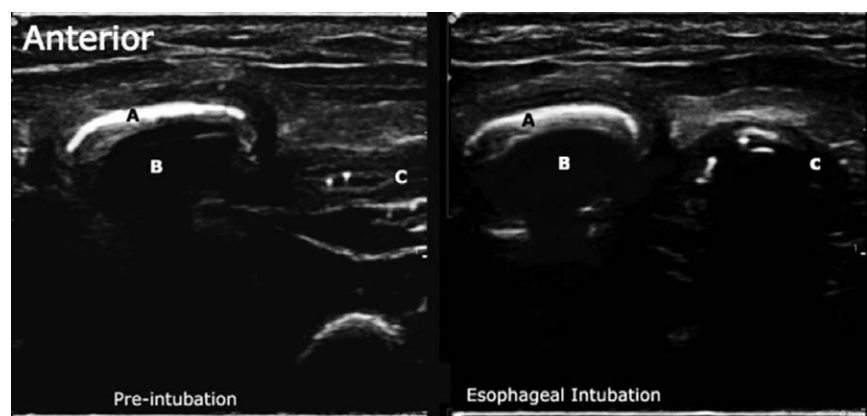


# Images in Anesthesiology: Point-of-care Ultrasound to Diagnose Esophageal Intubation

## "The Double Trachea"

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**B**EDSIDE ultrasound is increasingly available for imaging the airway in real time during instrumentation in both adults and children.<sup>1,2</sup> When the neck is imaged in short axis using a linear transducer placed transversely over the anterior neck just superior to the sternal notch, the trachea and esophagus can usually be visualized.

We present images from a 2-month-old, 3.2-kg infant demonstrating the ultrasound findings of inadvertent esophageal intubation. A

second provider observed the airway changes in real time using a linear high-frequency transducer (18L5, BKMedical, USA) and a BK3500 portable ultrasound machine (BKMedical).

1. Preintubation (*left*): The trachea is seen as an oval acoustic shadow (B) posterior to the hyperechoic white crescent-shaped cartilage of the tracheal ring (A). The esophagus is lateral to the trachea and appears as a donut-shaped muscle (C) surrounding a small hypoechoic lumen.
2. Postintubation of esophagus (*right*): The image of the trachea is unchanged but the esophagus is now distended by the endotracheal tube, the muscular layer is thinned, and the lumen appears as a hypoechoic shadow. This characteristic appearance is called "a double trachea sign."<sup>3</sup>

This imaging is performed similarly in adults and children. Advantages include potentially faster recognition of esophageal intubation than methods requiring test ventilations such as auscultation and capnography, which can also be unreliable with low cardiac output, poor chest compliance, and bronchospasm. In limited studies with experienced clinicians, the specificity and sensitivity for recognition of esophageal intubation are both reported as 1.0.<sup>4</sup> Ultrasound imaging needs to be anticipated and equipment present. Obesity and abnormal anatomy may limit imaging.

### Competing Interests

The author declares no competing interests.

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