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Maintaining ventilation through the Montgomery t-tube

The Montgomery T-tube was first introduced in 1980¹ to be used in place of a standard tracheostomy tube for patients with tracheal defects. The problem of artificial ventilation through the T-tube remains however. The previously described method of using a Fogarty catheter to obstruct the upper intraluminal limb of the T-tube is not suitable for long term ventilation.² We describe a new method of ventilation through the T-tube using a customized armored tube.

Two adults with ventilatory dependency due to C1 quadriplegia and subglottic stenosis were referred to the Southport Spinal Injuries Unit for long term ventilation and rehabilitation one month following road traffic accidents. Both patients required silicone T-tube insertion subsequently. In preparation for this procedure both patients underwent diaphragmatic pacing to maintain breathing by electronic stimulation during the T-tube insertion under total intravenous anesthesia.

A 5 mm I.D. armored tube, (8 mm O.D.) with a standard 15 mm connector, and 10 cm long, had been ordered specially to fit a 14 mm I.D. T-tube (Boston Medical Products). After its insertion into the T-tube, the proximal end of the armored tube was engaged firmly into the outer limb of the T-tube to provide an air-tight seal (Figure). It was then possible to provide adequate pulmonary ventilation through the T-tube using a Puritan Bennett 2801 companion in the pressure control mode. In this way, an essential alternative mode of ventilation to diaphragm pacing was easily available without the need to remove the T-tube.

Whilst this method of ventilation can be used for anesthesia, an advantage for long term transtracheal ventilatory assistance is its ability to provide both adequate pulmonary ventilation and a translaryngeal air-flow sufficient for speech.

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FIGURE A sagittal section showing the trachea with a Montgomery t-tube in situ and its removable inner armored tube for use with pressure control ventilation.

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