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When a Tooth Becomes a Foreign Body: A Rare Pediatric Airway Emergency A Case Report

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Abstract:
Foreign body aspiration is considered as a top emergency in children, which demands immediate detection and prompt medical response. The extraction of teeth as aspirated foreign bodies is extremely rare because their sharp edges make it difficult to extract from the distal airways. A two-year-old female patient had her upper incisor tooth aspirated after a fall which resulted in multiple unsuccessful bronchoscopic retrieval attempts leading to repeated hypoxic arrests. The case shows the diagnostic and therapeutic challenges of distally impacted airway foreign bodies and performs safe and timely surgical procedures when standard bronchoscopic techniques are ineffective.

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Introduction:

Foreign body aspiration (FBA) continues to be a major cause of illness and death in children especially those under five years of age [1]. The commonest aspirated objects are nuts, seeds, and small toys, while aspiration of teeth is an extremely rare phenomenon [2]. These cases present diagnostic and management challenges with increase in the risk of airway trauma, prolonged hypoxia, and failed extractions [3]. We present an unusual case of bronchial tooth aspiration in a child, managed by a minimally invasive surgical procedure after repeated hypoxic arrests during attempted rigid bronchoscopy.

Case Presentation:

A 2-year-old previously healthy female was brought by her parents to the pediatric clinic with progressively increased work of breathing and cough. Her medical history was unremarkable except for a recent fall, which resulted in minor oral bleeding and avulsion of an upper incisor tooth. At that time, she was initially treated with antibiotics and discharged home.

Over the following days, her respiratory symptoms worsened, prompting her parents to seek care at a local healthcare facility. Chest radiography revealed a radiopaque foreign body consistent with a tooth lodged in the left main bronchus, associated with left-sided lung opacity and reduced aeration, suggestive of post-obstructive atelectasis (Figure 1A and 1B). Based on the clinical history and radiographic findings, a foreign body aspiration was suspected.

The patient was referred to a chest physician and subsequently to an otolaryngology (ENT) surgeon. Multiple attempts at rigid bronchoscopy were performed; however, these were unsuccessful due to the distal impaction of the foreign body within the left inferior lobe bronchus. Each bronchoscopic attempt was complicated by episodes of hypoxic cardiac

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arrest, requiring 2–5 minutes of cardiopulmonary resuscitation. Given the repeated failures and persistent respiratory compromise, the patient was transferred to our tertiary care center for further management.

At our institution, additional attempts at rigid bronchoscopy by the ENT team were undertaken but again failed. The sharp edges of the tooth hindered effective grasping with standard forceps and resulted in significant mucosal trauma. The patient was subsequently admitted to the intensive care unit (ICU), where she required endotracheal intubation and mechanical ventilation. Arterial blood gas analysis demonstrated severe respiratory acidosis with marked hypercapnia ($PaCO_2$ 90 mmHg). A repeat anteroposterior chest radiograph confirmed persistence of the foreign body in the left main bronchus with progressive left lung collapse and worsening obstructive atelectasis (Figure 1C).

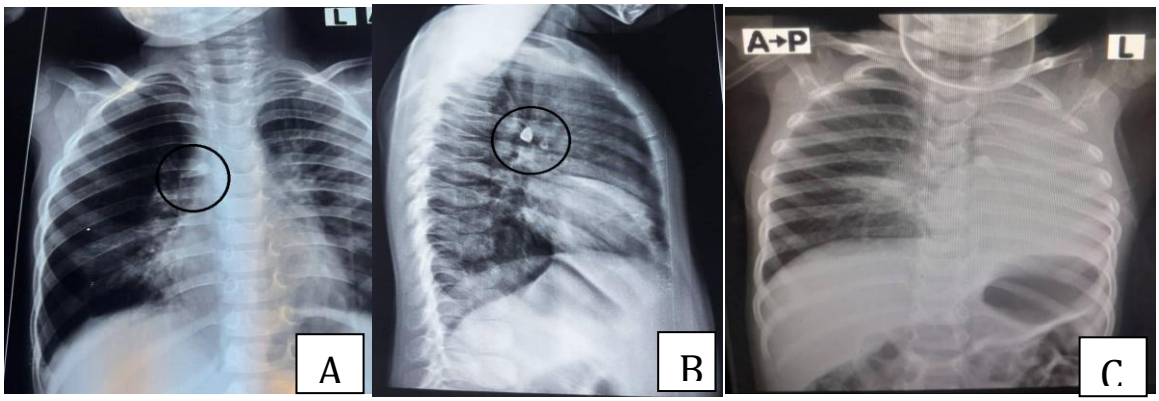

Figure 1: ***(A) Anteroposterior Chest radiographs showing a radiopaque tooth in the left main bronchus. (B) Lateral view showing associated left-sided opacity and reduced aeration indicating post-obstructive atelectasis. (C) Follow-up showing persistence of the radiopaque tooth within the left main bronchus, with worsening left lung collapse and increased opacity consistent with obstructive atelectasis.***

A cardiothoracic surgery consultation was obtained, and an urgent computed tomography (CT) scan of the chest was performed. Imaging revealed a radiopaque tooth obstructing the left inferior lobe bronchus, with associated left lung collapse and consolidation, confirming obstructive atelectasis (Figure 2).

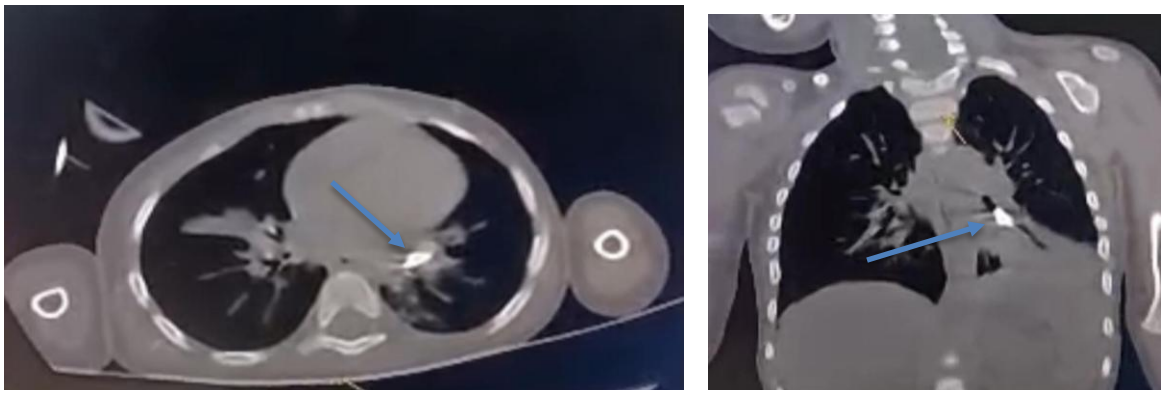

Figure 2: ***CT chest images showing a radiopaque tooth lodged in the left main bronchus with associated collapse and consolidation of the left lung, confirming obstructive atelectasis.***

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During her ICU stay, the patient experienced another episode of cardiac arrest, requiring prompt resuscitation. She remained under close monitoring in the ICU for 24 hours following the arrest.

Given the repeated failure of bronchoscopic retrieval and the patient's ongoing instability, the cardiothoracic surgical team proceeded with a minimally invasive surgical intervention. The foreign body—identified as an upper incisor tooth—was successfully extracted from the left inferior bronchus (Figure 3A1 and 3A2). Following removal, the left lung re-expanded immediately without evidence of air leakage, and there was a dramatic improvement in gas exchange, with $PaCO_2$ decreasing from 90 mmHg to 33 mmHg and PaO_2 increasing to 190 mmHg. An intercostal chest drain (ICD) was inserted, and the patient was transferred back to the ICU for postoperative care.

Postoperatively, the patient remained hemodynamically stable and showed steady respiratory improvement. She was gradually weaned from mechanical ventilation over the subsequent 48 hours. Serial chest radiographs demonstrated progressive resolution of left lung opacities, and she was successfully extubated while maintaining normal oxygen saturation. Upon awakening, she was fully conscious with a normal neurological examination. She tolerated oral feeding and early mobilization well. The ICD was removed on postoperative day three, and she was transferred to the general pediatric ward.

The patient was discharged home two days later in stable condition. At outpatient follow-up one week after discharge, she was asymptomatic, and a repeat chest radiograph showed complete resolution of lung abnormalities (Figure 3B).

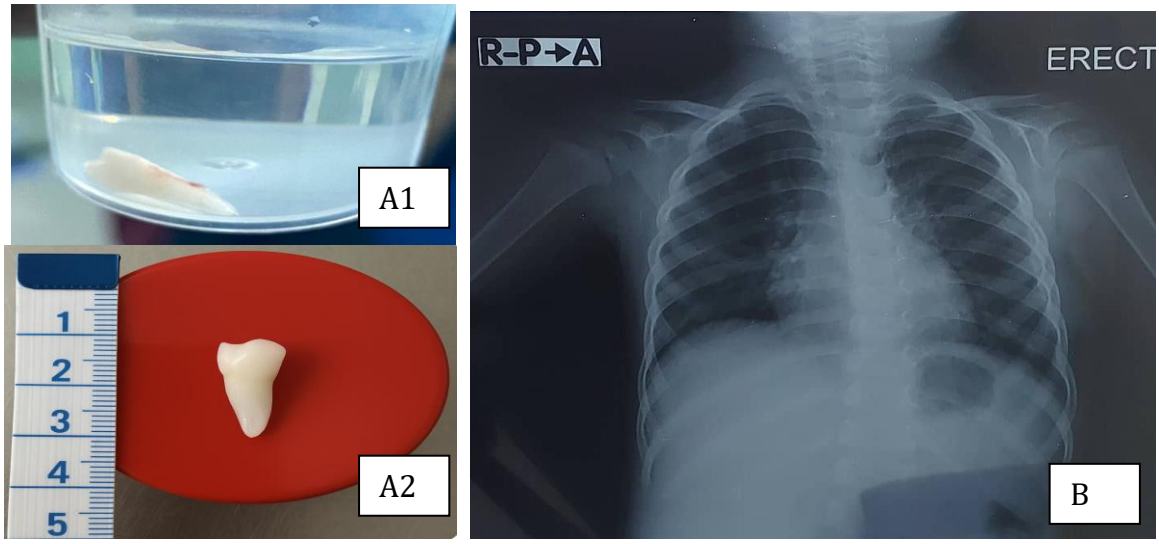

Figure 3: ***(A1) Extracted upper incisor tooth in specimen container, (A2) beside a measuring scale measuring ~2 cm, (C) Post-extraction chest radiograph showing marked re-expansion of the left lung with resolution of atelectasis.***

Discussion:

The case demonstrates why dental trauma should be considered as a possible cause of airway foreign bodies in children who experience unexplained respiratory distress following a fall [7]. The case demonstrates the challenges of treating an atypical pediatric foreign body which entered the bronchus as a tooth. While nuts and seeds are most commonly reported, tooth aspiration is rare and associated

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with higher risks due to its rigid structure and irregular edges [2,3].

The procedure of rigid bronchoscopy stands as the primary method for foreign body extraction [4] but it showed its boundaries in this case. The multiple hypoxic arrests demonstrate the requirement for prompt multidisciplinary care that includes anesthesiology, ICU, and ENT and interventional radiology [13]. The medical literature shows growing interest in innovative techniques including retrieval baskets and cryoprobes and fluoroscopic guidance for treating refractory cases [6,5].

The case highlights the need to identify dental trauma as a possible cause of airway foreign bodies in children who experience unexplained respiratory distress after a fall [7].

Conclusion:

Tooth aspiration in children is a rare but potentially fatal event that requires prompt recognition and careful management. The case demonstrates the special difficulties that arise from sharp bronchial foreign bodies and the dangers of multiple failed bronchoscopic procedures. The achievement required early anticipation of complications and intervention with creative extraction techniques and unified teamwork between different medical specialists.

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