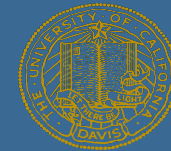




# Airway Compression by Transesophageal Echocardiography Probe



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## INTRODUCTION

Transesophageal echocardiography (TEE) is a valuable diagnostic tool used to assess cardiac function and anatomical relationships, guiding both surgical and anesthetic managements. TEE is relatively safe, however is not completely without risks.<sup>1</sup> The proximity of airway to the esophagus with a relatively large sized TEE probe can place small infants at risk of airway compression, which could be detrimental in critically ill populations.

## CASE REPORT

A 6 month old boy with trisomy 21 (5.6kg) presented for VSD repair. Inhalational induction was performed, intravenous access was obtained, and patient was intubated with 3.5 cuffed endotracheal tube. Breath sounds were equal bilaterally and adequate tidal volume was achieved on the ventilator. Right radial artery and right internal jugular vein were cannulated under ultrasound guidance. Subsequently, TEE probe was placed. After several minutes, patient's tidal volumes decreased with the initial ventilator settings, and oxygen saturation precipitously dropped to the mid 80 percent. Upon auscultation, no breath sounds were heard over the right lung. FiO<sub>2</sub> was increased to 100%, patient was manually ventilated, endotracheal tube position was confirmed, and recruitment maneuver was performed. Upon re-ascultation, faint breath sounds were heard over the right lung, but there was no improvement of tidal volume or oxygen saturation. Chest x-ray was performed, which showed a complete opacification of the right lung with moderate mediastinal shift to the right. At this point, TEE probe was removed leading to improvement in both tidal volumes and oxygen saturation.

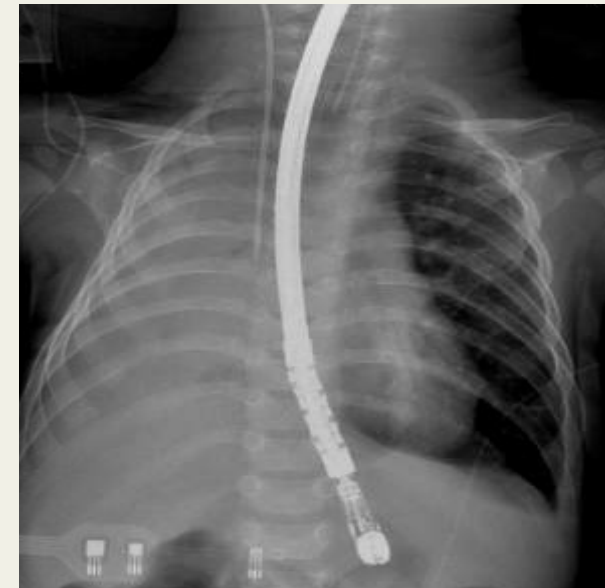
## DISCUSSION

There are many potential causes of intraoperative hypoxemia, and it becomes a challenge for an anesthesiologist to determine the etiology and effectively manage it at the same time, especially in a critically ill patient.

For our case, differential diagnosis included migration of the endotracheal tube, mucus plugging, atelectasis, bronchospasm, pneumothorax, and bronchus compression, which were systemically ruled out. With the chest x-ray showing a complete opacification of the right lung with mediastinal shift to the right, we determined that the hypoxemia was due to the compression of the right main bronchus by the TEE probe. Prompt removal of the TEE probe led to an improvement of tidal volumes and oxygen saturation.

Airway obstruction by TEE probe has been reported in literature in the past.<sup>1</sup>  
-Stevenson reported airway obstruction in 14 patients (1%) out of 1650 patients undergoing TEE examination.<sup>2</sup>  
-Sheil reported airway obstruction in 6 patients (3%) out of 200 patients undergoing cardiac surgery for congenital heart disease.<sup>3</sup>

Airway obstruction by TEE probe is an infrequent complication, especially the degree of obstruction noted in our case with right main bronchus obstruction. Although infrequent, it may lead to unexpected morbidity and mortality.



## REFERENCES

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