

Control of Endotracheal Tube Cuff Pressure Using a Simple Device

To the Editor:—Regulation of endotracheal tube cuff pressure to a safe range^{1,2} requires frequent adjustment. We have devised an inexpensive, reusable, and readily available device which may be constructed to automatically regulate endotracheal tube cuff pressure (fig. 1).

A 10 cc syringe barrel is taped upright to a pole near the patient's head. A 79 cm length of tubing (Venisystem®) is attached to the syringe and run downward for the distance desired (distance A-B in fig. 1, *i.e.*, 25 cm for a pressure of 25 cm H₂O). The tubing is taped to the pole at this point, and the rest of the tubing is coiled in approximately three turns and taped perpendicular to the pole, leaving 10 cm of tubing at the end. The end of the iv tubing is clamped off and the syringe barrel filled to the top with water. The clamp is then slowly released to allow the tubing to fill to the last turn in the coil, and then the tubing is reclamped.

After the trachea has been intubated, a seal is effected by inflating the cuff with air just until no leak is heard with lung inflation. The end of the extension tubing is

plugged into the pilot balloon port and the clamp released. The intracuff pressure now equals the height of the water column. With N₂O diffusion³ or increased tracheal tone, gas will be displaced from the cuff and will push the water up along the coils, but the height of the water column will be essentially unchanged. Similarly, with decreased tracheal tone, water will move down along the coils and maintain the same water column height and, thus, the same cuff pressure (The device may be placed at any convenient height relative to the patient's head, as the height of the water column remains constant no matter where it is placed).

Prior to extubation, the iv tubing is clamped off and is separated from the pilot balloon port. It can then be reused for the next case. The cuff is then deflated with a syringe, and the patient is extubated in the usual fashion.

The patient must be checked frequently for occurrence of a cuff leak. If a leak develops, more air is added to the cuff and the device is reconnected.

This simple device has proven useful, particularly in prolonged anesthetics, and should prevent aspiration and ischemic tracheal mucosal damage by regulation of cuff pressure to a safe range.

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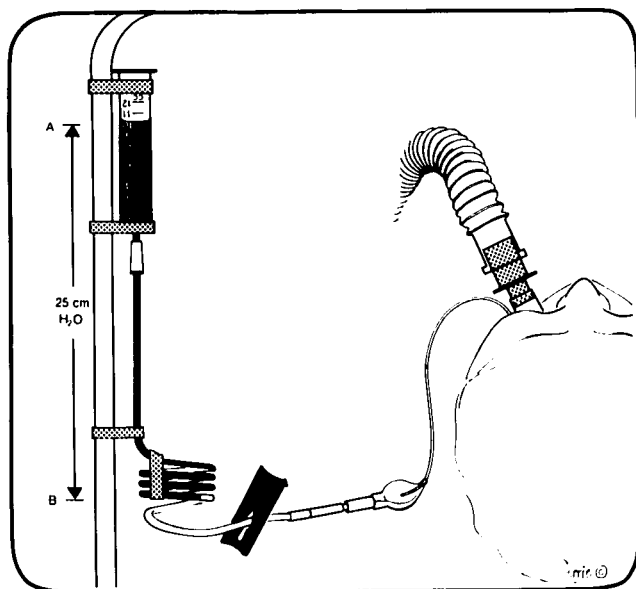


FIG. 1. A simple device to automatically regulate endotracheal tube cuff pressure.