

Intraoral penetrating injury from a long metallic foreign body: a case report

*James O, ** Adeosun OO, ***Anorue EI

*Department of Oral & Maxillofacial Surgery, Faculty of Dental Sciences, College of Medicine, University of Lagos,

**Department of Oral and Maxillofacial Surgery Unit, Department of Dental Surgery, Federal Medical Centre, Lokoja,

***Department of Dental Surgery, Federal Medical Centre, Gombe, Nigeria

Correspondence: James O

E-mail: olutayo.james@gmail.com

Abstract

Children often play with sharp objects in their mouths without knowing the injurious effects of such action. These objects can accidentally cause severe injury to oro-pharyngeal tissues. Timely removal of such objects is essential to prevent life threatening complications. This paper presents a case of an intraoral penetrating injury in a 5 year old patient caused by a long metallic foreign object. The foreign body was successfully removed by meticulous exploration through the existing wound. Educational measures such as enlightening the parents and guardians on the importance of keeping dangerous materials from the reach of their children may be necessary. The need to immediately bring such patients to the hospital for expert management in case of inadvertent injury and also to comply with follow-up appointments is also essential.

Key words: Intra -oral penetrating injury; foreign object; lateral pharyngeal space.

Introduction

The true incidence of penetrating intra-oral trauma in children is unknown because parents frequently remove the foreign body before arrival at the emergency room or choose to forgo medical attention^(1,2). Intra-oral penetrating injury is usually an accidental injury which most often occurs when a child falls with a penetrating foreign body held in the mouth⁽³⁾. The most frequent penetrating foreign bodies are long objects with pointed tip such as metal sticks, plastic toys, forks, toothbrush and ball point ends^(1,4-6).

Although common in the entire paediatric population, children between age of 3 and 5 years represent largest group among those with such penetrating injuries^(1,7). Common areas of injury include the posterior palatal region and lateral pharyngeal walls^(2,7). Such intra-oral penetrating objects can cause injury to one or more of the vital structures that are present in the neck including the great vessels and nerves which may result severe bleeding or neurological deficit⁽⁸⁾. This type of injury can be life threatening often requiring urgent medical attention^(4,7-10). This paper presents a report of an intra-oral penetrating injury due to a domestic accident. The modalities of treatment and the relevant literature was also discussed.

Case Report

A 5-year-old boy was brought to the Accident and Emergency Room by his father with a complaint of a metallic object that penetrated the oral cavity about an hour before presentation.

He reported that the child was playing at home with a long metallic object in his mouth which accidentally became lodged in the soft tissue of the oral cavity but could not vividly give an account of how the accident occurred. The

father further claimed that efforts were made by him to retrieve the object from his child's mouth which eventually proved abortive and causes more tissue penetration. At the time of presentation the patient was fully conscious in no respiratory distress, he was noted to have a long metallic foreign body protruding out from his oral cavity with blood stained saliva drooling from the mouth (**Figure 1**). He was unable to close his mouth fully and had difficulty in speaking and swallowing.



Figure 1: Clinical picture of the patient showing the long metallic foreign body projecting from his mouth.

The major finding on extra-oral examination was a tender oval shaped swelling of about 2cm by 2cm in size, in the upper part of the anterior triangle of the left neck. Palpation of the swelling elicited a transmitted movement of the extra-oral protruded portion of the metallic object. There was neither sign of expanding haematoma nor neurological deficit. Intra oral examination revealed a penetrating metallic object at left posterior faucial pillar

which disappeared into the lateral pharyngeal wall, with about 5 cm of the metal projecting outside the mouth. About 2cm longitudinal mucosal laceration surrounded by blood clot was also noted at the entry point, no active bleeding was noticed.

A diagnosis of an intra-oral penetrating injury due to a metallic object was made. An urgent head and neck x-ray; lateral and posterior-anterior views were taken. The x-ray report showed a long radio opaque foreign body traversing the mouth obliquely from the right canine region to the left lateral parapharyngeal space with a rounded curved end embedded within it (**Figure 2**). The level of the patients haematocrit was also assessed. It was found to be within normal limits.

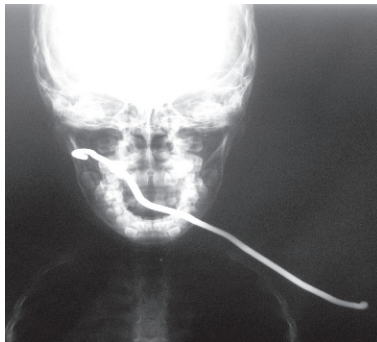


Figure 2. Postero-Anterior view radiograph of the head and neck showing the foreign in the left parapharyngeal space.

Tetanus prophylaxis was administered and followed by commencement of intravenous antibiotics. The patient was then booked for emergency removal of the object in the operating room.

Under general endotracheal anaesthesia, the wound was cleaned and blunt dissection carried out along the length of the metal through the existing laceration. This was followed by gentle manipulation to ease out the metal, keeping in mind the curved hooked and with embedded structures on it. It was a 25 cm long metallic foreign body with curve hooked rounded end (**Figure 3**).

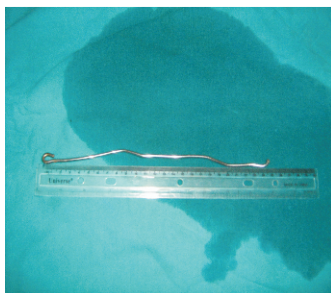


Figure 3: Foreign body removed.

After the foreign body removal, the residual wound was copiously debrided with normal saline and wound closed with chromic catgut suture. Bleeding was minimal from the site.

Post operatively, antibiotics and analgesic were given. The procedure was uneventful and the patient was discharged the 3rd post-operative day without any complication (**Figure 4**). However, the patient was lost to follow-up.



Figure 4. Clinical picture of the patient after the foreign body has been removed

Discussion

Children often play with sharp objects in their mouth without knowing the injurious effects of such action. Such objects can accidentally cause injury to oro-pharyngeal tissues. Injuries are most likely to be sustained by toddlers who are not steady on their feet and fall on to these objects^(2,7). There is a reported strong male preponderance and injuries tend to occur more frequently in the posterior and lateral portion of pharynx^(2,7,11). In the present case, even though the patient was not a toddler we assumed that the child must have fallen down while the metallic object was in his mouth, this must have generated a huge penetrating force that pushed the object into the lateral pharyngeal space taking cognizance of the less penetrable smooth curved rounded end (**Figure 3**). But an attempt by the father to retrieve it from the mouth aided more tissue penetration. Child abuse may sometimes be considered in such cases^(5,12); although in our case there is no evidence of this on the basis of history and physical examination. Therefore it is important that parents and guardians be counselled to take their children to the hospital for appropriate treatment rather than attempting to retrieve such foreign bodies by themselves, to prevent further complication. Children in the low socioeconomic strata to which this patient belongs has been reported to be more susceptible because of the ready availability of penetrating objects in their vicinity^(2,10). The course and extent of penetrating injury as well as the cause of injury plays very significant factor that determine the degree of injury^(8,14) furthermore, all penetrating intra-oral injuries to the pharyngeal walls are not to be taken lightly because they are potentially dangerous and can be life threatening which may often require emergency treatment^(3,13,15). This is because the vital structures of the upper part of the neck could be extensively damaged through such injuries^(14,16).

To aid the evaluation and treatment of penetrating neck injuries, the lateral neck has been divided into 3 zones^(8,9,17). Zone 1 extends from the clavicle to the cricoid cartilage and includes the thoracic inlet. This region contains the major vascular structures of the subclavian artery and vein, jugular vein, and common carotid artery, as well as the oesophagus, thyroid, and trachea. Injuries in this zone have the highest mortality^(9,17).

Zone 2 extends from the cricoid to the angle of the mandible and contains the common carotid artery, internal

and external carotid arteries, jugular vein, larynx, hypopharynx, and cranial nerves X, XI, and XII. Mortality is low in this region because of ease of exposure and ability to control bleeding⁽⁹⁾.

Zone 3 is a small but critical area extending from the angle of the mandible to the skull base. This region contains the internal and external carotid arteries, jugular vein, lateral pharynx, and cranial nerves VII, IX, X, XI, and XII. This is least common area of injury but has a high morbidity due to the difficulty of exposure of the involved structures⁽¹⁴⁻¹⁸⁾.

The lateral parapharyngeal space involved in the present case unfortunately belongs to this zone. Care should be taken during the examination to identify any neurological problems that may not relate to the degree of injury^(12,20).

In the case described, in spite of the fact that the left parapharyngeal space was penetrated by the metallic object, there was no clinical evidence that major vessels and nerves were injured because there was no active bleeding, expanding haematoma, bruit, pulse or neurological deficit. This may be due to the smooth nature of the penetrated curved part of the object. In a similar reported case of intraoral penetrating injury⁽⁸⁾, a wooden stick that penetrated the oro-pharynx came out of the neck without injury to the major vessels or cause any neurological deficit. Sometimes, injury of major vessels might be tamponaded by foreign bodies, therefore blind removal may cause life threatening haemorrhage^(9,12,14). Such foreign objects should be removed by gentle exploration through the existing wound in a well-established centre. In this our case, no ominous bleeding was found after the removal of the foreign object thereby suggesting that it did not tamponade on any major vessel.

Computed tomographic scan and Computed tomographic angiography which is a better investigation modality in such cases^(6,21) was not done as it is not presently available in our center. However the plain radiograph of the head and neck taken provided ample information that guided the diagnosis and successful removal of the foreign body.

The early wound exploration and proper wound debridement with adequate antimicrobial coverage and immunization against tetanus were the prime factors in curtailing morbidity and mortality^(2,8,22). In this case, timely removal of the metallic object was successfully achieved by meticulous manipulation after adequate wound exploration despite the fact that exploration of this zone of neck region is more difficult than the other zones^(16,19).

Conclusion

Since oropharyngeal penetrating injuries carry a high morbidity in children, it is therefore pertinent to introduce measures to prevent such domestic accidents. Young children should be discouraged from inserting sharp objects in their mouth. Educational measures such as enlightening the parents and guardians on the importance of keeping chancy materials from the reach of their children may also be necessary. The need to immediately bring such patients to the hospital for expert management in case of inadvertent injury and also to comply with follow up appointments should be emphasized.

References

1. Incollongo F, Shevchenko Y. Air way management in a child with penetrating pharyngeal wall foreign body injury: A case Report AANA Journal 2007; 75:329- 332

2. Sood S, Meher R. Intraoral penetrating injury due to an unusual foreign body. *Int. J. Pediatr. Otorhinolaryngol Extra.* 2007; 2, 45–47
3. Singer J. Management strategy for penetrating oropharyngeal injury. *Pediatr Emerg Care* 1989; 5:250-252.
4. Sagar S, Kumar N, Singal M, Kumar S, Kumar A. A rare case of life-threatening penetrating oropharyngeal trauma caused by tooth brush in a child. *J India Soc Pedod Prevent Dent* 2010; 28: 134-137.
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; 118:1284-1286.
6. Grochowski JJ, Brian Hynes B. A toddler with a pharyngeal foreign body. *Can Fam Physician* 2008; 54:1695-1696.
7. Kosaki H, Nakamura N, Toriyama Y. Penetrating injuries to the oropharynx. *J Laryngol Otol* 1992; 106:813-816
8. Singh RK, Bhandary S, Karki P. Managing a wooden foreign body in the neck. *J Emerg Trauma Shock* 2009; 2:191-195.
9. Agrawal R, Timilsina DS, Reddy NS, Ganguly SN, Tayal A. Penetrating foreign body neck: A case report. *Kathmadu University Med J* 2007;5 :414-416
10. Adoga AA, Adoga AS, Nwaorgu OGB. An unusual oronasal foreign body: Report of a case. *Nig J Med* 2008; 17: 459-461.
11. Laffoy M. Childhood accidents at home. *Irish Med J* 1997; 90:26-27.
12. Schoem SR, Choi SS, Zalzal GH, Grundfast KM. Management of oropharyngeal trauma in children. *Arch Otolaryngol Head Neck Surg* 1997; 123:1267-1270
13. Yetiser S, Kahtramanyol M. High velocity gunshot wounds to head and neck. A review of wound ballistic. *Mil Med* 1988; 165:346-351.
14. Arotiba GT. Penetrating maxillofacial trauma - a case report. *West Afr J Med* 1995; 14:186-188.
15. Hellmann JR, Shott SR, Gootee MJ. Impalement injuries of the palate in children: review of 131 cases. *Int. J. Pediatr. Otorhinolaryngol.* 1993; 26: 157-163.
16. Meher R, Agarwal AK, Raj A, Singh I. Intraoral penetrating injury. *Ind Pract* 2004; 57:187-188.
17. Olasoji HO, Tahir AA, Ahidjo A, Madziga A. Penetrating arrow injuries of the maxillofacial region. *Br J Oral Maxillofac Surg* 2005;43:329-332.
18. Maisel HM, Hom DB. Penetrating trauma to the neck. In: Cummings CW, Fredrickson JM, Harkar LA, Krause CJ, Richardson MA, Schuller DE, (Editors). *Otolaryngology, Head and Neck Surgery.* St Louis Mosby, 1998;1707-1720
19. Deepak KS, Amit G, Mittal RS, Vineet S. Penetrating injury to cervical spine from a nail gun . *Indian J Neurot* 2009; 6:147-150.
20. Radkowski D, McGill TJ, Healy GB, Dwight TJ. Penetrating trauma of the oropharynx in children. *Laryngoscope* 1993; 103:991-994.
21. Soose RJ, Simons JP, Mandell DL. Evaluation and Management of Pediatric Oropharyngeal Trauma. *Arch Otolaryngol Head Neck Surg* 2006; 132:446-451.
22. Seward GR, Harris M, McGowan DA. Killey and Kay's outline of oral surgery: part one. IOP Publishing limited, 2nd edition, Great Britain, 1987; 152- 153.