

An Ingested Toothbrush

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Abstract:

Toothbrush ingestion is rare and most cases are seen in anorexic or bulimic young women or associated with mental retardation or schizophrenia. We report a case of accidental swallowing of a toothbrush in a man with no such background psychiatric disorder. The toothbrush was impacted in the duodenum and could not be removed endoscopically. It was removed via a laparotomy and the patient made an uneventful recovery. The pathophysiology, presentation and various techniques reported for endoscopic removal have been reviewed. If endoscopic removal is not possible the toothbrush must be removed by operation, as spontaneous passage is unknown. (PHD 2011; Vol. 16(2): p75-77).

Introduction

The penetration of endoscopy services is gradually increasing in Pacific Island countries. Most endoscopies are still being done by general physicians and surgeons for whom an ingested toothbrush may pose a challenge. Knowledge of special techniques that have been used elsewhere for extraction of rare foreign bodies might prove invaluable in the successful treatment of these cases.

Among the myriad of foreign bodies swallowed, toothbrushes are rare. They are swallowed mostly, but not always, while attempting to induce vomiting.¹ The orientation of the toothbrush in the stomach may give a clue to the cause of ingestion and may influence treatment.

Endoscopic removal is usually possible but may be challenging and may require endoscopic accessories like over tubes and snares. We have reviewed the various ingenious methods reported to grasp and pull out this slippery object.^{2,3,4,5,6,7}

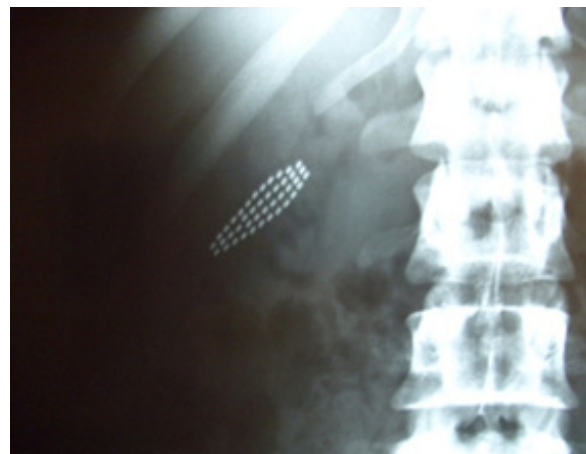
Case Report

A 28 year old man presented to the Surgical Department of the Colonial War Memorial Hospital, Suva, Fiji, with a history of having accidentally swallowed his toothbrush while

brushing his teeth in the morning. He said he was drowsy and the brush inadvertently slipped from his grasp and went down. He did not have any pain or vomiting following this. He had no previous history of ingesting abnormalities and had no co morbid conditions. There was nothing remarkable in his appearance and his vital signs were all within normal limits. General and systemic examination including the abdomen did not reveal any abnormality.

A plain X-ray of the abdomen revealed rows of stippled radio densities in the right upper quadrant arranged in the shape of a toothbrush head. (Figure 1)

Figure 1: Radio graphic appearance of a tooth brush head



An upper gastro intestinal endoscopy was done and this showed the toothbrush handle in the stomach and the head passing through the pylorus. The head was impacted in the duodenum and the proximal end was pressing on the greater curvature of the stomach. With some difficulty an endoscopic snare was passed over the handle and brought to the neck where it was tightened. The head of the toothbrush was now disimpacted from the duodenum and brought into the stomach. (Figure 2)

Figure 2: Toothbrush in stomach after dis-impaction



However it was not possible to snare and remove the toothbrush endoscopically as no purchase could be gained on the smooth proximal end, and the toothbrush could not be rotated in the stomach by endoscopic manipulation.

A laparotomy was done and the toothbrush removed via a gastrotomy. The patient made an uneventful recovery.

Discussion

Foreign body ingestion is seen frequently and the common objects involved are coins, bones, food debris, dental prosthesis, safety pins etc;⁸ however presentation with a swallowed toothbrush is rare.^{8,9} Kirk et.al⁹ reviewed the literature and found only 31 cases of toothbrush ingestion.

Most cases of toothbrush ingestion are seen

in bilimic or anorexic young women who seek to induce vomiting by stimulating the back of their throat.¹ This is done usually with the fingers, otherwise with readily available objects like toothbrushes. These objects, presumably, initiate the swallowing reflex and the object is pulled down into the oesophagus. However, rarely, toothbrushes can be swallowed by patients without a neurotic background whatsoever.⁶

On X-ray examination the head of the toothbrush is usually visible. Though the plastic is radiolucent, the head is marked by characteristic multiple rows of stippled radio densities which represent the metal staples used to fix the bristles in place.

Toothbrushes have been ingested both handle first and head first. It is curious to note that vomiting is usually induced with the handle rather than the head, and as expected, these toothbrushes go in handle first.^{1,6} Accidentally ingested toothbrushes go in head first. Thus the orientation of the toothbrush could give a clue to the cause of ingestion.

This orientation is retained in the stomach and may influence treatment. It is easier to grasp the head rather than the handle by endoscopic means, unless the handle has a hole. Rotation of the toothbrush in the stomach is not possible as the object lies in the long axis of the stomach and there is insufficient space for rotation.

About 80% – 90% of ingested foreign bodies will pass out spontaneously.⁸ However this has never been seen in the case of a toothbrush.⁹ Impaction usually occurs in the duodenum, though one case has been reported of a toothbrush perforating the hepatic flexure of the colon and penetrating the liver.¹⁰ On impaction it can cause perforation, penetration, fistula formation or abscess formation.⁹

Endoscopic removal of toothbrushes in the

oesophagus and stomach is usually possible if the proximal end can be securely grasped. A review of the literature reveals the following additional methods of securing a toothbrush endoscopically: It can be grasped with a polypectomy snare,^{2,3} with a dormia basket,⁴ with rat tooth forceps inserted through a hole in the handle of the toothbrush,⁵ by passing a biopsy forceps through a hole in the handle and opening the jaws⁶ or by using biopsy forceps to pass a thread through a hole in the handle to secure the toothbrush.⁷ Most of these endoscopic methods require a sheath or over tube to protect the oesophagus during withdrawal. In the absence of such a sheath complications of oesophageal perforation^{8,5,9} are known to have occurred.

If the toothbrush cannot be grasped by endoscopic means, if it has gone in head first or if it has impacted itself - it can be removed by laparoscopy assisted gastrostomy¹⁰ or laparotomy. No case of spontaneous passage has been reported.

Conclusion

A presentation with an ingested toothbrush should alert the clinician of a possible background of an eating disorder especially if the toothbrush has gone in handle first. Endoscopic removal is not easy and the special techniques outlined above may be helpful in achieving a successful endoscopic outcome.

References

1. Faust J, Schreiner O. A Swallowed Toothbrush. *Lancet* 2001; 357: 1012 [PMID:11293596 DOI:10.1016/S0140-6736(00)04238-0]
2. Lu XL, Cao HL, Qian KD. Endoscopic Removal of an Accidentally Swallowed Toothbrush. *Inter Med* 2008; 47: 1797-1798. [PMID: 18854631, DOI:10.2169/internalmedicine.47.0910]
3. Slim R, Geagea A, Yaghi C, et al. Unusual way of purging. *Emerg Med J* 2006 June;23(6):486 [PMID: 16714523, DOI:10.1136/emj.2005.033308]
4. Bastos I, Gomes D, Cotrim I, et al. An Unusual Endoscopic Procedure to Remove a Toothbrush from the Stomach. *Endoscopy* 1996; 28:525 [PMID:8886646]
5. Ertan A, Kedia S, Agrawal N, et al. Endoscopic removal of a toothbrush. *Gastrointestinal Endoscopy* 1983; 29(2): 144-145 [DOI:10.1016/S0016-5107(83)72564-2]
6. Mughal M. Accidental ingestion of a toothbrush! *Arch Emerg Med* 1986; 3: 119-123 [PMID: 3730077]
7. Nagashima R, Saitoh H, Fukase Y, et al. Endoscopic Removal of a Toothbrush Using Biopsy Forceps and Thread. *Endoscopy* 1998; 30(08): S90-S91
8. Selivanov V, Sheldon GF, Cello JP, et al. Management of Foreign Body Ingestion. *Ann Surg* February 1984; 187-191 [PMID: 6696536]
9. Kirk AD, Bowers BA, Moylan JA, et al. Toothbrush Swallowing. *Arch Surg* 1988; 123(3): 382-384
10. Lee MR, Hwang Y, Kim JH. A case of colohepatic penetration by a swallowed toothbrush. *World J Gastroenterol* 2006; 12(15): 2464-2465 [PMID: 16688846]

Excerpts from Medicine: Fiji Medicine Men

TIME Magazine (Monday, May.01, 1944). Retrieved from <http://www.time.com/time/magazine/article/0,9171,774898,00.html>

Since Dr. Lambert's retirement in 1939, Dr. Victor William Tighe McGusty, director of Fiji's medical services, has had complete charge of the school. Rockefeller support, no longer needed, has been withdrawn. The regular teachers are British-paid Colonial Medical Service doctors.