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How-to-do-it

A new technique for T-tube insertion in patients with subglottic stenosis

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Abstract

A silicone T tube is widely used for the management of airway problems. Montgomery described the way in which it is usually inserted, but this conventional insertion technique can fail in cases of subglottic stenosis due to the softness of the T tube, which kinks when forced against resistance. An adjunct to the traditional technique of Montgomery may help to insert a T tube in such patients.

Keywords: Montgomery T tube; Subglottic stenosis; Device; Bronchoscopy/bronchus; Endoscopy/endoscopic procedures

A bronchoscopy for evaluation is done under topical anaesthesia and sedation. The patient is then submitted to general anaesthesia, usually maintained in spontaneous ventilation. The airway is dilatated with suspension laryngoscopy or rigid bronchoscopy and Montgomery insertion is initiated. When we found difficulties in placing the proximal end, we used the technique as depicted in Fig. 1. Using an intubation laryngoscope and a Magill grasper, a 10-F nasogastric tube (NT) is folded and inserted through the mouth and exteriorised by the tracheostoma. It is then introduced through the proximal end of the Montgomery and exteriorised in the extraluminal limb. The folded NT is introduced through the distal perforation of the Foley catheter, creating a large loop which can be passed around the T tube. The NT is then tractioned back in such a way that it becomes firmly attached to the Foley catheter. A forceps grasps the distal end of the Montgomery T tube inserting it into the trachea in the classical manner. Stretching the set NT/Foley catheter helps to introduce the proximal end inside the trachea. The bronchoscopic direct vision allows the Foley catheter to be insufflated, as many times as necessary, until the T-tube proximal end inside the stenotic area is completely unfolded and adjusted (Fig. 2).

Using this technique in the last six ambulatory patients with conventional Montgomery technique failure, we succeeded optimal location of the proximal end without requiring other auxiliary techniques (i.e., trachea re-dilatation, suspension laryngoscopy or rigid bronchoscopy).

1. Discussion

Some modifications of the technique have been described in the literature when conventional placement fails [1]. These modifications use laborious manoeuvres and require the use of rigid bronchoscopy or suspension laryngoscopy.

Cooper [2] has used the umbilical tape to place the proximal end of the intraluminal limb in the stenotic subglottic space. This tape is passed through the external limb and proximal end of the T tube, goes through the tracheostoma, and is pulled out by the mouth with a rigid bronchoscope.

Shapshay [3] straightened a folded proximal end of the intraluminal limb by pulling with a forceps using a rigid bronchoscope.

Kato [4] used a cone-shaped dilator placed beforehand at the proximal end of the intraluminal limb of the T tube. Once the set is inserted into the tracheostoma, it is possible to pull it out by the mouth making the proximal end of the T tube

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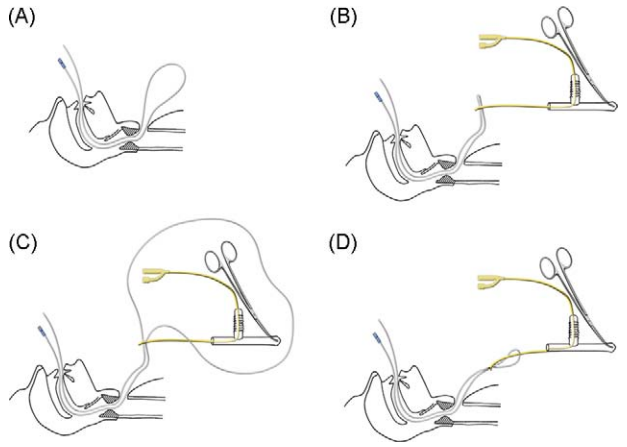

Fig. 1. Four steps for attaching the nasogastric tube to the conjunct of the Foley and Montgomery T tube. (A) The double nasogastric tube is inserted through the mouth and retrieved through the tracheostomy stoma; (B) the extremity of the nasogastric tube in inserted through the role of the Foley catheter already passed through the external branch of the Montgomery and exteriorised by the proximal extremity; (C) the nasogastric tube is enlarged and englobe the conjunction of the Foley and the Montgomery; and (D) after embracing the conjunction the nasogastric tube is stretched and firmly tied to the Foley catheter functioning as an extension of the Foley.

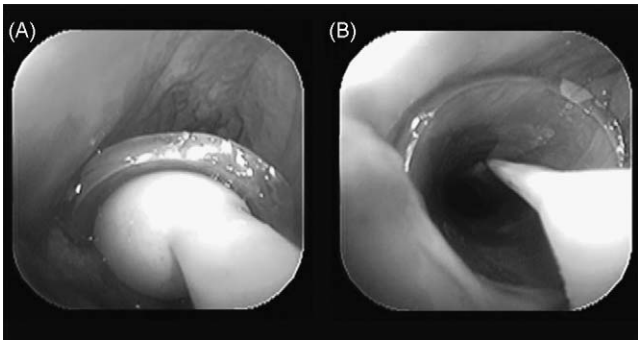

Fig. 2. A bronchoscopic view showing: (A) the insufflated cuff of the Foley catheter inside the proximal end of the T tube pulling it through the subglottic stenotic area; and (B) the T tube positioned in the subglottic space.

with the cone dilator pass through the stenotic subglottic space.

Bibas intubated the patient with a cuffed endotracheal tube elongated by an uncuffed tube until this set can be pulled out by the tracheostoma. He inserted the tip of this long tube into the proximal end of the T tube and inflated the cuff so that both tubes become connected and he could pull them together, allowing the proximal end to be inserted inside stenotic subglottic area [5].

There are three advantages with our technique: a T tube can be inserted without the aid of suspension laryngoscopy or rigid bronchoscopy; insufflating the cuff of the Foley catheter helps to adjust the prosthesis in the subglottic stenotic area; and, under direct bronchoscopy, we can view the cuff insufflation which can be repeated as many times as required. Moreover, Foley catheters are ubiquitous, have the required cuff, are not expensive and with their use this technique has good results.

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