

Spontaneous ventilation and not controlled ventilation for removal of foreign body when present in both bronchi in a child

Sir,

A 14-month-old, 8 kg male child reported to the emergency room with breathlessness and choking sensation for the last 8 h, after eating peanuts. On examination, the child was tachypneic with room air oxygen saturation of 88%. Chest auscultation revealed conducted sounds on the left side and decreased breath sounds on the right side. Immediate chest X-ray showed hyperinflation of left lung field and crowding of ribs on the right side along with hyperinflation of right lower zone [Figure 1]. A provisional diagnosis of right endobronchial foreign body was made. Being an emergency, a CT Scan could not be performed and the child was immediately shifted to the operating room for bronchoscopy. Routine monitors were attached and intravenous dexamethasone 4 mg,

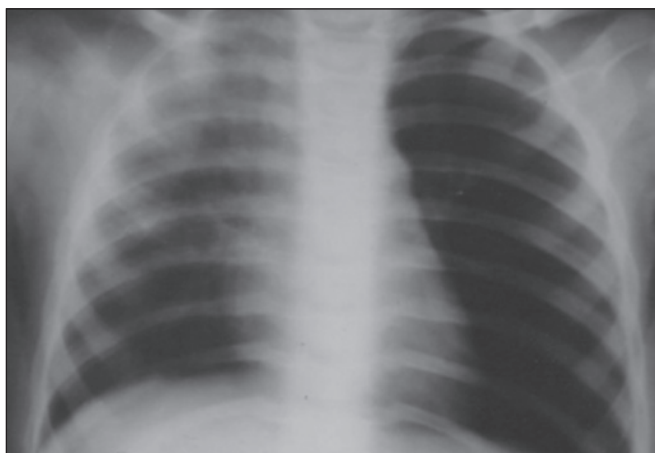


Figure 1: Crowding of ribs on right side with hyperinflated left lung field

glycopyrolate 3 mg, and lignocaine 9 mg were administered. Anesthesia was induced with oxygen in sevoflurane. Intravenous mgsuccinylcholine 8 mg was injected to facilitate bronchoscope insertion, but there was loss of chest expansion with decreasing SpO₂ levels and thus the bronchoscope was removed. Fortunately, spontaneous respiration were restored, thereby increasing the SpO₂ to 94%. Reintroduction of bronchoscope was facilitated with increasing concentration of sevoflurane (8%); however, this caused decreased ventilatory efforts of the child and resulted in a similar scenario. Return of spontaneous ventilation increased the oxygen saturation to 94%. Bronchoscopy was now performed in a spontaneous breathing child by titration of sevoflurane (4%), maintaining SpO₂ between 91-94%. Peanut cotyledons were removed from the right as well as the left main bronchus. Rest of the course was uneventful. Post 24 h, chest X-ray showed bilateral lung expansion [Figure 2] and child was discharged after 48 h.

Ventilation during bronchoscopy is accompanied with concomitant risks; with controlled ventilation forcing the foreign body deeper into the smaller airways, while maintenance of spontaneous ventilation resulting in unexpected movement or coughing.^[1-3]

During anesthesia, lung volume is reduced and bronchial smooth muscle relaxes, thereby increasing the compressibility of large airways.^[4] Moreover, muscle relaxation causes loss of chest wall tone and disrupts the forces of active airway inspiration, thereby further reducing external support of the narrowed airway.^[5] However spontaneous ventilation preserves a larger airway diameter than would occur during controlled ventilation.

We postulate that as the peanut cotyledons were present in both the bronchi, anesthesia and controlled ventilation resulted in loss of chest wall tone and narrowing of airway diameter,

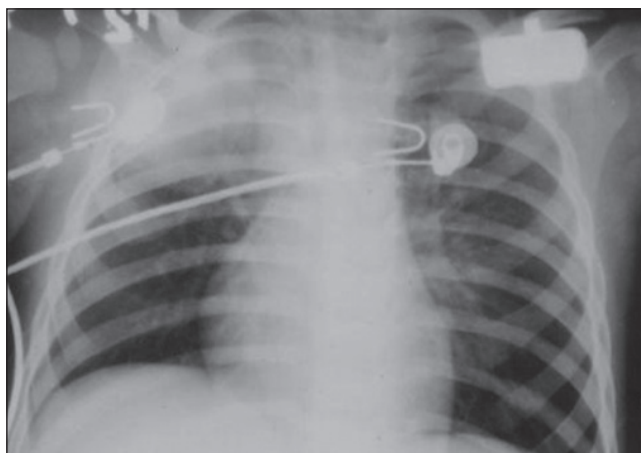


Figure 2: Post bronchoscopy X-ray showing bilateral expanded lung fields

thereby leading to failure of adequate ventilation. On resuming spontaneous ventilation, the bronchi were comparatively of larger diameter making ventilation possible as was evident from appearance of end tidal CO₂ tracing and improvement in O₂ saturation.

In children younger than 3 years of age as the angles created by the right and left main stem bronchi are approximately equal at 55°, aspirated foreign bodies may be equally distributed between the left and right main bronchus.^[6] Thus, there is a possibility of the presence of foreign body in both bronchi. Preserving spontaneous respiration for bronchoscopy may be a better choice in this age group.

Jyotsna Punj, Gururaj Nagaraj, Divya Sethi

Department of Anesthesiology and Critical Care, All India Institute of Medical Sciences, New Delhi, India

Address for correspondence: Dr. Jyotsna Punj,
Department of Anesthesiology and Critical Care,
All India Institute of Medical Sciences,
New Delhi - 110 029, India.
E-mail: jyotsna_punj@yahoo.com

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