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### Airway Obstruction with Esophageal Monitors in a Patient with Double Aortic Arch

*To the Editor:*—Aortic arch malformations in children can compress the trachea and esophagus, producing symptoms of airway obstruction and dysphagia.<sup>1,2</sup> A patient with a double aortic arch can present a near total airway obstruction during anesthesia and surgery with introduction of monitors into the esophagus.

A 3-week-old, 3.7-kg male patient with double aortic arch and respiratory distress was brought to surgery with a 3.5 mm orotracheal tube and a 10 F nasogastric tube in place. A right radial arterial line was inserted for monitoring. Ventilation was controlled via a SERVO 900 C® ventilator with an  $FI_{O_2}$  of 1.0. Anesthesia was induced and maintained with isoflurane, oxygen, and 10  $\mu$ g/kg iv fentanyl followed by pancuronium for muscle relaxation. An esophageal stethoscope (8F) and a soft esophageal temperature probe (9F) were inserted. After the patient was turned to the right lateral decubitus position, we observed a marked increase in peak inspiratory pressure (PIP) from 40 cmH<sub>2</sub>O to 70 cmH<sub>2</sub>O and a decrease in transcutaneous  $PO_2$  ( $PtcO_2$ ) from 220 to 24 mmHg. An ABG immediately showed a  $Pa_{O_2}$  of 28 mmHg,  $Pa_{CO_2}$  32 mmHg, and  $pH_a$  7.41. The patient was quickly turned supine. Tracheal tube patency was confirmed by passage of a suction catheter with ease. The esophageal stethoscope and temperature probe were checked by direct laryngoscopy and found to be in the esophagus. Upon removal of the temperature probe, esophageal stethoscope, and nasogastric tube, the PIP decreased to 40 cmH<sub>2</sub>O with no change in tidal volume ( $V_T$ ) of 80 ml, which was maintained throughout the episode. The  $PtcO_2$  increased to 200 mmHg, and the ABG improved rapidly using  $FI_{O_2}$  of 1.00 with a  $Pa_{O_2}$  of 240 mmHg,  $Pa_{CO_2}$  21 mmHg,

and  $pH_a$  7.61. The remainder of the intraoperative and postoperative course was uneventful with the division of the right aortic arch.

We conclude that in patients with double aortic arch and respiratory distress, esophageal monitors can compress the trachea below the endotracheal tube, resulting in airway obstruction. Ventilation should be monitored carefully during insertion of esophageal monitors in such patients, and alternate methods of monitoring should be considered if airway obstruction is detected.

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#### REFERENCES

1. Wychulis AR, Kincaid OW, Weidman WH, Danielson GK: Congenital vascular ring: Surgical considerations and results of operation. *Mayo Clin Proc* 46:181-188, 1971
2. Roesler M, de Leval M, Chrispin A, Stark J: Surgical management of vascular ring. *Ann Surg* 197:139-146, 1983

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