Removal of Obstructing T-Tube and Stabilization of the Airway

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INTRODUCTION

The Montgomery T-tube was introduced in 1965 to support the trachea following laryngotracheoplasty [1]. The tube is inserted into the upper trachea or larynx following trauma or surgery and is available in sequentially increasing sizes for children and adults [1-3]. It maintains the tracheal airway and also serves as a stent, protecting the airway from collapse or stenosis thereby allowing for speech and respiration through the native airway. Thankfully, complications of T-tubes are rare. Obstruction of the distal tracheal limb is the most dreaded complication of a T-tube. Many otolaryngologists send their patients home with a small-sized ETT and instructions to place the tube down the distal tracheal limb should they start to develop air hunger from an obstructed T-tube. Unfortunately, though this may seem feasible from the practitioner’s standpoint and from the standpoint of a calm, non-laboring patient, this is rarely a simple task in the face of acute airway obstruction. Moreover, the ETT, being of a smaller caliber than the T-tube, may become occluded with whatever is obstructing the T-tube (mucus plug, granulation tissue, blood clot, etc.). Therefore, we describe a simple method by which a patient should be able to remove their occluded T-tube and re-secure their airway with a tracheostomy tube.

PATIENT INSTRUCTIONS

Patients require extensive education on caring for their T-tube. Before explaining to them the simple steps required to remove their T-tube, they need to be educated on the signs and symptoms of impending and active airway occlusion. They also require education on the instruments they will be sent home with.

Patients will be sent home with two instruments: (1) a curved Kelly clamp and, (2) a tracheostomy tube that is small enough to easily pass into their well-formed stoma. The patient should become familiar with the locking mechanism of the Kelly clamp and of the force required to successfully remove the T-tube from the airway. In terms of the tracheostomy tube, the patient should be instructed on the importance of the inner cannula and its frequent removal and washing. Moreover, education on the lack of a T-tube inner cannula should be discussed so they can understand the dynamics and urgency of T-tube occlusion. Education is of utmost importance, because although the procedure is quite simple for otolaryngologists, it may be all that a patient is capable of undertaking in a life-threatening situation.

DISCUSSION

Though the technique described above may seem simple to practicing otolaryngologists, the fact of the matter is that patients are not surgeons. In a life-threatening situation, when a patient has limited time to relieve their airway obstruction, they need a simple, repeatable, and minimally invasive procedure. Therefore, at our institution, we feel that complete removal of the obstructing T-tube in a one-step process is the best option. Our procedure is far less cumbersome than trying to slide a small ETT down a small opening in one’s own neck.

When deciding on the appropriate tracheostomy size to send the patient home with, we always err on the smaller side. At the time of T-tube placement, a tracheostomy tube is also sized within the stoma. We decide which size of tracheostomy tube fits whatever is obstructing the T-tube (mucus plug, granulation tissue, blood clot, etc.). Therefore, we describe a simple method by which a patient should be able to remove their occluded T-tube and re-secure their airway with a tracheostomy tube.

CONCLUSIONS

Although they are extremely effective in maintaining tracheal and subglottic patency, T-tubes themselves can result in airway obstruction from plugging. Many practitioners educate patients on placing a small (5.0) endotracheal tube (ETT) through the tracheal limb of the T-tube if they develop airway obstruction. Unfortunately, this can be a difficult task to complete during acute airway obstruction. In this article, we describe a simple set of steps for rapid relief of airway obstruction and stabilization of the airway in the event of T-tube obstruction. This method requires removal of the T-tube with a Kelly clamp and stabilization of the airway with a tracheostomy tube. Although it is simple, we hope that this technique will prevent morbidity and mortality from acute airway obstructions related to T-tubes.

REFERENCES