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A Rare Twist in Trauma: Delayed Airway Compromise from Aspirated Denture Fragment: A Case Report

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ABSTRACT

Foreign body aspiration following maxillofacial trauma is a significant diagnostic challenge. The difficulty is compounded when dental prostheses are involved, as radiolucent materials are not visible on standard radiographs, and clinical symptoms can be delayed. A young woman sustained a mandibular fracture in a motor vehicle collision and was discharged after initial evaluation. She returned to the emergency department one week later with progressive dyspnea. Subsequent investigation revealed a large, aspirated fragment of her denture. This case underscores the critical importance of maintaining a high index of suspicion for occult foreign body aspiration in patients with maxillofacial trauma. This potential complication must be considered even in younger individuals and in cases where the initial clinical presentation appears stable.

Keywords: Foreign body aspiration; Maxillofacial trauma; Mandibular fracture; Denture aspiration.

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Introduction

Aspiration of foreign bodies in the setting of maxillofacial trauma occurs more frequently than commonly recognized, particularly when dental appliances are disrupted during injury. While elderly patients with full dentures are considered at the highest risk, younger patients wearing partial dentures or other oral prostheses are also vulnerable. The radiolucent nature of modern acrylic dental materials renders conventional radiography ineffective for detection, and symptoms may be delayed for days to weeks following the traumatic event [1]. Early recognition of aspirated dental prostheses is critical, as retained foreign bodies can lead to severe complications, including postobstructive pneumonia, lung abscess, bronchiectasis, and respiratory failure. This case illustrates the potentially life-threatening consequences of missed denture aspiration in a young trauma patient who initially appeared stable and was discharged home [2].

Case Description

A 28-year-old female presented to our emergency department as a trauma activation following a high-speed motor vehicle collision. She was the restrained driver and sustained significant facial impact against the steering wheel when her airbag failed to deploy. Upon arrival, her vital signs were: blood pressure 132/78 mmHg, heart rate 98 beats per minute, respiratory rate 18 breaths per minute, and oxygen saturation 98% on room air. She was alert and oriented with a Glasgow Coma Scale score of 15. Physical examination revealed significant facial edema, a 4-cm laceration of the lower lip, extensive ecchymosis over the chin and anterior neck, and tenderness along the left mandibular body. Intraoral examination was limited due to pain and swelling but revealed dental malocclusion and mobile teeth.

Initial trauma evaluation included chest radiography, which demonstrated no acute cardiopulmonary abnormality. Computed tomography of the maxillofacial region revealed a displaced fracture of the left mandibular body with an associated parasymphyseal fracture on the right side. No intracranial injury was identified. The patient's cervical spine was cleared clinically and radiographically. Following consultation with oral and maxillofacial surgery, the decision was made for outpatient management with close follow-up. The mandibular fractures were minimally displaced and deemed suitable for conservative treatment with a soft diet and analgesics. The patient was instructed to follow up in clinic within 48 hours. She was discharged home after six hours of observation with prescriptions for pain control and antibiotics. Seven days later, the patient returned to the emergency department with a three-day history of progressive dyspnea, productive cough with yellow-green sputum, and fever to 38.9 °C. She reported that her breathing difficulty had worsened significantly over the preceding 24 hours. On examination, she appeared in mild respiratory distress with the following vital signs: blood pressure 118/72 mmHg, heart rate 112 beats per minute, respiratory rate 24 breaths per minute, and oxygen saturation 92% on room air.

Auscultation revealed coarse crackles sounds in the left lower lung field. Laboratory studies revealed a white blood cell count of 12,800 cells/μL with left shift. The patient was placed on supplemental oxygen via nasal cannula and admitted to the hospital with a presumptive diagnosis of community-acquired pneumonia. Chest X-ray shows the foreign body in the right bronchus (Figure 1:yellow arrow) and left lower lobe infiltration (Figure 1:yellow circle). A non-contrast computed tomography scan showed left lower lobe infiltrate large fragment of radio-opaque material (Figures 2,3) and post-obstructive segmental pneumonia (Figure 4).

Flexible bronchoscopy was performed on hospital day 1, which revealed a tooth with dental filling lodged in the left bronchus, causing complete obstruction of the basilar segments (Figure 4). Significant purulent secretions and granulation tissue surrounded the foreign body. The fragment was carefully extracted using flexible bronchoscopic forceps through multiple attempts. Following foreign body removal, copious irrigation was performed and purulent material was sent for culture, which subsequently grew Streptococcus pneumoniae and Haemophilus influenzae. The patient's respiratory status improved dramatically within 12 hours. She was continued on culture-directed antibiotic therapy for a total of 10 days. The patient was discharged home on hospital day 7 in good condition. At six-week follow-up, she remained asymptomatic from a pulmonary standpoint, and chest radiography demonstrated complete resolution of the infiltrate.

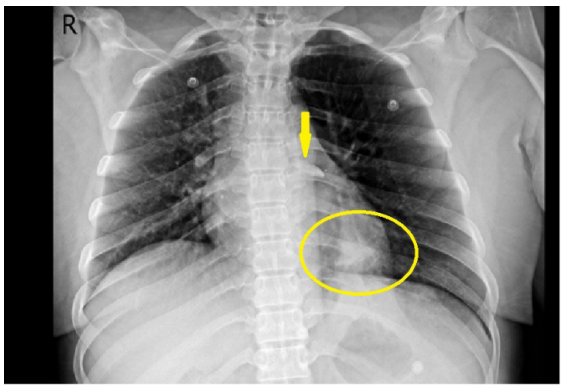
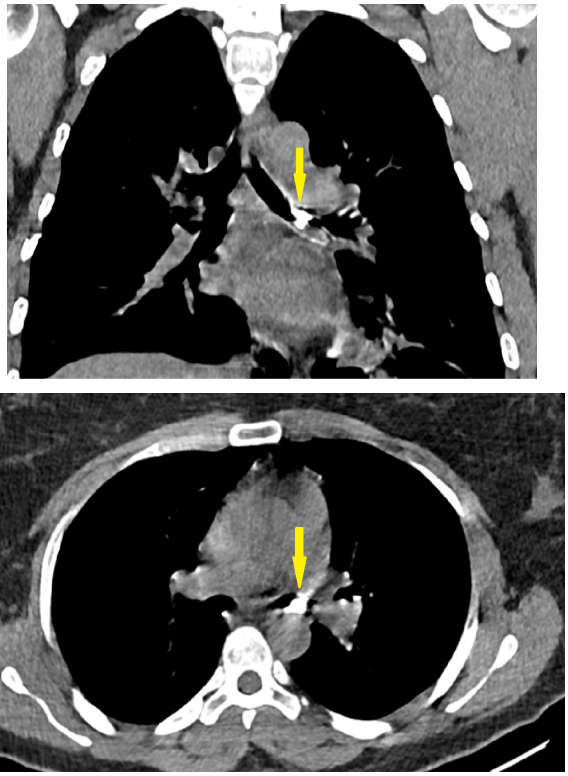


Figure 1. The chest X-ray reveals a foreign body lodged in the right bronchus along with infiltration in the left lower lobe.



Figures 2,3. Axial and coronal non-contrast CT images demonstrated a large fragment of radio-opaque material within the left bronchus.

Figures 4. The parenchymal lung image of non-contrast CT scan demonstrated post-obstructive segmental pneumonia.

Discussion

This case of delayed aspiration of a radiolucent denture fragment following mandibular trauma illuminates a critical, though uncommon, clinical entity. A thorough discussion of its epidemiology, pathophysiology, clinical evolution, and management is essential to improve patient outcomes. Foreign body aspiration (FBA) is a well-documented complication of maxillofacial trauma, with a likely underreported incidence [1]. While the typical demographic for FBA includes children and the elderly, the risk profile shifts in the context of trauma. Patients with dental prostheses—whether complete dentures, partial dentures, or bridges—are at significantly heightened risk during high-impact events like motor vehicle collisions, assaults, or falls [2]. Our case underscores that this risk is not confined to the elderly; younger, partially dentate adults who wear removable appliances are equally vulnerable. The force of impact can shatter both natural teeth and prosthetic materials, creating multiple fragments prone to aspiration or ingestion [1,3].

The pathophysiology of post-traumatic denture aspiration involves a cascade of mechanical and physiologic processes. First, sufficient blunt force to the maxilla, mandible, or midface may fracture the bony framework and disrupt or dislodge a dental appliance. At the moment of injury, the patient may be stunned, obtunded, or suffer neurologic impairment or airway reflex suppression (e.g., from concomitant head injury or sedation), allowing the dislodged fragment to be inhaled rather than expelled. Once in the airway, the fragment may become lodged at a bronchial branch, act as a nidus for mucus trapping, provoke local inflammation, cause pressure necrosis, and ultimately lead to obstruction, secondary infection, or tissue damage over time [4]. The initial site of lodgment is often a mainstem or lobar bronchus. Acrylic fragments, being smooth and non-irritating initially, may not cause immediate symptoms, allowing them to migrate distally over time. Eventually, the fragment causes a ball-valve effect, allowing air in but obstructing expiration, or complete obstruction, leading to distal atelectasis. The retained foreign body incites a local inflammatory response, impairing mucociliary clearance and creating a fertile ground for bacterial colonization. This culminates in postobstructive pneumonia, lung abscess, or bronchiectasis, as seen in our patient who developed a fulminant infection with S. pneumoniae and H. influenzae [5]. The clinical presentation can be deceptively benign at first. As in our case, the patient may be clinically stable with normal initial radiographs and oxy-

gen saturation. Symptoms are often delayed for days to weeks, only manifesting as the fragment migrates or significant infection develops [6]. The hallmark symptoms of this condition are progressive respiratory issues. Patients often experience worsening shortness of breath, which is frequently localized to one side of the chest. A persistent cough is also common; it may start as dry but can progress to producing purulent sputum. The development of a fever and other systemic signs typically indicates that a postobstructive pneumonia has become established. A key physical finding that should raise concern for a central airway obstruction is the presence of wheezing on one side or a noticeable reduction in breath sounds. However, it is important to note that the lack of these symptoms when a patient is first examined should not be mistakenly interpreted as a sign that the condition is not present [7].

The radiolucent nature of acrylic resins poses the greatest diagnostic hurdle, rendering standard chest radiography and often even computed tomography (CT) inconclusive in the acute phase [2]. Therefore, diagnosis relies on a high index of suspicion. Diagnosis relies on recognizing the connection between facial/dental trauma and the onset of breathing difficulties. Imaging studies like chest X-rays or CT scans are useful for identifying resulting lung issues (such as collapse or infection), but are frequently normal or inconclusive regarding the acrylic fragment. For this reason, flexible bronchoscopy is the cornerstone of management, as it can both confirm the diagnosis and remove the foreign body, and it should be pursued urgently based on clinical suspicion alone [2].

However, the large size and irregular shape of denture fragments often necessitate rigid bronchoscopy, which provides better control of the airway and allows for the use of a wider array of retrieval instruments. In complex cases where bronchoscopy fails or the fragment is embedded in the parenchyma, surgical options like thoracotomy or video-assisted thoracoscopic surgery (VATS) may be required. Concurrent management of the infection with appropriate antibiotics is crucial [2,5]. This case delivers several critical lessons for clinicians who manage facial trauma. You must suspect aspiration in every case of dental trauma where a prosthesis is damaged or missing. A patient should be considered to have aspirated or ingested a fragment until this is definitively ruled out, regardless of their age or initial stability. It is essential to remember that imaging has significant limitations. A normal chest X-ray or CT scan cannot rule out a radiolucent foreign body. Your clinical suspicion must always take priority over radiographic findings. When suspicion exists, an early bronchoscopy is key for both diagnosis and treatment in symptomatic patients. You should also consider bronchoscopy for asymptomatic high-risk patients before discharge if any uncertainty remains. This case strongly reinforces that prevention is paramount. It argues for the universal incorporation of radiopaque materials into all dental prostheses, as this simple measure could prevent life-threatening diagnostic delays. Finally, you must educate patients before discharge. Any patient sent home with facial fractures and dental injuries needs clear and specific instructions to return immediately for any new respiratory symptoms [1,8].

Conclusion

Aspiration of radiolucent denture fragments represents a potentially life-threatening complication of facial trauma that may present in a delayed fashion. Clinicians evaluating patients with maxillofacial injuries must maintain awareness of this possibility, particularly when dental appliances are damaged or missing. Younger patients wearing partial dentures are also at risk and should not be excluded from suspicion based on age alone. Progressive dyspnea, persistent cough, or pneumonia developing within days to weeks following facial trauma should prompt consideration of foreign body aspiration, even when radiographic studies are unrevealing. Early bronchoscopy should be performed when clinical suspicion exists, as delayed diagnosis can lead to severe pulmonary complications. The incorporation of radiopaque materials into dental prostheses would facilitate earlier detection and should be considered standard practice. Patient education regarding warning signs and appropriate follow-up is essential in the outpatient management of facial trauma involving dental injuries.

Conflict of Interest

There is no conflict of interest to declare.

References

[1] Daniels J, Oremule B, Tsang W, Khwaja S. A 10-year review of the complications caused by ingested and aspirated dentures. Ear, Nose & Throat Journal. 2021 Sep; 100(8):574-80.

[2] Eliçora A, Sezer HF, Topçu S, Çardaközü T. Tracheobronchial tooth and dental prosthesis aspirations: 15 cases. Journal of Cardiothoracic Surgery. 2023 Feb 21; 18(1):78.

[3] Routsi C, Kokkoris S, Pantazopoulos I. Tooth Aspiration in a Patient with Traumatic Brain Injury. Thoracic Research and Practice. 2019 Sep 25.

[4] Huh JY. Foreign body aspirations in dental clinics: a narrative review. Journal of dental anesthesia and pain medicine. 2022 May 27; 22(3):161.

[5] Bajaj D, Sachdeva A, Deepak D. Foreign body aspiration. Journal of Thoracic Disease. 2021 Aug; 13(8):5159.

[6] Panigrahi B, Sahay N, Samaddar DP, Chatterjee A. Migrating foreign body in an adult bronchus: an aspirated denture. Journal of dental anesthesia and pain medicine. 2018 Aug 1; 18(4):267-70.

[7] Chaudhry A, Vasta A. Case Report: Post-Obstructive Pneumonia Secondary to Foreign Body Aspiration.

[8] Tiresse N, Elfathi S, Zegmout A, Elouazzani H, Rhorfi I. Delayed Diagnosis of an Aspirated Dental Crown Presenting as Chronic Bronchitis and Pneumonia in an Adult Male: A Case Report. Cureus. 2025 Aug 27; 17(8).