A toddler with a pharyngeal foreign body

James J. Grochowski MD CCFP(EM) Brian Hynes MD FACS

Foreign bodies of the upper aerodigestive tract often present as medical emergencies—particularly in view of the possibility of a compromised airway. Knowledge of pharyngeal anatomy and associated structures is essential to dealing effectively with the removal of a foreign body. In the pediatric patient, parental anxiety and lack of patient cooperation are additional factors that the emergency physician must contend with. We present a case report of a toothbrush lodged in the oropharynx-peripharyngeal tissues of an 18-month-old who fell while learning to brush his teeth (**Figure 1**).

Case description

An 18-month-old boy presented to the emergency room in the arms of his parents. Under the supervision of his parents, and without cause, he had fallen while a toothbrush was in his oral cavity, lodging the toothbrush in his mouth. Uncertain as to the depth that the toothbrush had entered the left side of the oropharynx, the parents, without trying to pull out the brush, restrained the child and brought him to the emergency room by car.

Upon arrival, the child was crying and fearful; blood and saliva were coming from his mouth. The parents continued to actively restrain his arms in order to disable him from trying to pull out the toothbrush himself. Results of functional inquiry were negative except for psoriasis. Immunizations were up to date.

On examination, the child was not stridorous or cyanotic. He was afebrile but tachypneic (40 breaths/min) and tachycardic (170 beats/min) with an oxygen saturation by pulse oximetry of 100% on room air. His cry was normal but he was drooling saliva and blood. Examining the oral cavity was too difficult so was not pursued. There was no pulsatile movement of the toothbrush. No subcutaneous emphysema, neck swelling, or neck hematoma was observed.

Figure 1. An 18-month-old who fell with a toothbrush in his mouth

Treatment

Ears, nose, and throat (ENT) surgical and anesthesia consultations were obtained and an airway plan was developed. All agreed upon a rapid sequence intubation, and the anesthesiologist premedicated the patient with sufentanil and atropine, followed by propofol as an induction agent and succinylcholine as the paralytic. Once the airway was secured, a tonsil setup was employed for examination purposes and a proper oral examination was completed. The major consideration was whether or not the toothbrush had pierced through the oral mucosa and constrictor muscles and entered the parapharyngeal space.

Photographs were taken before and after the child had been intubated. The head of the toothbrush had completely pierced the oral mucosa just at the level of the retromolar trigone and anterior to the anterior tonsil pillar. There was no excessive bleeding once the toothbrush was removed.The deep pharyngeal wound was irrigated with saline and closed with chromic sutures. Intravenous antibiotics were given intraoperatively. The child's postoperative recovery was uneventful.

Discussion

Although immediate airway compromise is a clear threat in penetrating oropharyngeal injuries, the severity of the injury is not always readily apparent. Violation of the retropharyngeal space can lead to subsequent hematomas, abscess formation, and mediastinitis.[1] Lateral neck radiographs or computed tomographic imaging should be considered to identify air in the retropharyngeal area.[2] Imaging of our patient in this case was forgone, given the urgency of the situation.

Care must be taken to ensure that a missing piece of the foreign body does not remain lodged in the head and neck region. In this case, it was easy to identify the foreign body as structurally intact. In addition,

This article has been peer reviewed.
Cet article a fait l'objet d'une révision par des pairs.
Can Fam Physician 2008;54:1695-6

benign-appearing injuries to the soft palate and peritonsillar tissues can still conceal deeper damage because of their close proximity to the arterial-venous structures. Chambers et al reported pseudoaneurysms of the internal carotid artery after an infant allegedly fell on her face with a spoon in her mouth.[3] Direct damage to the carotid artery is possible by a rapid, blunt blow to the posterolateral soft palate, compressing the artery against the transverse process of the second or third cervical vertebrae. Intimal damage can still occur from shearing forces after blunt trauma, even in the absence of arterial penetration. This intimal damage might promote thrombus formation with potential serious neurological sequelae.[4]

Although our case had a good outcome, it allows us to discuss a serious medical problem with the potential for disastrous consequences. The soft palate is commonly injured with sharp objects, such as sticks, utensils, pencils, and tools. The phrase "Don't run with that in your mouth" is often voiced too late after an object in a child's mouth suddenly gets jammed against something firm. As with many "accidents," prevention and education are still important to this issue. Although these cases occur infrequently in smaller communities, it is prudent to be familiar with their presentation.[5-7]

The smaller community hospital setting in Ontario presents its own unique challenges to treating pediatric patients with penetrating oropharyngeal injuries. Sarnia, Ont, where we practise, is a city of 73 000 people; the nearest pediatric trauma centre is 110 km away. Its emergency department receives 60 000 visits yearly. Unlike large tertiary centres, the emergency physicians in our community hospital do not have in-house ENT, pediatric, or anesthesia access. As ENT coverage is supplied by a single surgeon, it is important for emergency physicians to know their limitations when coverage is not available and, at the same time, to be comfortable with their airway skills. Check your emergency room to ensure that there is an advanced airway cart available to deal with emergencies such as the one presented here. Experienced physicians still need to proceed with extreme caution in these cases and require periodic review courses.[4,8] In a non–life-threatening situation, it would be prudent not to proceed with foreign body removal unless the didactic skills, experience, personnel, and equipment are all present.

Conclusion

Pediatric patients who present with impalement of the lateral portion of the soft palate or tonsillar tissue, regardless of benign appearance of the injury, should be admitted, and ENT consultation should be obtained, as these cases represent a subset of patients at risk for adverse outcomes. In the absence of sufficient resources, a foreign body should be left in place and the patient transferred, along with the most experienced physician, to the appropriate facility. As with all pediatric cases, it is equally important to assess the caregiver's ability to watch the child for rare complications after discharge.

EDITOR'S KEY POINTS

- There is good reason for the saying "Don't run with that in your mouth."
- The severity of penetrating oropharyngeal injuries might not be apparent on physical examination. Lateral neck x-ray scans or computed tomographic imaging might be necessary. Consultation with an otolaryngologist should be obtained, if possible.
- Given the potential for serious harm, removal of oropharyngeal foreign bodies requires expertise and specialized equipment.

POINTS DE REPÈRE DU RÉDACTEUR

- L'expression «Ne cours pas avec quelque chose dans la bouche!» est bien fondée.
- La gravité des blessures oropharyngiennes pénétrantes peut ne pas être apparente à l'examen physique. Il peut être nécessaire de faire une radiographie latérale du cou ou un tomodensitogramme. Si possible, demandez une consultation à un oto-rhino-laryngologiste.
- Étant donné la possibilité d'un dommage sérieux, le retrait d'un corps étranger de la région oropharyngienne requiert de l'expérience et des instruments spécialisés.

Dr Grochowski is an Adjunct Professor in the Department of Medicine at the University of Western Ontario in London and an attending emergency medicine physician at Bluewater Health in Sarnia, Ont. **Dr Hynes** is an attending otolaryngology surgeon at Bluewater Health in Sarnia.

Competing interests
None declared

Correspondence
Dr James Grochowski, 220 N Mitton St, Sarnia, ON N7T 6H6; telephone 519 464-4400, extension 5214; e-mail **jgrochowski@cogeco.ca**

References

1. Singer JI. Management strategy for penetrating oropharyngeal injury. *Pediatr Emerg Care* 1989;5(4):250-2.
2. Lim R, Peddle M. Penetrating pharyngeal injury in an infant. *CMAJ* 2007;177(11):1351-2.
3. Chambers N, Hampson-Evans D, Murdoch L. Traumatic aneurysm of the internal carotid artery in an infant: a surprise diagnosis. *Pediatr Anaesth* 2002;12(4):356-61.
4. Horceczko T, Gausche-Hill M, Burbulys D. Case presentation: "the perilous pencil." In: American Academy of Pediatrics. APLS: The Pediatric Emergency Medicine Resource. 4th ed. [website]. Sudbury, MA: Jones and Bartlett Publishers; 2008. Available from: **www.aplsonline.com/cme/casepresentations.aspx?c=1**. Accessed 2008 Nov 6.
5. Sasaki T, Toriumi S, Asakage T, Kaga K, Yamaguchi D, Yahagi N. The toothbrush: a rare but potentially life-threatening cause of penetrating oropharyngeal trauma in children. *Pediatrics* 2006;118(4):e1284-6.
6. Tanaka T, Sudo M, Iwai K, Fujieda S, Saito H. Penetrating injury to the pharynx by a toothbrush in a pediatric patient: a case report. *Auris Nasus Larynx* 2002;29(4):387-9.
7. Luqman Z, Khan MA, Nazir Z. Penetrating pharyngeal injuries in children: trivial trauma leading to devastating complications. *Pediatr Surg Int* 2005;21(6):432-5. Epub 2005 May 13.
8. Kovacs G, Law A. Airway Interventions and Management in Emergencies [website]. Halifax, NS: AIME; 2008. Available from: **www.aimeairway.ca**. Accessed 2008 Nov 6.