

Case Report

Fatal foreign body aspiration in a toddler due to peanut lodgement in the right main bronchus: A case report

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Received: 12 March 2026

Accepted: 12 June 2026

Epub Ahead of Print: 26 August 2025

Published:

DOI

10.25259/KPJ_17_2026

Quick Response Code:



ABSTRACT

Foreign body aspiration is a leading cause of accidental morbidity and mortality in children under 3 years of age. Organic foreign bodies such as peanuts pose a particularly high risk due to their hygroscopic nature and tendency to cause airway inflammation. We report a fatal case of delayed airway obstruction in an 18-month-old female child following peanut aspiration, initially presenting with transient choking that appeared to resolve. The child subsequently developed acute respiratory distress several hours later and died despite hospital admission. Autopsy revealed a peanut lodged in the right main bronchus with hyperinflation of the right lung. This case highlights the deceptive clinical course of foreign body aspiration, the dangers of delayed presentation and the need for heightened clinical suspicion even when initial symptoms subside.

Keywords: Autopsy findings, Choking, Foreign body aspiration, Paediatric airway obstruction, Peanut aspiration, Sudden death

INTRODUCTION

Due to poor swallowing coordination, a lack of molar teeth and an innate propensity to investigate objects orally, foreign body aspiration (FBA) is a frequent paediatric emergency, especially in children between the ages of 6 months and 3 years. This age group is most vulnerable, and FBA continues to be a major global cause of unintentional morbidity and mortality. The most commonly aspirated materials are organic foreign bodies, particularly nuts, which can cause severe airway inflammation and delayed complications if they are not identified and treated right away.^[1-3]

Because peanuts are hygroscopic, they absorb moisture and cause swelling in the airway, making peanut aspiration especially dangerous. This process causes severe granulomatous and inflammatory reactions along with the release of proteins and oils, which eventually obstruct the airways.^[4,5]

Crucially, initial episodes of choking may go away momentarily, leading to a false sense of security and postponing a conclusive diagnosis and treatment.^[6]

This case study highlights the vital significance of easy detection, prompt bronchoscopy and preventive measures by describing a toddler's fatal outcome following peanut aspiration.

CASE REPORT

An 18-month-old girl who had previously been healthy choked while eating peanuts at home on the incident day at 3.00 pm. The episode was marked by breathing difficulties and abrupt choking.

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Caregivers reported that the child appeared clinically stable and that the respiratory distress quickly subsided on its own. At that point, no medical care was sought.

The child was admitted to an urgent peripheral hospital at around 12.30 am the next morning due to the sudden onset of severe breathing difficulties. The child's condition rapidly worsened despite supportive care, and at 6.30 am, she was declared dead. A medico-legal autopsy was conducted in light of the sudden death.

A peanut was identified firmly lodged in the right main bronchus. The foreign body was pale in colour, consistent with prolonged exposure to airway secretions. The right lung was markedly over-expanded and pale, indicating air trapping due to a ball-valve mechanism. The left lung appeared relatively compressed. No evidence of pneumonia or chronic lung disease was noted. Asphyxia due to FBA (peanut) causing acute airway obstruction [Figures 1 and 2]. Although imaging was taken on admission before the death, retrospective evaluation suggests findings consistent with unilateral hyperinflation of the right lung, a classic but often subtle radiological sign of bronchial FBA [Figure 3].

DISCUSSION

Due in large part to poor dentition, unsafe feeding practices and immature swallowing coordination, FBA continues to be a major cause of unintentional morbidity and mortality in children under three.^[1,2] The most frequently aspirated materials in this age group are organic foreign bodies, especially nuts, which are linked to more severe airway reactions than inorganic objects.^[1-3] The current case highlights the high-risk nature of such foreign bodies by demonstrating the potentially fatal result of a toddler aspirating peanuts.



Figure 1: Autopsy photograph demonstrating peanut lodged in right main bronchus.

Because peanuts are hygroscopic and airway secretions, they can cause progressive swelling and luminal obstruction, making peanut aspiration particularly risky. Furthermore, the release of proteins and oils from peanuts causes severe granulomatous and inflammatory reactions that further constrict the airway and raise the possibility of abrupt deterioration.^[4,5] Despite the initial resolution of symptoms, these mechanisms account for the delayed but catastrophic respiratory compromise seen in this case.

The brief improvement after the initial choking episode is a noteworthy aspect of this case. It has been well documented that such transient symptom resolution frequently results in delayed presentation because caregivers may believe that the child has recovered.^[3,6] Ongoing airway inflammation and partial obstruction may continue to worsen during

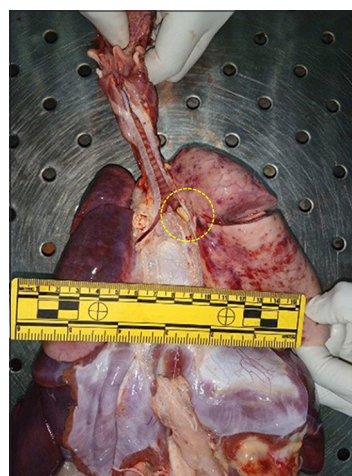


Figure 2: Gross appearance of the aspirated peanut (yellow dotted circle).

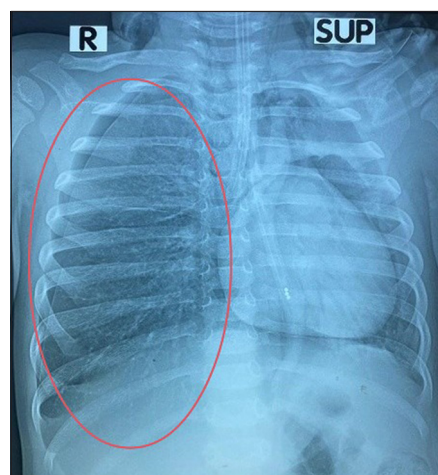


Figure 3: Chest X-ray showing right lung hyperinflation (red oval).

this asymptomatic or silent phase, which poses a serious diagnostic risk until acute decompensation takes place.

In this instance, the foreign body was lodged in the right main bronchus, which is consistent with known anatomical predispositions such as its shorter length, wider lumen, and more vertical orientation in relation to the left bronchus.^[2,4] A classic ball valve mechanism in which air enters during inspiration but is trapped during expiration is reflected in autopsy findings of unilateral right lung hyperinflation with contralateral lung compression. In the absence of a strong clinical suspicion, these radiological and pathological findings, which are typical of bronchial FBA may be subtle and easily missed.^[3,6]

The gold standard for confirming and removing airway foreign bodies is still early bronchoscopy, which is the cornerstone of diagnosis and treatment in suspected FBA.^[4,5] Bronchoscopy is linked to good results and low rates of complications when done quickly. On the other hand, acute airway obstruction, hypoxia, and unexpected death can occur from delays in diagnosis and treatment, as demonstrated in this instance. Acute asphyxia from mechanical airway obstruction is further supported as the primary cause of death by the autopsy's lack of pneumonia or chronic lung pathology.

This case emphasises the critical need for preventive measures such as educating caregivers about age-appropriate feeding, preventing children under three from consuming high-risk foods like peanuts, and emphasising the significance of getting medical attention right away after any choking incident.^[1-3] Even when symptoms seem to have subsided, medical professionals should keep a high index of suspicion for FBA because prompt treatment can save lives.

CONCLUSION

This case emphasises the risk of delayed presentation after an apparently resolved choking episode and the deadly potential of peanut aspiration in toddlers. Regardless of the resolution of symptoms, a high index of suspicion is essential for all young children with a history of choking. Bronchoscopy referrals made early can save lives. Preventive measures such as educating caregivers and keeping children away from

high-risk foods continue to be essential in lowering such tragic results.

Ethical approval: Institutional Review Board approval is not required.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given consent for their images and other clinical information to be reported in the journal. The patient understands that the patient's names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship: Nil.

Conflicts of interest: There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation: The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript, and no images were manipulated using AI.

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How to cite this article: Balasubramaniam S, Pranavan S. Fatal foreign body aspiration in a toddler due to peanut lodgement in the right main bronchus: A case report. Karnataka Paediatr J. doi: 10.25259/KPJ_17_2026