CORRESPONDENCE

To the Editor—A recent article by Reali-Forster et al.1 regarding the development of a new, thin-walled endotracheal tube (ETT) is reminiscent of earlier ETT designs. A prior “flanged” cuff2 was difficult to place and did not perform well, but the new and improved device shows promise because of its use of thin, compliant flanges and a highly flexible ETT molded to reflect airway anatomy. Lomholt developed an “anatomic” ETT in 1971 that later was criticized for being highly dependent on correct orientation and positioning for functional improvement,3 and, actually, anatomic differences among individual patients could create an inappropriate fit that would threaten worse laryngo-tracheal injury.

Of particular interest, Reali-Forster et al. intentionally position their “cuff” in the larynx. Laryngeal cuff placement may cause vocal cord paralysis because of recurrent laryngeal nerve ischemia, and both a laryngeal cuff and a soft ETT predispose to spontaneous ETT dislocation.4,5 Laryngeal positioning has seemed undesirable, probably not because the larynx is more susceptible to ischemic injury than the trachea, but because the patient is likely to be more cognizant and upset by damage to the larynx. My own work convinced me that placing a high volume, low pressure (hi-lo) cuff in the larynx (1) improves its sealing ability by limiting conformational changes that would normally occur, and (2) may result in much lower pressures exerted on the airway wall. Laryngeal cuff placement deserves further investigation.

The assertion that the flanged cuff exerts “no pressure” on the larynx is puzzling. Obviously, the flanges must press against the airway wall with a force at least equal to airway inflation pressure, or gas would escape around the cuff. Although a single flange is highly compliant, in vivo flanges interact with each other, the airway wall, secretions, and the airway inflation pressure. The flanges likely function similar to a “parachute cuff,” exerting a pressure on the airway wall equal to but not exceeding the airway inflation pressure.6

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New Endotracheal Tube Cuff Recalls Past Efforts: Focuses on Laryngeal Placement


Fig. 1. Assembled portable suction device.
Although the merits of a thin-walled ETT are obvious with respect to airway resistance, the impact of this new cuff is less clear to me. Properly inflated, the current hilo cuff functions well in the operating room with little or no major morbidity; it is difficult to argue that the hilo cuff design should be replaced. However, the hilo design functions poorly during mechanical ventilation with high airway pressures, predisposing patients to tracheal ischemia and necrosis. Even under “high pressure” conditions, modifying the hilo design can significantly improve its performance. Reali-Forster et al should be encouraged to develop their new “cuff” for use in patients with reduced lung compliance, comparing their new design to both standard and modified hilo cuffs.

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Fig. 1. The Shaw Hemostatic Scalpel.