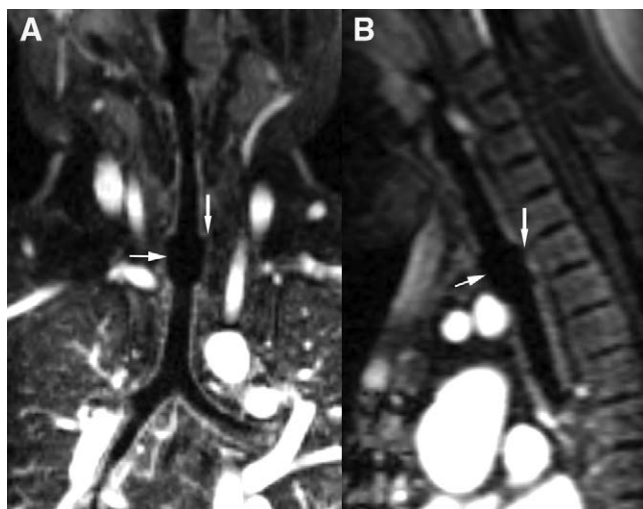


Inadvertent Endotracheal Cuff Hyperinflation Diagnosed by Magnetic Resonance Imaging

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ENDOTRACHEAL tube (ETT) cuff hyperinflation was incidentally diagnosed in a 5-yr-old maintained on N₂O-free general anesthesia (Microcuff, 4.5 mm, inflated with 1.8 ml of air) during cardiac magnetic resonance imaging preceding catheterization. Magnetic resonance angiograms reformatted in coronal (image A) and sagittal (image B) planes of the trachea demonstrate pronounced tracheal distention (*thin arrow*) at the ETT cuff site, with a thinner contrast-enhanced layer of the tracheal wall (*thick arrow*), suggesting a degree of mucosal compression. Subsequent cuff manometer measurement demonstrated a pressure of 30 cm H₂O, indicating that too high of an airway pressure was applied when testing for an air leak.

Cuff overinflation is associated with complications secondary to compromise of tracheal mucosal perfusion and compression of nearby structures, including sore throat, postextubation stridor, laryngeal or tracheal lesions, vocal cord paralysis, and recurrent laryngeal nerve injury.¹

Although intracuff pressures of at least 25 to 30 cm H₂O are recommended in adults, a lower limit of at most 15 to 20 cm H₂O in children is supported by the literature.^{2,3} Small volumes of inflated air in ETTs can inadvertently lead to cuff diameters 2 to 2.5 times the age-corresponding internal tracheal diameter and intracuff pressures up to 120 cm H₂O, including in ETTs designed with high-volume, low-pressure cuffs.³

Thus, cuff inflation should be periodically evaluated during anesthesia to assure that overinflation is not present. Cuff pressure is assessed by palpation of the pilot balloon, abolition of air leak at a continuous positive airway pressure of 20 cm H₂O, or cuff manometry.² However, the former clinical endpoints alone are associated with significant cuff hyperinflation.¹

Competing Interests

The authors declare no competing interests.

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