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### *Subcutaneous Emphysema Atypical Presentation of Foreign Body Aspiration*

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#### Abstract

Foreign bodies commonly enter the tracheobronchial tree in young children less than three years of age as a result of incomplete laryngeal closure and insufficient swallowing reflexes. A 1- and 10-month year old female child patient presented with difficulty breathing, periorbital, facial and neck swelling for 2 hours duration. Chest X-ray was done and shown massive subcutaneous emphysema from lower face to abdomen. A foreign body bronchus can manifest as subcutaneous emphysema; this condition should be considered, even if no history suggested foreign body aspiration has been reported.

**Keywords:** Foreign bodies; Tracheobronchial tree; Subcutaneous emphysema

#### Introduction

FBA (foreign body aspiration) is a potentially fatal emergency that most usually affects children aged (1-3) years [1]. Peanuts are the most typically aspirated substance in youngsters, followed by seeds, popcorn, hot dogs, candies, grapes, and small toy bits. FBA is characterized by a sudden onset of coughing and choking, followed by stridor and dyspnea, depending on the location and magnitude of the occlusion. Due to its higher vertical posture than the left main bronchus, the incidence of right-sided foreign bodies (52%, CI = 48%-55%) is higher than that of left-sided foreign bodies (33%, CI = 30%-37%) [2]. Lower down in the bronchial lumen, impaction may be less noticeable or even asymptomatic [1,3]. The FB should be removed as quickly as possible via bronchoscopy. We present a unique instance in which a patient with an undetected foreign body in the lower airways presented to us with widespread subcutaneous emphysema in the face and neck, as well as moderate breathing difficulty [3]. Due to the lack of a definitive history of aspiration or FBA remaining undiscovered, the condition and its treatment are delayed. The patient had long-term foreign body

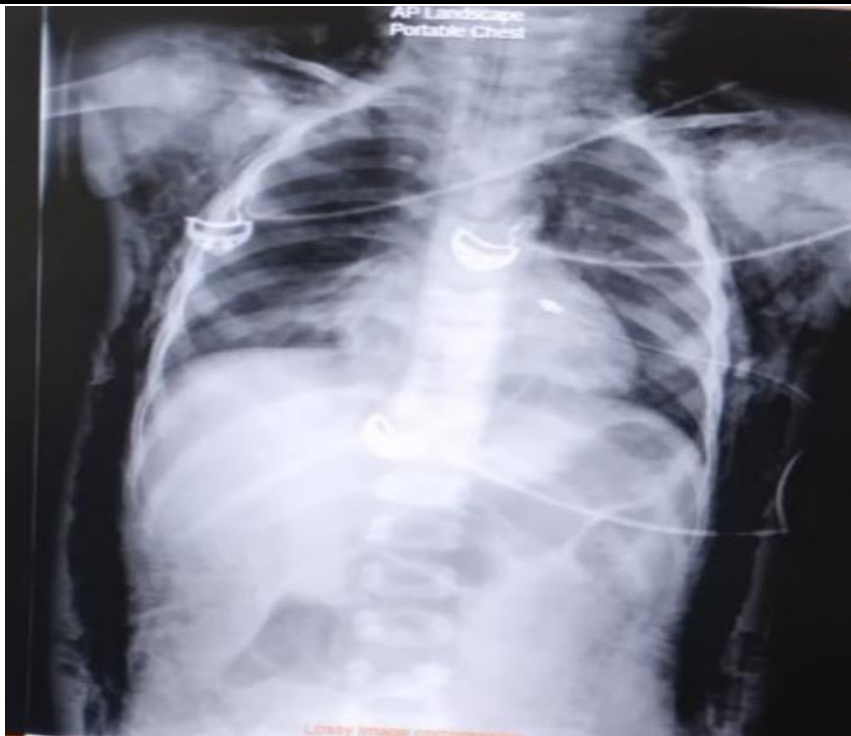
injuries with serious consequences, including subcutaneous emphysema (SCE), which is one of the least common foreign body presentations (1.3% to 1.6%) [3,4] and there have only been a handful cases reported to date.

#### Case Presentation

A 1- and 10-month year old female child patient presented with difficulty breathing, periorbital, facial and neck swelling for 2 hours duration. She had an reactive airway disease but no history of any similar episode in the past on examination, patient looks ill, crying, in respiratory distress, not cyanosed, GCS 15/15, decreased air entry bilateral, crepitation bilateral, temperature 37.1°C, pulse 151, O<sub>2</sub> sat 89 and a known case of reactive airway disease, the patient initially treated as anaphylactic reaction and was given methylprednisolone, ratidine, adrenaline, aerovent and budicort nebulizers, adrenaline IM, however patient condition doesn't improve, chest x-ray was done and shown massive subcutaneous emphysema from lower face to abdomen (Figure 1), then the patient admitted as

a case of acute chest infection complicated with pneumothorax and began treatment with antibiotic and EET was done due to respiratory distress, after 2 days the patient became better and extubation was done then discharged, after 2 weeks on the follow up clinic the

patient x-ray show a unilateral hyperinflation in the right side (Figure 2), then a foreign body aspiration was suspected and confirmed by chest CT scan, then a rigid bronchoscopy performed and foreign body removed.



**Figure 1:** Chest X-ray shows massive subcutaneous emphysema from lower face to abdomen.



**Figure 2:** Chest X-ray after 2-weeks of discharge shows a unilateral hyperinflation in the right side.

## Discussion

Foreign bodies commonly enter the tracheobronchial tree in young children less than three years of age as a result of incomplete laryngeal closure and insufficient swallowing reflexes. Typically, the child presents with history of choking or gagging followed by coughing, wheezing, and decreased breathing sound. This happens when the foreign body lodges in the trachea or bronchi, these leads to variable degrees of respiratory distress. The right main bronchus is a more common site of foreign bodies in adults, most likely due to its larger size and lesser angle of divergence from the tracheal axis, on other hand In pediatric age groups, foreign body aspiration occurs equally on both sides [4]. As well as bronchial occlusion, pneumonia, lung abscesses, bronchiectasis, and occasionally pneumomediastinum can occur [1]. Air leak syndrome, which includes pneumothorax, pneumomediastinum, and subcutaneous emphysema occurs in 1% to 2% of cases; 25% of cases remain asymptomatic for long periods of time [4]. Some parents of small children may not be aware of the aspiration incident, so even if there is no history of foreign body aspiration but sudden onset of respiratory symptoms, the treating physician should suspect foreign body airway [5]. Subcutaneous emphysema can be developed in two ways following foreign body aspiration. The first involves the foreign body in the airway, which acts as a "one-way valve" allowing air to enter, but not to exit, causing air to be trapped, causing the distal volume and pressure to go up. By creating a sufficient pressure gradient across the alveoli, the alveolar membrane ruptures, allowing air to travel along the blood vessels to reach the mediastinum [5]. The second mechanism involves mechanical disruption of the mucosal membrane of the bronchus or airway, through which air is forced into the tissue under pressure. When one coughs or experiences respiratory distress, high pressure gradients are created, pushing air through the mucosal membranes to the mediastinum via perivascular and peribronchial interstitial tissue this is leads to pneumomediastinum and subcutaneous emphysema [5]. In our mentioned case there was misdiagnosis of foreign body aspiration. as initially the case was diagnosed as pneumonia and treated with antibiotics for pneumonia and chest tube for pneumothorax. However, during the follow up after two

weeks, it was found that there was hyperinflation of the right lung on chest X-ray, so the diagnosis of foreign body aspiration was suspected which is confirmed with Computerized Tomography scan and rigid bronchoscopy performed and peanut foreign body removed from the right bronchus. A foreign body bronchus can manifest as subcutaneous emphysema; this condition should be considered, even if no history suggested foreign body aspiration has been reported.

## Declaration of patient consent

The authors declare that they have obtained all patient consent.

## Conflict of Interest

None declared

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