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CASE REPORT

Hidden Dangers of Oral Hygiene: Oropharyngeal Impalement by Toothbrush in a 3-Year-old

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ABSTRACT

Introduction: Oropharyngeal impalement injuries in children are common due to behavioral tendencies such as walking or playing with objects in the mouth. Although most injuries are benign, a subset can lead to serious complications.

Case Report: We report a case of a 3-year, 4-month-old male who sustained a penetrating injury to the oropharynx after a fall while brushing his teeth. The toothbrush became lodged into the left tonsillar fossa, causing significant discomfort and distress. Emergency transoral endoscopic removal was performed under sedation with standby tracheostomy. No vascular or airway injury was noted, and the patient recovered uneventfully.

Conclusion: Though seemingly trivial, oropharyngeal penetrating trauma with common household objects like toothbrushes can pose life-threatening risks. Prompt evaluation and careful extraction are critical to avoid complications.

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INTRODUCTION

Penetrating oropharyngeal injuries in children, particularly due to common household objects like toothbrushes, are relatively frequent but often underestimated. In the preschool age group, such injuries typically occur due to ambulation while holding objects in the mouth.[1] These incidents can range from superficial mucosal injuries to deep tissue trauma with vascular and neurological implications. This report highlights a rare and potentially dangerous presentation of a toothbrush impalement injury and discusses the appropriate clinical approach.

CASE PRESENTATION

A 3-year, 4-month-old male presented to our Emergency Department following a fall from approximately four feet while brushing his teeth. The child landed on face-first, resulting in the toothbrush penetrating his left tonsillar bed.

Figure 1: child with toothbrush stuck in oral cavity as a foreign body.

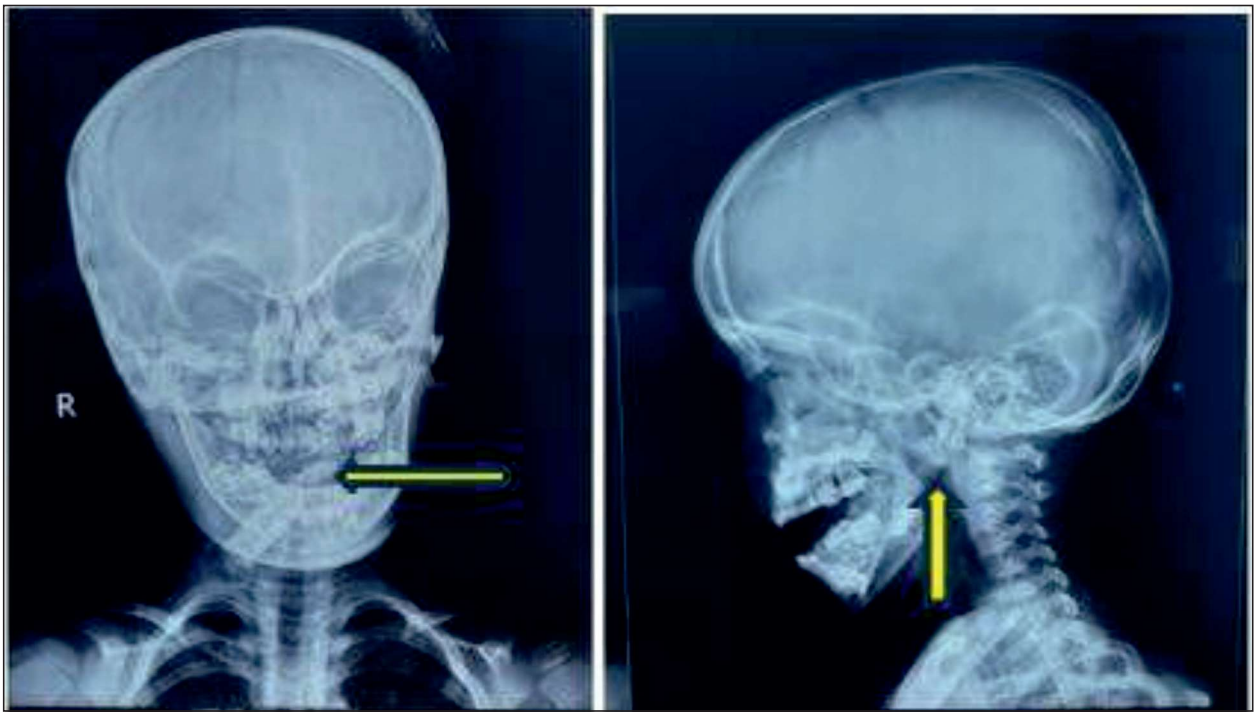

Figure 2: X-ray Anteroposterior and lateral view of foreign body visualised in oral cavity [yellow arrow]

The patient's parents were unable to remove the toothbrush due to impaction of bristle end of toothbrush in the oral cavity and initial bleeding with complaints of oral pain, drooling of saliva, and an inability to close his mouth, there was no other episodes of bleeding. The patient had a past medical history of febrile seizures at the age of one year.

On examination, the child was conscious and hemodynamically stable (BP: 100/60 mmHg, pulse: 110 bpm, temperature: 37.4°C). There was no evidence of cyanosis, bruising, or subcutaneous emphysema. The toothbrush head and part of the neck were visibly lodged from the right oral commissure to the left tonsillar fossa, displacing the left anterior tonsillar pillar posteromedially.

A soft tissue lateral and anteroposterior face and neck X-ray was performed, revealing no signs of subcutaneous air or other complications. The patient was transferred to the operating room. Child was sedated with fentanyl and propofol, and oxygen was administered via nasal prongs. A standby tracheostomy setup was in place but not required. He was not intubated due to oblique lodgement of tooth brush from right oral commissure into left tonsillar fossa which could have increased risk of dislodgment and further injury to carotid artery which lies lateral to tonsillar fossa. The toothbrush was visualized by transoral endoscopic examination, tonsil and fossa were pushed posteromedially with blood clot surrounding site of penetration. No active bleed was present, free edges cauterized and brush was removed gently in anteromedial direction without any complications.

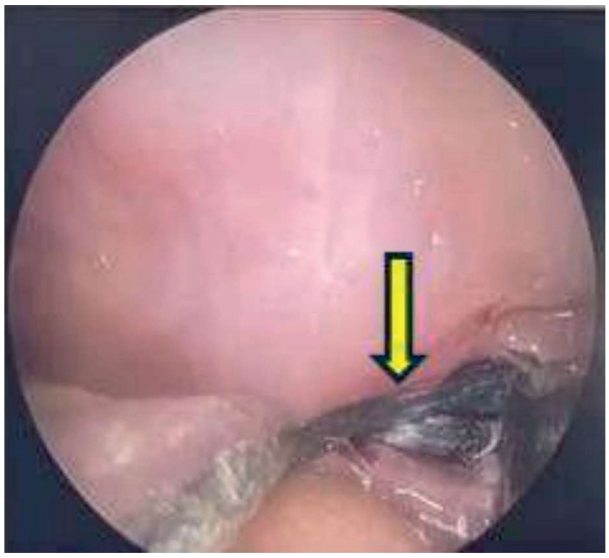

Figure 3: Endoscopic view of brush foreign body in left tonsillar fossa region [yellow arrow]

A 3 x 1x 1 cm defect was noted in the left anterior tonsillar pillar post-removal and was closed with Vicryl sutures.

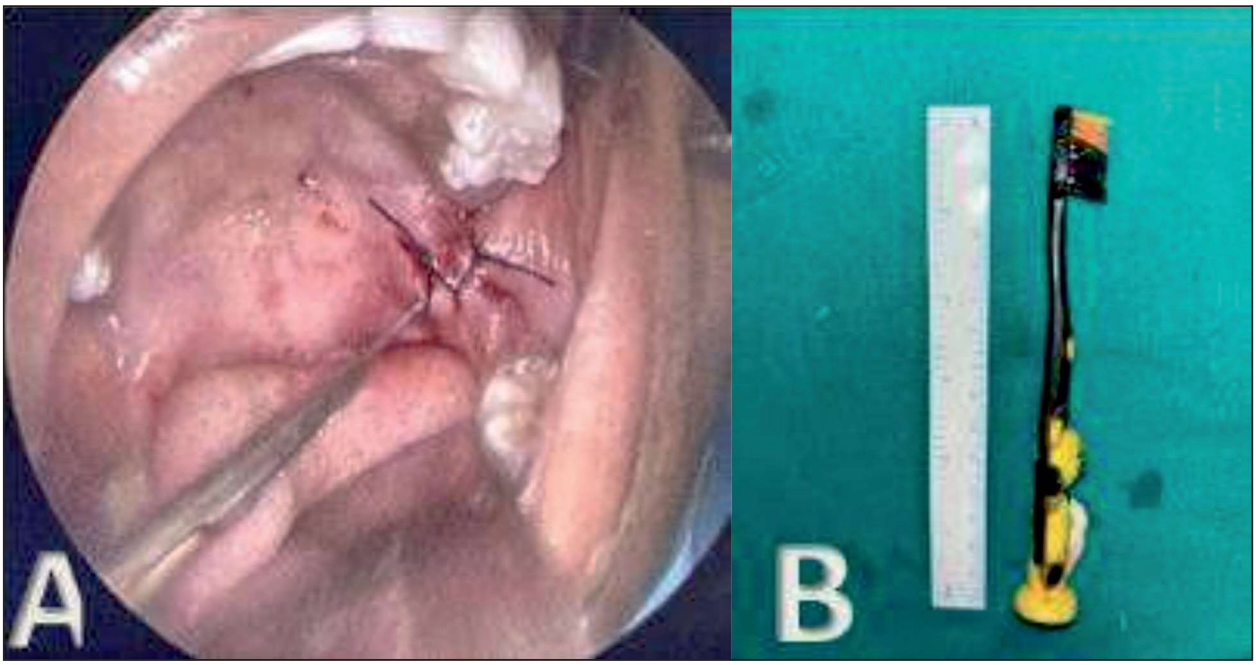

Figure 4: A - Closed defect post foreign body removal, **B -** Tooth brush as foreign body with scale

DISCUSSION

Children aged 3–4 years are particularly vulnerable to oropharyngeal injuries due to their developmental tendency to explore the environment orally while ambulating.[2] Toothbrushes are among the most common instruments implicated in such injuries, along with pens, pencils, and straws.[3]

Despite their frequency, penetrating injuries can be deceivingly dangerous. The proximity of the internal carotid artery (ICA) to the tonsillar region raises concerns about potential vascular injury, particularly when the foreign body enters from a lateral trajectory.[4] In rare but documented cases, this has led to arterial thrombosis, pseudoaneurysm, or stroke.[5]

Used toothbrushes are also known to harbor dense microbial populations (up to 10,[8] CFU),[6] increasing the risk of secondary infections such as deep neck abscesses, retropharyngeal abscess, mediastinitis, or widespread subcutaneous emphysema.[7]

Initial evaluation should focus on airway, breathing, and circulation (ABCs). Occult pharyngeal perforations can be ruled out by X-ray soft tissue neck by revealing retropharyngeal air.[8] In suspected vascular injury cases, contrast-enhanced CT or angiography may be required to assess ICA involvement. Simple removal in such cases is contraindicated and may result in catastrophic bleeding.[9,10]

Post-operative care must include observation for delayed neurovascular complications. Appropriate antibiotic coverage and follow-up are necessary due to the risk of secondary infection and pharyngeal wall perforation.

CONCLUSION

Penetrating oropharyngeal trauma from toothbrushes, though common in pediatric patients, must not be underestimated. A high index of suspicion, proper imaging, careful evaluation focusing airway, breathing, circulation and cautious management are vital. Prompt, multidisciplinary intervention can prevent potentially fatal outcomes.

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