall of the oesophagus with mild ulceration in the area. The distal end of the toothbrush was very smooth (Fig. 2), and proved difficult to grasp with large foreign body / alligator forceps. The toothbrush was therefore pushed into the stomach, however all attempts to reverse it so that the bristle end (Fig. 3) was facing the cardio-oesophageal junction was not possible.

Subsequently, the smooth tapering end was held with stone basket and gently pulled out after insufflation to distend both the cardio-oesophageal junction and cricopharyngeal junction (Fig. 4).

The toothbrush was found to be a regular adult-sized tooth brush with no breaks or dents (Fig. 5). The patient withstood the procedure well, with no observed trauma to the cardio-oesophageal junction or cricopharynx, and was discharged after a 24-hour observation period.

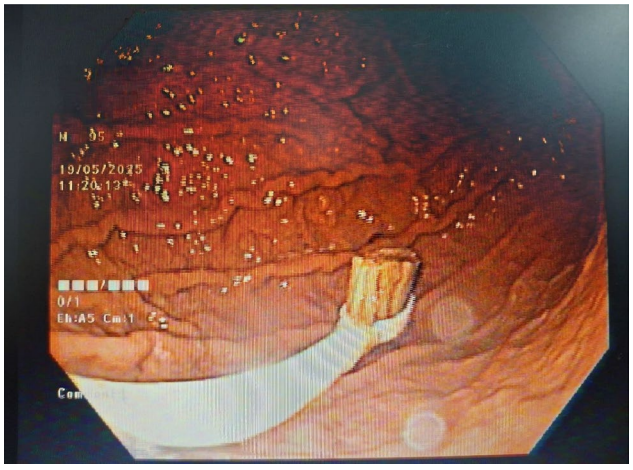

Fig. 3 : Bristle end of toothbrush as seen during endoscopy

Fig. 4 : The tooth brush as held during endoscopic removal

Discussion

Most cases of accidental foreign body ingestion are noted in the paediatric age group. Intentional foreign body ingestion in adults are seen most often in psychiatric patients. Inadvertent foreign body ingestions in adults are not as common, and when present are usually fish bones and chicken bones [3].

About 80% of foreign bodies which reach the stomach will pass spontaneously thorough the GIT and get expelled from the rectum and can therefore have a conservative management [4]. However, toothbrush ingestions are considered high risk and are likely to require endoscopic intervention [5]. High risk ingestions include sharp objects, length more than 5 cm, diameter more than 2.5 cm, button batteries and magnets [6].

Foreign bodies that exceed 10 cm in length and are rigid in nature (like a toothbrush) are unlikely to pass through the GIT and get expelled spontaneously due to the anatomical constrictions and curvature of the intestine, notably the C-loop of the duodenum [5, 6].

Fig. 5 : The toothbrush as seen after successful endoscopic retrieval

Accidental ingestion of an adult sized toothbrush is an extremely rare occurrence with a literature review showing only 31 cases, none of which were expelled spontaneously [5]. Furthermore, several of these toothbrush ingestions caused complications including mucosal tears and perforations [5]. Another case series including 8 swallowed toothbrushes or broken toothbrush heads in adults showed that all of them required either endoscopic or laparoscopic removal [7]. The literature also reports a cases of delayed perforation following toothbrush ingestion [8, 9]. Urgent endoscopic removal is therefore imperative in these cases.

Conclusion

Although intentional foreign body ingestions in adults are usually associated with underlying psychiatric illness [10], inadvertent ingestions can sometimes occur, especially while attempting to clean the posterior end of the tongue with the back of the bristled end of the toothbrush [11].

In our case, the patient was suffering from Parkinson's disease, a neurodegenerative illness which is known to cause dysphagia as well as diminish the gag reflex [12], which would explain the unusual and inadvertent swallowing of an adult sized toothbrush since

neurodegenerative diseases like Parkinson's are known to prolong the swallow trigger, leading to prolonged duration of the pharyngeal and oesophageal phases of swallowing.

Another interesting aspect of this case was the visibility of the tooth brush on the X-ray abdomen. It is not common knowledge, that the bristled head end of the toothbrush is radio-opaque owing to the small metallic wires which are used to hold the plastic bristles in place [6]. X-ray is therefore a valid as the initial radiological investigation to confirm the presence of a toothbrush.

To our knowledge, this is the oldest reported age of a patient with accidental ingestion as well as successful retrieval of a toothbrush. Prompt recognition and retrieval in this case led to a favourable outcome without any complications despite the patient's advanced age.

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FV – Conceptualization, writing – original draft, writing – review and editingKV – Writing – review and editingVS – Writing – review and editingSJ – Writing – review and editingSN – Writing – review and editingAll authors have read and approved the final manuscript.

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