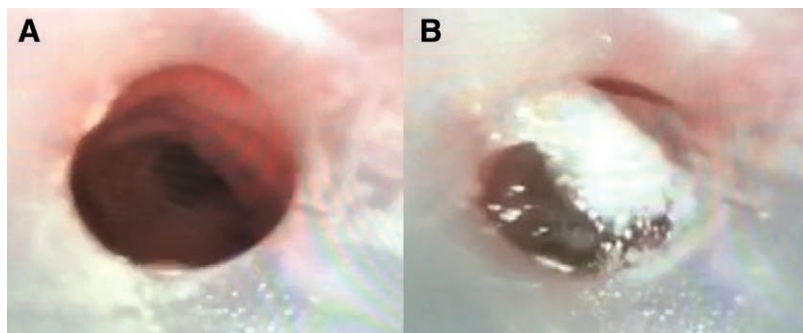


# Endotracheal Tube Obstruction Caused by Cuff Hyperinflation

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**W**HILE endotracheal tube obstruction by the air cuff is rare, it is not a new phenomenon. As early as 1957, cuff hyperinflation was a reported cause of ventilation failure, leading to several deaths.<sup>1</sup> Most commonly, airway obstruction results from herniation of the thin pliable cuff plastic, either into the lumen of or around the end of the endotracheal tube (Images *A* and *B*, *in vivo* deflated and hyperinflated; video, Supplemental Digital Content 1, <http://links.lww.com/ALN/B706>, and 2, <http://links.lww.com/ALN/B707>,

which demonstrate distal obstruction by the air cuff *in vivo* and *ex vivo*, respectively). These herniation events may be even more likely in the presence of nitrous oxide, due to diffusion of the gas into the closed space of the cuff.<sup>2</sup> To avoid hyperinflation, an excessive volume of air in the endotracheal cuff should be avoided. The clinician may periodically auscultate the neck to determine the minimum cuff inflation volume at which the inspiratory air leak disappears.

Endotracheal cuff obstruction does not generally appear in modern algorithms for management of ventilation failure in the intubated patient.<sup>3</sup> Here, standard maneuvers may fail to reveal the cause, because suction catheters can sometimes pass around the obstructing cuff while ventilation remains insufficient. Direct visualization clearly demonstrates the etiology, but bronchoscopy is not immediately available in all settings. This can lead to unnecessary and dangerous extubation and reintubation, or worse, nonrecognition of the problem and adverse outcome. For intubated patients with new onset ventilation difficulty, a trial of cuff deflation should be considered and should be included in updated airway management algorithms.

## Competing Interests

The authors declare no competing interests.

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