

The Wandering Obstruction: A Case of Migratory Foreign Body in the Pediatric Airway

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ABSTRACT

Introduction: Aspiration of foreign body in the pediatric population is a common yet potentially fatal event, particularly in those under three years of age. Due to their natural tendency to explore objects orally, infants and toddlers are at an increased risk of airway obstruction. This report highlights a case of a migratory foreign body in the airway, emphasizing the diagnostic and management challenges encountered.

Case Report: A 1-year-old male presented with a cough and respiratory distress persisting for three days. Despite initial treatment with antibiotics and oxygen support at an outside hospital, his condition did not improve. Although no clear history of foreign body aspiration was given, further questioning revealed a prior choking episode. Clinical examination suggested left bronchial obstruction, but HRCT thorax unexpectedly showed an isodense right main bronchus foreign body. Intraoperatively, rigid bronchoscopy revealed a large, smooth-surfaced Sitaphal seed lodged in the left main bronchus, indicating migration. Successful removal was achieved despite the retrieval challenges, and the child recovered well postoperatively.

Conclusion: This case underscores the importance of maintaining a high suspicion for foreign body aspiration in children with unexplained respiratory distress. Migratory airway foreign bodies can present with dynamic clinical and radiological findings, necessitating careful preoperative assessment and intraoperative preparedness. However, the gold standard procedure for diagnosis and management of aspirated foreign body is Rigid bronchoscopy.

Keywords: Bronchoscopy, Foreign Body Aspiration, Airway Foreign Body

INTRODUCTION

Aspiration of foreign body in the pediatric population is not infrequent in its presentation. Foreign body aspiration is the commonest cause of accidental death in children under 3 years of age. Hence, the infant and toddler with sudden onset respiratory distress has to be met with a high degree of suspicion for a foreign body in the airway. The tendency in young children to explore using their mouth puts them at risk for an impacted foreign body in the aerodigestive tract. Tracheobronchial system foreign bodies seem to cause more complications than in other anatomical sites.¹ Owing to the wide variety of possible foreign bodies, the clinical presentation and history can vary greatly. The most common location of the foreign body within the airway has been identified from meta-analysis to be in decreasing frequency for the following locations: bronchus (right more frequent than left side), trachea, larynx, and lung.² The role of taking high-resolution computed tomography (HRCT) Thorax is also

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debatable. This report is on a case of a migratory foreign body bronchus and the associated diagnostic challenges.

CASE REPORT

A 1-year-old male kid was referred to the pediatric casualty with a history of cough and sudden onset respiratory distress

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for 3 days. The child had been treated with antibiotics and started on oxygen via high-flow nasal canula as he was not maintaining saturation on room air. The mother gave no history of foreign body aspiration. She hasn't witnessed any choking episodes or vomiting episodes recently. There had been no previous similar history or hospital admission. Child was born by normal vaginal delivery as a term baby with good APGAR scores at birth. On examination, the child was tachypneic, with increased respiratory effort. There was no cyanosis or stridor. He was maintaining saturation on oxygen by bubble cPAP. Subcostal and intercostal retractions were noted. Auscultation revealed reduced air entry on the left. A chest X-ray was taken, which came out to be normal (Figure 1). On suspicion of the foreign body in left bronchus, HRCT thorax was taken. To our surprise, the CT revealed an isodense foreign body lodged in the right main bronchus (Figure 2). We examined the child again and found that the air entry was now reduced on the right side. Just before Rigid Bronchoscopy,

on repeat auscultation child had reduced air entry that was noted on the left side. On bronchoscopy, a black foreign body with a smooth surface (Sitaphal seed) was noted completely obstructing the left main bronchus (Figure 3). Removal was done using with help of optical forceps with some difficulty owing to the smooth surface and the large size of the foreign body relative to the airway (Figure 4). On check scopy, no more foreign bodies were visualised on either bronchus. Immediately following removal, the air entry became equal bilaterally. The child was discharged after 2 days in good health.

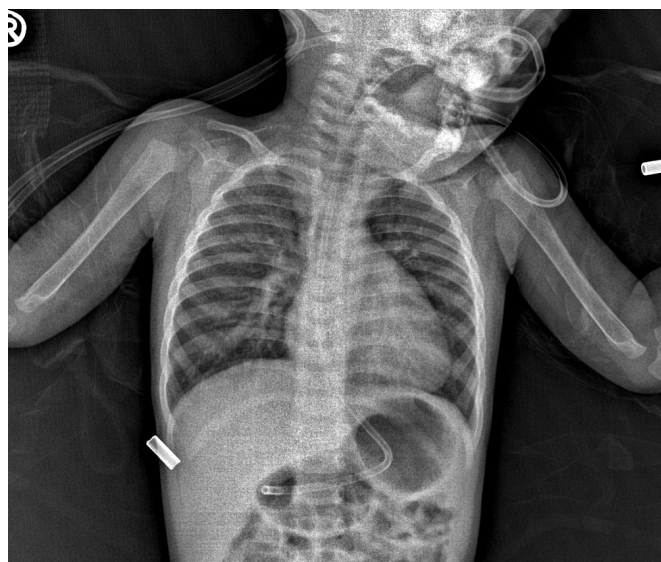


Figure 1: X-ray AP view of chest showing no abnormalities

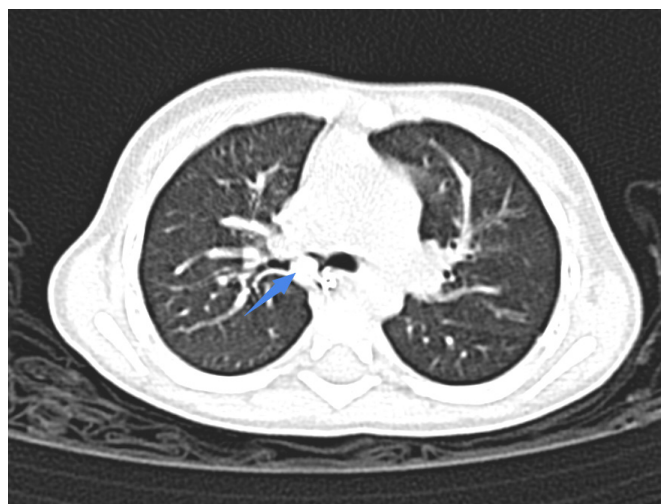


Figure 2: HRCT Thorax axial cut, showing a hyperdense (? foreign body; Blue arrow) in right Main bronchus



Figure 3: Foreign body visualized in left main bronchus



Figure 4: Foreign body (Sitaphal seed)

DISCUSSION

Inhaled foreign bodies are most frequently observed in kids under the age of three.³ A wide range of foreign bodies has been documented, with organic materials being more prevalent than inorganic ones in this age group.^{4,5} The history may involve a witnessed foreign body in the mouth or, in some cases, no apparent foreign body presentation in a young child, which can lead to a delayed diagnosis. Symptoms and signs of foreign body inhalation include choking, coughing, hoarseness, difficulty breathing, wheezing, increased respiratory effort, cyanosis, asphyxiation, and even death. In almost 40% of cases, the diagnosis was made after 24 hours.⁶ Decreased air entry on one side of the chest on auscultation gives a diagnostic clue as to the site of obstruction. Radiographic

findings on chest films will often be normal (11%–26%).⁷ Classical finding in x-ray of chest is hyperinflation of the same side lung due to the ‘ball-valve’ effect. The sensitivity and specificity of X-ray for airway foreign bodies have been calculated to be 73% and 45%, respectively.⁸ Computed tomography is a highly sensitive investigation for identifying a foreign body within the airway. However, considering HRCT for a 1-year-old child has got risk of sedation and may require mechanical ventilation during the investigation. A low threshold for diagnostic bronchoscopy must be maintained so that the asymptomatic foreign body or occult foreign body is not missed.

In the case that we encountered there was also a delay in the initial diagnosis of the foreign body at an outside center due to an absent history of foreign body ingestion and confusion with infective etiology. This highlights the importance of a good history and examination as primary tools in diagnosis. When the child was presented to us, leading questions with a high degree of suspicion helped point us in the right direction. Any sudden onset respiratory difficulty in a young child warrants a differential diagnosis of inhaled foreign body in the physician’s mind. The auscultation at presentation showing unilateral reduced air entry also aided the diagnosis, while the chest radiograph was normal. Fernandez emphasized that the sensitivity of clinical examination and auscultation (90%) is much higher compared to a chest X-ray. Computed tomography (CT) is an effective non-invasive tool for aiding diagnosis and determining the requirement of an invasive procedure. While it is not recommended as a gold standard for diagnosing tracheobronchial foreign bodies, it can add value in more challenging cases, as it provides superior visualization of foreign bodies compared to plain radiography. CT scans are especially helpful in detecting radiolucent or soft-density foreign bodies.⁹

However, the further developments in our case go on to point out that while imaging aids in diagnosis, the surgeon doing the bronchoscopy must be prepared for surprises on the OT table. In this case, the larger size of the foreign body relative to the 1-year-old’s airway kept it from sliding into smaller distal airways, while its smooth contour (Figure 4) meant easy movement from one bronchus to the other. While the CT showed a right-sided foreign body, intraoperatively, we encountered the obstruction in the left primary bronchus. The smooth contour also meant difficulty in its retrieval. This necessitates robust pre-operative and intra-operative preparedness from the surgeon as well as the anaesthetist. For the surgeon, good instruments and experienced hands are paramount to an uneventful foreign body removal. For the anaesthetist, experience dealing with paediatric airways will help them afford the surgeon sufficient time for a difficult case as well as for thorough examination of the airway bilaterally.¹⁰ For this reason, while bronchoscopy must be done without undue delay, the level of urgency depends on the condition of the patient and the resources available at hand. If a child presents during an evening with a history of

possible foreign body inhalation and is well, it is reasonable to delay bronchoscopy until the morning if that will afford better resources.¹¹

CONCLUSION

Early diagnosis of a tracheobronchial foreign body in a child with respiratory distress is possible with good clinical evaluation and imaging. Rigid bronchoscopy gives the definitive diagnostic and therapeutic option and should be considered at a low threshold for suspected cases. This case goes to show us that in the numerous varied presentations of inhaled foreign bodies, a migratory foreign body bronchus should also be considered and anticipated when there are varying clinical and imaging findings, as demonstrated in this case.

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