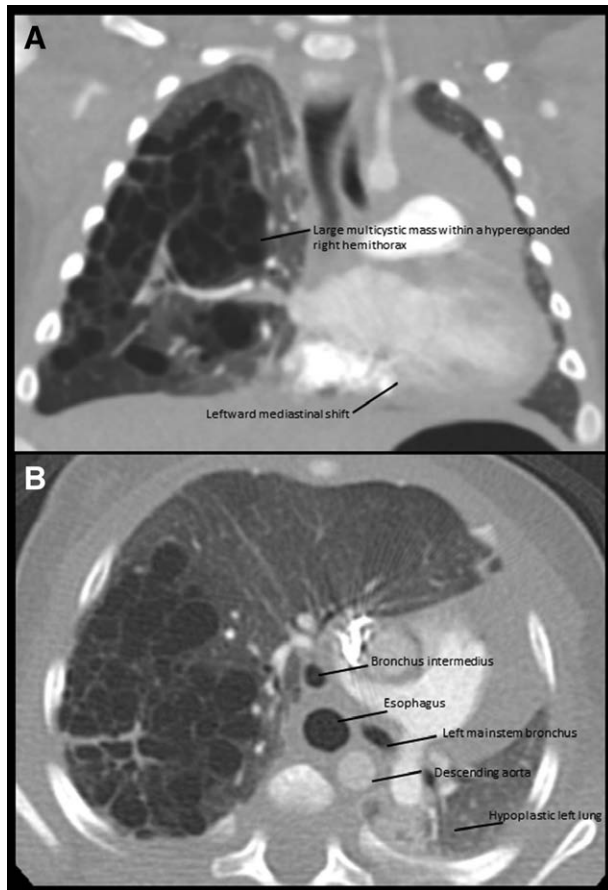


## Images in Anesthesiology: Congenital Pulmonary Airway Malformation

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A 2-MONTH-OLD girl presented with a congenital pulmonary airway malformation (CPAM) as demonstrated by computed tomography angiography (figs. A and B).

CPAM is a rare developmental abnormality of the lower respiratory tract with an incidence of 1:7,200 to 1:27,400.<sup>1</sup> CPAMs are composed of cystic and adenomatous elements, which arise from tracheal, bronchial, bronchiolar, or alveolar tissue. These lesions do not participate in gas exchange and can compromise alveolar growth and development. Large lesions can cause mediastinal shift, cardiac and caval compression with resultant polyhydramnios, and hydrops fetalis. Hydrops carries a high mortality rate, and fetal intervention may be indicated. Although usually sporadic, CPAMs are associated with cardiac, renal, and gastrointestinal anomalies.<sup>2</sup> There is a small risk of malignant transformation. Hence, early detection and surgery are important.

One-lung ventilation (OLV) improves surgical access and minimizes trauma to the limited residual normal lung tissue during resection; however, it increases the risk for hypoxia. A commonly used technique to achieve OLV in an infant is endobronchial intubation with a conventional endotracheal tube, albeit limited by difficulty in suctioning the nonventilated lung and obstruction of the upper lobe bronchus. A 5-French pediatric bronchial blocker or a 3-French Fogarty catheter are alternatives. The techniques and challenges of pediatric OLV are described in a previous review.<sup>3</sup> Anesthetic concerns include overinflation of the affected lung with posi-

tive pressure ventilation, with risk of pneumothorax, airway obstruction, and cardiovascular collapse. Nitrous oxide is avoided, and thoracic caudal epidural is recommended to allow early extubation.

### Competing Interests

The authors declare no competing interests.

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### References

1. Lau CT, Kan A, Shek N, Tam P, Wong KK: Is congenital pulmonary airway malformation really a rare disease? Result of a prospective registry with universal antenatal screening program. *Pediatr Surg Int* 2017; 33:105–8
2. Laje P, Liechty KW: Postnatal management and outcome of prenatally diagnosed lung lesions. *Prenat Diagn* 2008; 28:612–8
3. Hammer GB: Single-lung ventilation in infants and children. *Paediatr Anaesth* 2004; 14:98–102

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