

# 1 Acute Foreign Body Aspiration Complicated by 2 Cardiorespiratory Arrest Medical Case Report /Case 3 Report.

4

## 5 **ABSTRACT**

6 Background: Foreign body (FB) aspiration is a potentially fatal pediatric emergency.  
7 Complication by cardiorespiratory arrest (CRA) followed by successful cardiopulmonary  
8 resuscitation (CPR) is rare and associated with significant neurological morbidity and  
9 mortality.

10 Case Presentation: We report the case of a 1-year-8-month-old infant admitted to the  
11 emergency department for aspiration of a food foreign body (red grape), presenting with  
12 penetration syndrome associated with cyanosis and loss of consciousness, requiring  
13 immediate resuscitation and transfer to the pediatric intensive care unit (PICU). The clinical  
14 course was marked by cardiorespiratory arrest recovered after CPR, severe bilateral  
15 infectious pneumonia, coagulation disorders, ecchymotic skin lesions, cerebral microbleeds  
16 on MRI, and ultimately death after prolonged hospitalization.

17 Conclusion: This case illustrates the severity of foreign body aspiration in infants and the  
18 cascade of systemic complications following prolonged cardiorespiratory arrest,  
19 emphasizing the importance of prevention and early diagnosis.

20 Keywords: endobronchial foreign body; cardiorespiratory arrest; infant; bronchoscopy;  
21 pediatric intensive care; aspiration pneumonia.

## 22 **1. Introduction**

23 Foreign body aspiration represents one of the most frequent and dangerous respiratory  
24 emergencies in pediatrics, particularly in children under 3 years of age. Food foreign bodies  
25 — especially seeds, peanuts, grapes, and other round fruits — account for the majority of  
26 cases in this age group due to the predominance of oral exploratory behavior in infants.

27 Penetration syndrome, characterized by coughing fits, cyanosis, and acute respiratory  
28 distress, is the principal clinical warning sign, and rapid recognition directly influences  
29 prognosis.

30 When airway obstruction is complete or near-complete, acute asphyxia may occur and can  
31 be fatal without immediate management.

32 Rigid bronchoscopy remains the gold standard technique for the extraction of  
33 endobronchial foreign bodies. However, when aspiration is complicated by

34 cardiorespiratory arrest, mortality and neurological morbidity remain extremely high even  
35 after successful cardiopulmonary resuscitation.

36 We report the case of a 1-year-8-month-old infant admitted for aspiration of a food foreign  
37 body whose fatal outcome was marked by multiple systemic complications.

## 38 2. Case Presentation

### 39 2.1 Patient Information and Reason for Admission

40 The patient was a 1-year-8-month-old male infant weighing 15 kg, with no significant  
41 medical or surgical history and no history of parental consanguinity. He was admitted to the  
42 pediatric emergency department on 19/11/2025 at 00:30 for foreign body aspiration  
43 involving red grapes and was subsequently transferred to the pediatric intensive care unit.

### 44 2.2 History of Present Illness

45 Two hours before admission, the infant suddenly developed penetration syndrome while  
46 ingesting red grapes, associated with cyanosis, loss of consciousness, and two episodes of  
47 vomiting. The parents immediately called emergency services, and the child was  
48 transported to the pediatric emergency department.

### 49 2.3 Clinical Examination on Admission

50 Neurological examination: conscious but cyanotic child.

51 Respiratory examination: expiratory wheezing, signs of respiratory distress, suprasternal  
52 and intercostal retractions, oxygen saturation of 85% on room air, bilateral bronchospasm  
53 and crackles on auscultation.

54 Hemodynamic examination: heart rate = 164 bpm, blood pressure = 10/6 mmHg, capillary  
55 refill time < 3 seconds.

56 Initial management included bilateral peripheral venous access, bag-mask ventilation, semi-  
57 seated positioning, oxygen therapy, intubation, and resuscitation measures. Laboratory  
58 investigations and thoracic imaging were requested.

### 59 2.4 Initial Laboratory and Radiological Findings

60 Arterial blood gas analysis showed severe acute respiratory failure with the following  
61 values:

62	-		pH	=				7.306
63	-		PaCO <sub>2</sub>	=	52.5			mmHg
64	-	PaO <sub>2</sub>	=	63	mmHg	(FiO <sub>2</sub>	=	21%)
65	-		Oxygen	saturation	=			89%
66	-		Hematocrit	=				30%

67 - Estimated hemoglobin = 10.1 g/dL  
68 - Lactate level = 1.29 mmol/L

## 69 2.5 Rigid Bronchoscopy

70 Rigid bronchoscopy was performed on 19/11/2025 under general anesthesia. Intubation  
71 was uncomplicated. Endoscopic findings showed a free trachea, thinned carina,  
72 inflammatory erythematous mucosa, free right main bronchus with endobronchial  
73 secretions requiring suction, and free left main bronchus with inflammatory mucosa. No  
74 visible foreign body was identified during bronchoscopy.

## 75 2.6 Evolution in the Pediatric Intensive Care Unit and Complications

76 The clinical course in the PICU was severe and marked by several major complications:

77 • Cardiorespiratory arrest occurring on day 50 of hospitalization, successfully recovered  
78 after cardiopulmonary resuscitation. The patient subsequently exhibited delayed  
79 awakening and respiratory dependence after sedation withdrawal.

80 • Severe bilateral infectious pneumonia with multidrug-resistant organisms isolated from  
81 serial blood cultures, including *Acinetobacter baumannii* resistant to imipenem, *Serratia*  
82 *marcescens*, and carbapenem-resistant *Pseudomonas aeruginosa*. The patient received  
83 prolonged antibiotic therapy including colistin, fluconazole, amikacin, and adapted  
84 treatment according to antibiograms.

85 • Hemostatic disorder and suspected disseminated intravascular coagulation (DIC):  
86 hemoglobin = 7.7 g/dL, platelet count = 76,000/mm<sup>3</sup>, prothrombin time = 54%, activated  
87 partial thromboplastin time = 52.5 seconds. Hematology consultation suggested possible  
88 DIC, leading to treatment with fresh frozen plasma, furosemide, and intravenous vitamin K.

89 • Ecchymotic skin lesions involving the axillary regions, upper limbs, popliteal fossae, and  
90 trunk, associated with petechial lesions and erosive cervical lesions. Drug-related skin  
91 reaction or thrombocytopenic origin was suspected.

92 • Post-anoxic cerebral injury: Brain MRI performed on 06/01/2026 for delayed awakening  
93 revealed a right parietal subcortical hematoma measuring 18 × 10 mm, multiple  
94 supratentorial microbleeds, bilateral symmetrical T2/FLAIR hyperintensity of the basal  
95 ganglia, and diffusion restriction compatible with severe hypoxic-ischemic encephalopathy.

## 96 2.7 Fatal Outcome

97 The patient died on 09/02/2026 after 83 days of hospitalization in a context of post-cardiac  
98 arrest multi-organ failure following foreign body aspiration.

99 **3. Discussion**

100 1. Foreign Body Aspiration in Children: Epidemiology and Pathophysiology

101 Foreign body aspiration is the third leading cause of accidental death in children under 4  
102 years of age. Food-related foreign bodies, particularly seeds, nuts, and round fruits, are the  
103 most common. Their smooth surface, rounded shape, and size (often larger than the child's  
104 glottic diameter) contribute to complete or subtotal obstruction of the upper airways or the  
105 tracheobronchial bifurcation. In our case, the grape seeds, due to their size, caused a near-  
106 complete obstruction leading to acute asphyxia. Rigid bronchoscopy, the gold standard for  
107 extraction, did not identify any visible macroscopic foreign body, suggesting either distal  
108 migration or fragmentation and partial expulsion of the material during the initial airway  
109 clearance maneuvers.

110 2. Penetration Syndrome and Time to Treatment

111 Penetration syndrome, defined by the combination of a coughing fit + cyanosis + acute  
112 dyspnea, is the clinical marker of foreign body inhalation in more than 80% of cases. In our  
113 case, the initial presentation was particularly severe, with loss of consciousness and SpO<sub>2</sub> =  
114 85% on room air upon admission. Rapid transfer to a referral center equipped with rigid  
115 bronchoscopy is critical for reducing mortality.

116 3. Cardiac Arrest and Post-Anoxic Encephalopathy

117 A stroke occurring in this context of acute asphyxia is, by definition, a life-threatening  
118 emergency. Even when CPR is successful, anoxic-ischemic brain lesions persist and often  
119 determine the prognosis. Studies show that more than 50% of survivors of a pediatric  
120 stroke have severe neurological sequelae.

121 Our patient's brain MRI showed findings consistent with post-anoxic encephalopathy:  
122 bilateral and symmetrical T2/FLAIR hyperintensities in the basal ganglia with diffusion  
123 restriction, as well as multiple supratentorial microbleeds and a right parietal hematoma of  
124 subacute appearance. These abnormalities in the basal ganglia are typical of hypoxic injury  
125 in infants and indicate profound and irreversible brain damage.

126 4. Infectious Complications and Multidrug-Resistant Bacteria

127 Post-CE aspiration pneumonia is nearly universal, linked to the aspiration of foreign  
128 material and oropharyngeal secretions at the time of the event. Prolonged intubation  
129 increases the risk of ventilator-associated pneumonia (VAP) caused by multidrug-resistant  
130 organisms. In our case, blood cultures successively identified: ABRI + PARI (imipenem-  
131 resistant *Acinetobacter baumannii*), *Serratia marcescens*, and carbapenem-resistant  
132 *Pseudomonas aeruginosa* (PARC), illustrating the risk of the emergence of pandrug-  
133 resistant bacteria in intensive care units.  
134

#### 135 5. Hemostatic Disorders and DIC

136 Coagulopathy associated with ARF and severe infections is well documented in the  
137 literature. DIC (disseminated intravascular coagulation) is a serious complication that  
138 occurs in cases of septic shock and/or post-ARF. In our case, the clinical and laboratory  
139 findings (diffuse ecchymoses, thrombocytopenia at  $76,000/\text{mm}^3$ , PT = 54%, APTT  
140 prolonged to 52.5 seconds) were consistent with DIC, which prompted a transfusion of  
141 fresh frozen plasma and vitamin K supplementation. The bilateral ecchymotic skin lesions  
142 in the axillae and extremities, atypical in their distribution, were also considered in relation  
143 to a drug-induced etiology (DRESS—Drug Rash with Eosinophilia and Systemic Symptoms),  
144 given the prolonged combination antibiotic therapy received by the patient.

#### 145 6. Prevention and Public Health Issues

146 This case highlights the critical importance of preventing CE inhalation in infants and young  
147 children. Preventive measures include educating parents about high-risk foods for children  
148 under 3 years of age (whole round fruits, nuts, hard candies). Training caregivers in  
149 emergency procedures (Heimlich maneuver for children over 1 year of age, procedures for  
150 infants) remains essential.

### 151 **4. Conclusion**

152 We report a fatal case of food foreign body aspiration in a 1-year-8-month-old infant  
153 complicated by acute asphyxia, cardiorespiratory arrest, post-anoxic encephalopathy,  
154 severe multidrug-resistant pneumonia, disseminated intravascular coagulation, and multi-  
155 organ failure.

156 This observation emphasizes the need for immediate multidisciplinary management of  
157 foreign body aspiration and highlights the importance of close monitoring of systemic  
158 complications after pediatric cardiac arrest. It also supports strengthening preventive  
159 education campaigns for families and healthcare professionals regarding choking hazards in  
160 young children.

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