DS (Child) H J 2024; 40(1): 60-63

CASE REPORT

An Unusual Foreign Body in the Airway of 11-Month-Old Girl Mimicking Bronchiolitis

Sarabon Tahura[1], Johora Akter[2], Biswajit Chakraborty[3], Taniza Jabin[4]

Abstract

Airway foreign body aspiration (FBA) remains one of the most common respiratory emergencies in early childhood, accounting for a major proportion of preventable deaths in children. But variable clinical and radiological features lead the diagnostic and therapeutic challenges. Here we report an 11-month-old previously healthy girl who developed sudden cough and respiratory distress without fever. She was wheezy but not toxic; chest radiograph showed symmetrical hyperinflation, suggesting bronchiolitis. No improvement occurred after 5 days therapy with bronchodilators and corticosteroid nebulization prompted flexible bronchoscopy, which revealed a round-shaped artificial pearl bead lodged at the lower end of the trachea, moving bidirectionally with respiration. The bead was successfully extracted using a 'zero' tip stone basket by flexible bronchoscopy. Post-removal, the child's symptoms resolved completely, although she developed fever secondary to multidrug-resistant (MDR) Pseudomonas aeruginosa infection identified in bronchoalveolar lavage fluid, which responded to levofloxacin. This case illustrates how an atypical tracheal foreign body can mimic bronchiolitis, emphasizing the importance of early bronchoscopy in unexplained airway obstruction in children.

Keywords: *Foreign body aspiration, Children, Flexible bronchoscopy, Tracheal bead, Bronchiolitis mimic.*

Introduction

Foreign body aspiration (FBA) is life threatening and leading cause of acute respiratory distress in children. The majority of cases occur between 6 months and 3 years, when infants explore objects orally and lack coordinated swallowing reflexes.[1] Despite this high prevalence, only 40-60% of children have witnessed choking or aspiration history.[2,3] Recent multicenter studies reaffirm that up to 42% of pediatric FBAs are initially misdiagnosed as asthma, pneumonia, or bronchiolitis, particularly when radiographic signs are non-specific.[4,5]

Typical chest radiographic findings depend on the site and degree of obstruction. Unilateral hyperinflation remains the most frequent finding (70%), while lobar collapse occurs in about 25%, and bilateral hyperinflation in fewer than 5%, generally when the object is located in the trachea or carina causing partial, central obstruction.[6,7] Tracheal FBAs may thus simulate bronchiolitis or asthma, especially when the aspirated object is radiolucent and mobile.[8] Flexible bronchoscopy now plays a pivotal role both as diagnostic and therapeutic tool.[9]

1. Associate Professor, Department of Pediatric Respiratory Medicine, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh.
2. Registrar, Department of Pediatric Respiratory Medicine, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh.
3. Registrar, Department of Anesthesiology, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh.
4. Registrar, Department of Paediatric Respiratory Medicine, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh.

Correspondence to: Dr. Sarabon Tahura, Associate Professor, Department of Pediatric Respiratory Medicine, Bangladesh Shishu Hospital and Institute, Dhaka, Bangladesh. Cell: +8801716248281, Email: drsarabon@yahoo.com
Received: 8 January 2024; **Accepted**: 9 May 2024

Case Report

An 11-month-old previously healthy girl presented with a sudden onset of cough and respiratory distress without associated fever. There was no history of asthma, atopy, choking episode, aspiration or any preceding respiratory illness. She was initially admitted to a local clinic where a clinical diagnosis of acute bronchiolitis was made. The patient was treated with nebulized salbutamol and budesonide along with oral azithromycin. Despite five days of therapy, as her symptoms remained unchanged, the child was referred to the Department of Paediatric Respiratory Medicine of Bangladesh Shishu Hospital & Institute for further evaluation and management. On admission the child was alert but tachypneic, with a respiratory rate of 52/min. Her oxygen saturation was 93% in room air. Auscultation of the chest revealed bilateral expiratory wheeze, while other systemic examinations including cardiovascular assessment were within normal limits.

Chest radiograph showed bilateral lung hyperinflation without evidence of consolidation, collapse or mediastinal shift, findings consistent with bronchiolitis (Fig.- 1A). Intravenous hydrocortisone was initiated along with nebulized salbutamol. Respiratory viral panel was sent, which yielded normal results. However, the child's condition did not improve despite appropriate bronchodilator, corticosteroid and antibiotic therapy. On careful reevaluation and detailed history taking, the mother recalled that the initial coughing episode began suddenly while the child was playing with her mother's hijab which was embellished with artificial pearl. Mother noticed some of pearl beads were missing and she mentioned that the child might have put the pearl bead into her mouth, though this was unnoticed. Considering the possibility of an occult foreign body aspiration, flexible bronchoscopy was planned for diagnostic and potential therapeutic purposes.

Flexible bronchoscopy was performed under total intravenous anesthesia (TIVA) which revealed a round, shiny artificial pearl bead lodged in the lower trachea, moving bidirectionally with respiration (Fig-2A). The foreign body was successfully retrieved using a "zero-tip" basket through the working channel of the flexible bronchoscope (Fig-2B, Fig-3A). The procedure was completed smoothly without any bleeding, mucosal injury or post-procedural airway edema. The child recovered uneventfully and was discharged in stable condition with complete resolution of cough and respiratory distress. Post procedure chest X-ray revealed normal and she remained asymptomatic at one-week follow-up.

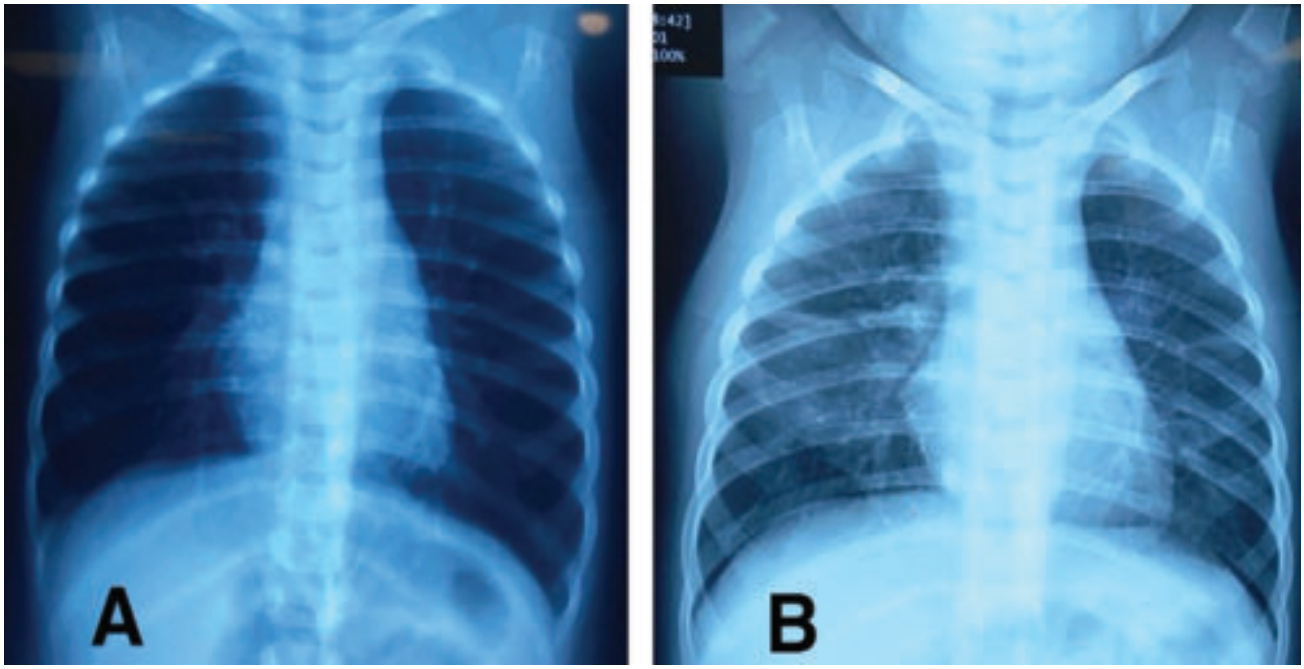

Fig.-1 *X-ray chest, 1A: Before bronchoscopy revealing bilateral hyperinflation without consolidation/collapse or mediastinal shift, consistent with bronchiolitis, 1B: After removal of foreign body revealing normal findings*

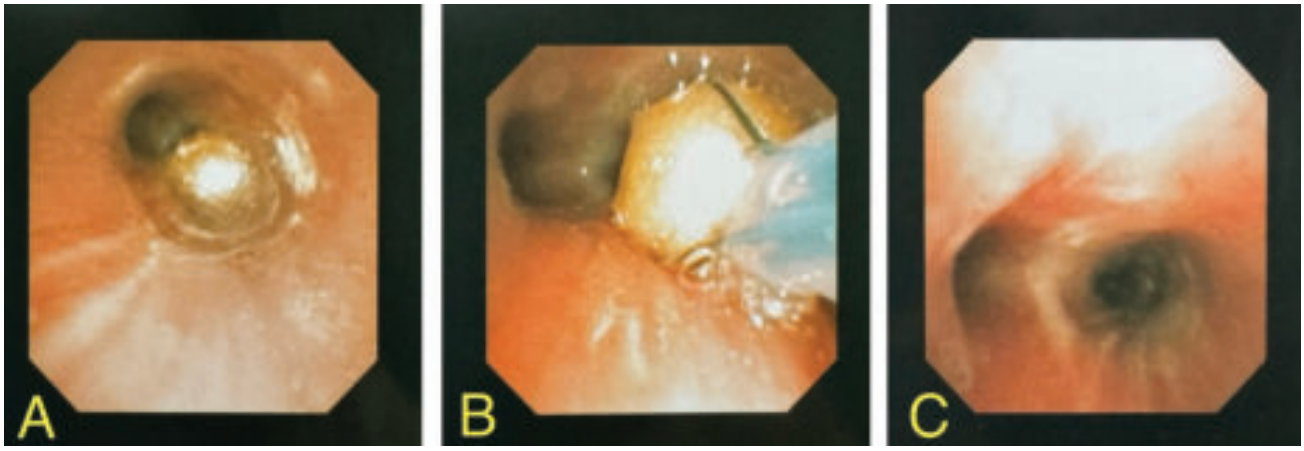

Fig.-2 *Flexible Bronchoscopc views, 2A: Foreign body (Pearl bead) at lower part of trachea, 2B: The pearl bead was firmly grasped with a zero-tip retrieval basket during extraction, 2C: After successful removal of the foreign body*

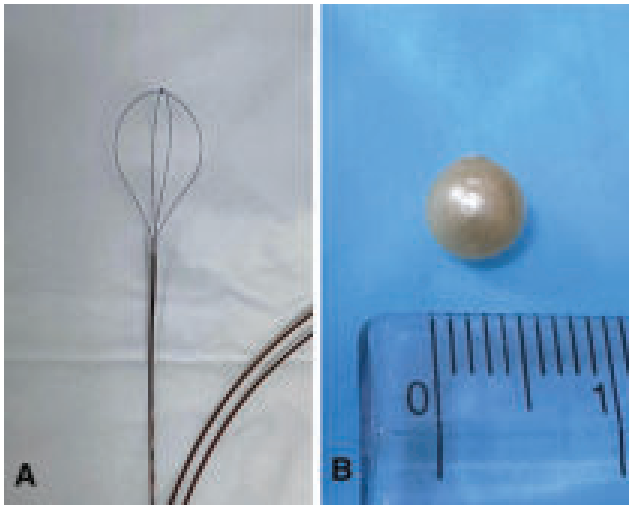

Fig.-3 *3A: 'Zero' tip stone basket, 3B: The foreign body (round shaped artificial pearl bead) after retrieval*

Discussion

This case underscores the diagnostic difficulty of radiolucent airway foreign body without a suggestive history. Contemporary studies show that 40-60% of pediatric patients lack a definite aspiration event[2,3,10] and that unilateral hyperinflation is the most common radiographic sign (70%), while bilateral hyperinflation occurs in <5%, usually in central or tracheal obstructions.[6,11]

Our patient represents this rare scenario. The radiolucent, smooth bead lodged in the lower trachea caused a dynamic "ball-valve" effect, partially obstructing airflow during expiration and producing symmetrical bilateral overinflation. Because it moved with respiration and did not settle in either bronchus, auscultation revealed diffuse wheeze and the chest X-ray simulated bronchiolitis. Similar observations were noted by Zhang et al.[13] who described tracheal foreign bodies causing atypical imaging patterns when radiolucent.

Flexible bronchoscopy provided both diagnosis and therapy. Although rigid bronchoscopy still remains the gold standard for removal of foreign bodies, use of flexible bronchoscope is increasing and becoming popular, offering reduced airway trauma and the ability to explore distal bronchi.[9,12] Post-procedure fever due to MDR *Pseudomonas* colonization though uncommon, can occur from airway manipulation or pre-existing colonization.[13] Prompt identification and targeted antibiotic therapy as in this patient ensure excellent outcomes.

This case emphasizes that persistent or atypical wheezing unresponsive to bronchodilators should raise suspicion for airway foreign body, even in the absence of history. Early referral for bronchoscopic evaluation is essential to prevent complications.

Conclusion

A radiolucent, mobile tracheal foreign body may mimic bronchiolitis by producing bilateral symmetrical hyperinflation through dynamic partial central airway obstruction. Flexible bronchoscopy ensures definitive diagnosis and safe removal. Clinicians should maintain high suspicion for FBA in any infant with unexplained refractory wheeze.

References

1. Penugonda AJ, Gupta A, Singh R, Sharma S, Jha R, Patel N, et al. Predictive value of clinico-radiological variables in paediatric airway foreign body aspiration. *J Bronchol Interv Pulmonol* 2024; **31**:110-16.
2. Ekim A, Demirbilek O, Yildiz I, Aydin A, Cevik H, Kaya E, et al. Foreign body aspirations in childhood: a retrospective review. *Eur Arch Otorhinolaryngol* 2023;**280**:2223-30.
3. Mu L, He P, Sun D. The causes and complications of late diagnosis of foreign body aspiration in children. *Arch Otolaryngol Head Neck Surg* 1991;**117**: 876-79.
4. Akýl RS, Türe S, Kýlýç M, Korkmaz M, Yýlmaz H, Özkan G, et al. Clinico-radiological profile and outcome of airway foreign bodies in children. *Pediatr Pulmonol* 2022;**57**:3274-82.
5. Foltran F, Ballali S, Passali FM, Kern E, Morra B, Passali D, et al. Foreign bodies in the airways: a review of paediatric cases. *Acta Otorhinolaryngol Ital* 2012; **32**:265-71.
6. Zerella JT, Dimler M, McGill LC, Pippus KJ. Foreign body aspiration in children: value of radiography. *J Pediatr Surg* 1998;**33**:1651-64.
7. Roda J, Nobre S, Pires J, Estêvão MH, Félix M. Tracheobronchial foreign bodies in children: a 10-year retrospective study. *Eur J Pediatr* 2012;171:1825-30.
8. Zhang Y, Wu X, Li J, Chen X, Wang L, Zhao Y, et al. Characteristics of occult foreign body aspiration and invisible airway foreign bodies in children. *Int J Pediatr Otorhinolaryngol* 2024;**158**:111542.
9. Asif M, Khan N, Raza SA, Siddiqui A, Ahmed S, Akhtar T, et al. Role of flexible bronchoscopy in paediatric airway foreign body management. *Front Pediatr* 2021;**9**:723456.
10. Passàli D, Lauriello M, Bellussi L, Passàli FM, Passàli GC, Gregori D. Foreign body inhalation in children: an update. *Acta Otorhinolaryngol Ital* 2010;**30**:27-32.
11. Akýl RS, Türe S, Kýlýç M, Korkmaz M, Yýlmaz H, Özkan G, et al. Clinico-radiological profile and outcome of airway foreign bodies in children. *Pediatr Pulmonol* 2022;**57**:3274-82.
12. Saki N, Nikakhlagh S, Hekmatnia A, Rahim F, Soleimani T, Heshmati S, et al. Comparison of flexible versus rigid bronchoscopy for removal of airway foreign bodies in children. *Int J Pediatr Otorhinolaryngol* 2020;**134**:110015.
13. El-Kholy AA, El-Badawy AA, El-Sokkary RH, Ahmed A, El-Ghandour S, Abdelrahman AE, et al. Multidrug-resistant *Pseudomonas aeruginosa* infection following bronchoscopy in children. *J Infect Dev Ctries* 2021;**15**:1263-70.