Tracheocele Showing a Distinctive Bullfrog-breathing Pattern

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A 68-yr-old man with invasive thyroid cancer underwent thyroidectomy and tracheal resection. Two days postoperatively, he developed increasing respiratory distress. Examination of his neck showed a subcutaneous air pouch (indicated by *arrows*), which alternately inflated during expiration (panel *A*) and deflated during inspiration (panel *B*).

Tracheocele describes an air pocket in the neck that communicates with the tracheal lumen. Although it may be congenital, it most commonly results from surgeries involving the trachea such as tracheostomy, tracheal resection, and tracheocutaneous fistula repair.[1]

Anatomically, this unusual breathing pattern occurs because rigid tracheal rings hold patent a tracheal defect throughout the respiratory cycle that allows both the exit and the re-entry of expired air to the trachea. Physiologically, the subcutaneous reservoir increases work of breathing by adding significant dead space, eventually leading to hypercapnia, hypoxemia, and respiratory failure.

Computed tomography may aid in diagnosis[2] (panel *C*) but does not consistently show the small fistula tract. Similarly, bronchoscopy is often required for confirmation, but the view can be impeded by the endotracheal tube (ETT) itself. Detection of this characteristic bullfrog-breathing pattern should raise the suspicion of a tracheal air leak after cervical surgery.

Treatment includes drains with pressure dressings for asymptomatic patients, whereas surgical repair is required for symptomatic patients. Positive pressure ventilation may lead to serious air leak and subcutaneous emphysema. Intraoperative airway management should include spontaneous ventilation, bronchoscopy for intubation, and positioning of the ETT cuff distal to the defect.[3] A video of the tracheocele can be viewed in Supplemental Digital Content (http://links.lww.com/ALN/C686).

Competing Interests

The authors declare no competing interests.

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Supplemental Digital Content is available for this article. Direct URL citations appear in the printed text and are available in both the HTML and PDF versions of this article. Links to the digital files are provided in the HTML text of this article on the Journal's Web site (www.anesthesiology.org). The affiliated case was presented at the virtual Canadian Anesthesiologists' Society meeting on June 19, 2020.

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