EARLY ENDOSCOPIC INTERVENTION FOR AN ACCIDENTALLY SWALLOWED TOOTHBRUSH: A CASE REPORT

Cemal Kaya*†, Emre Bozkurt*, Pinar Yazici*, Sinan Omeroglu* and Mehmet Mihmanli*

*University of Health Sciences, Sisli Hamidiye Etfal Training and Research Hospital, Department Of General Surgery.

ABSTRACT

Introduction: Esophageal foreign bodies can be diagnosed at any age, especially in childhood. The most efficient treatment method is the endoscopic removal of the object. Early diagnosis and treatment of the oesophageal foreign bodies are crucial regarding the possible fatal outcome due to complications. In the literature, there have been a few cases which were presenting ingested huge foreign bodies like swallowing toothbrush. This case report aims to introduce a successful minimally invasive emergency management of this rarely emerging clinical entity.

Case Summary: We presented a case of a 23-year-old female patient, who accidentally ingested toothbrush while trying to induce emesis by pharyngeal stimulation using it. After physical, laboratory and radiological examinations were done, the obstructed toothbrush was successfully removed endoscopically within two hours, and she was discharged without any complications after 24-h observation.

Conclusion: Emergent endoscopic intervention is a promising minimally invasive approach for retrieving of the ingested oesophageal foreign bodies to prevent the possible fatal course of the complications.

KEYWORDS: emergency, endoscopy, esophagus, foreign body ingestion

Introduction

Esophageal foreign bodies can be seen at any age but commonly seen in childhood. Although deaths have been reported in the literature, mortality from foreign body ingestion is extremely low unless diagnosis and treatment are delayed. An estimated 1500 deaths occur annually due to foreign bodies in the upper gastrointestinal tract [1]. Foreign body ingestion is mostly observed in childhood. Considering adult population, except for cases like swallowing dental prosthesis accidentally in older patients, foreign body ingestion tends to be intentional, occurring in the setting of psychiatric disease (i.e. bulimia nervosa), developmental delay, alcohol intoxication, and individuals with secondary gain (i.e. prisoners). Esophageal foreign bodies consist of approximately 15-20% of all gastrointestinal tract foreign bodies [2]. The most fixed place of the swallowed foreign bodies in children is upper oesophageal sphincter, whereas this place is lower oesophageal sphincter in adults [3,4].

There have been a few cases, who were presenting with a swallowed toothbrush that endoscopically treated [5-8]. We introduced a patient with an inadvertently swallowed toothbrush. This case report aims to present a successful minimally invasive emergency management of this rarely emerging clinical entity.

Case report

A 23-year-old female patient referred to the emergency service because of an accidentally swallowed toothbrush while using it for irritating the pharynx to provoke vomiting after a high amount of alcohol consumption. She claimed to have lost control of the toothbrush handle and ingested the “white-and-green” toothbrush. Patient’s vital signs, physical and psychological...
examinations were standard. She does not have any history of psychiatric diseases. Laboratory results showed leukocyte levels of 9,400 /µL (normal range: 4,500-10,500 /µL) and mildly elevated C-reactive protein (CRP: 25 mg/L) (normal range: 0-5 mg/L). After thorax and the abdominal X-ray showing no abnormal findings, thoracoabdominal computed tomography was performed. It revealed the indistinguishable shadow of a foreign body at the level of mid oesophagus, and there were not any signs of perforation of the oesophagus (Fig 1a-b). Oropharyngeal examination done by an otolaryngologist found oedema in the upper airway without visualisation of the foreign body in the upper airway and therefore, endoscopy was performed under sedation. The wire snare trap was used to grab the toothbrush which was located at the below epiglottis (Fig 2a), and it was successfully removed from the oesophagus within two hours of initial administration (Fig 2b).

Blood leukocyte and CRP levels were normal at the 24th hours after the intervention. Additionally, she was good at oral intake without evidence of mediastinitis or oesophagal rupture. Chest X-ray control was unremarkable. The patient was discharged without any complication at the 24th h of the procedure (Fig 3).

Discussion

Esophageal foreign bodies consist of about 15-20% of ingested foreign bodies [2]. Impaction commonly occurs at sites of anatomical constriction. The primary cause of this situation is the inefficient peristalsis required for progression of the ingested foreign body in this region of the oesophagus. Therefore, oesophagal foreign bodies should assess in a different approach than the ones in the other parts of the gastrointestinal tract [9]. The invisibility of the object in radiography does not exclude the foreign body existence; clinical findings and history should also be assessed.

Endoscopic intervention is also risky because of the oedema of the oesophageal mucosa as a reaction against to the pressure...
No history of past medical illness

Accidentally swallowed toothbrush

30 minutes before hospital admission

Hospital admission

- Patient’s vital signs, physical and psychological examinations were normal.
- Oropharyngeal examination done by an otolaryngologist: edema in the upper airway without visualization of the foreign body.
- Leukocyte and CRP levels
- Abdominal X-ray
- Computed thoracoabdominal tomography

Endoscopy was performed: swallowed toothbrush was seen just under the epiglottis

60 minutes after hospital admission

The toothbrush was removed with the wire snare trap

75 minutes after hospital admission

Blood leukocyte, CRP levels and chest X-ray control were normal

24 hours after removal of toothbrush

Discharged without any complication

Fig.3. Timeline of the case.
of the foreign body. This can result in oesophageal perforation, which has been considered more severe than other parts of the alimentary tract.

Almost all patients with a history of foreign body ingestion are examined by diagnostic emergency endoscopy because over 93% of the swallowed objects are located where it is easily reached by endoscopy [10]. While some of the ingested foreign bodies require endoscopic or surgical management due to their corrosive nature, some of the foreign bodies cannot pass through the gastrointestinal system [GIS] due to its size and may develop significant symptoms that may cause complications related pressure necrosis, gastritis, mucosal tears and subsequent perforations require intervention.

The swallowed toothbrush has been reported in a few cases in the literature [5-7]. Although it is hard to progress along the GIS due to its size and shape, some reports showed toothbrush in different parts of the GIS, even in the colon [11]. Endoscopic or surgical interventions were required even if the swallowing had been occurred a long time ago [5-7]. However, in the case of oesophageal obstruction as in our case, oesophageal foreign bodies should be managed to avoid any mucosal oedema predisposing the perforation easily.

Early diagnosis and treatment of the oesophageal foreign bodies are crucial regarding the possible fatal course of the complications. Because of the difficulty of interventions due to the local trauma of the foreign body and severe outcome of possible perforation in the oesophagus compared to the other regions of the gastrointestinal tract, oesophageal foreign bodies should be removed immediately. European Society of Gastrointestinal Endoscopy recommends emergent (preferably within 2 hours, but at the latest within 6 hours) therapeutic endoscopy for foreign bodies inducing complete oesophageal obstruction, and for sharp-pointed, large/long objects or batteries in the oesophagus [12]. Endoscopic retrieval of the foreign bodies as a first-line treatment can be performed with a success rate of 90-99%, particularly in adult patients [10]. However, the complication rate of endoscopic intervention including perforation, bleeding varies between 1-13% [13]. Therefore, observation in the next 24 hrs can be better to eliminate any endoscopic complication. In our case, no major or minor complication was detected plausible due to early intervention.

Conclusion

Type and duration of the ingestion of foreign body determine the outcome. Early detection and management of oesophageal foreign bodies, particularly large/long objects causing obstruction, are crucial to prevent plausible complications. Immediate endoscopic intervention following physical and radiological investigation is a promising approach for retrieving large/long oesophageal foreign bodies to prevent morbidity complications like alimentary tract perforation.

Authors’ Statements

Competing Interests

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

There were no financial support or relationships between the authors and any organization or professional bodies that could pose any conflict of interests.