

***In situ* remodeling of Montgomery T-tube: Anesthetic challenges and serendipitous discoveries**

Dear Editor,

Montgomery T-tube (T-tube) acts as a breathing conduit and tracheal stent post-laryngo-tracheoplasty [Figure 1].^[1] Administering general anesthesia (GA) to patients with T-tube is challenging, especially for surgeries in the laryngotracheal region. We describe anesthetic management for an *in situ* remodeling of T-tube requiring controlled ventilation.

A 35-year-old female underwent tracheoplasty and insertion of a 12-mm (Invotec®) T-tube for blunt laryngotracheal injury, sustained after entanglement of neck scarf in the fodder machine. Direct laryngoscopy 2 days post-tracheoplasty revealed protrusion of T-tube proximal end above the glottis. The upper end of the T-tube should be 0.5–1 cm below the glottis to avoid glottis dysfunction and pulmonary aspiration.^[2] The patient was scheduled for trimming of protruding proximal end of T-tube under GA; posing unique anesthetic challenges: (1) Muscle relaxation to avoid movement and injury to the vocal cords in the surgical field, (2) combating leak of inspired gases from the T-tube proximal end during controlled ventilation, and (3) allowing unobstructed surgical access in the laryngotracheal region, obviating occlusion of T-tube proximal end with Fogarty catheter or laryngeal mask airway.^[1,2]

The patient was kept fasting overnight and intravenous (IV) ranitidine 50 mg and metoclopramide 10 mg were administered as anti-aspiration prophylaxis. The anesthesia circuit was

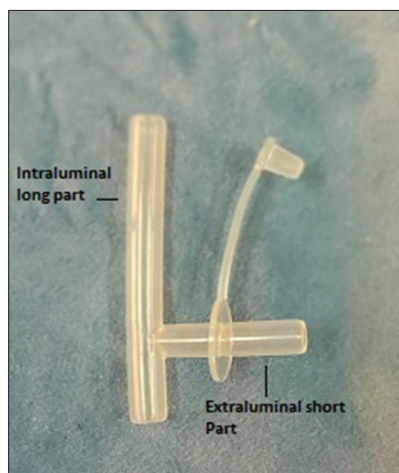


Figure 1: Montgomery T-tube

connected via a 15-mm standard endotracheal tube connector to the extraluminal part of T-tube. Patient received IV glycopyrrolate 0.4 mg, fentanyl 80 mcg and propofol 70 mg and anesthesia was maintained with Isoflurane (0.8–1 MAC) in oxygen: air mixture. This was followed by gentle laryngoscopy and occlusion of the T-tube proximal end with a small gauze. IV vecuronium 4 mg was given after ensuring adequate check ventilation. Fresh gas flow requirement increased indicating leak after administration of the muscle relaxant. The uncuffed T-tube is smaller in diameter than the airway to avoid compression-ischemia of tracheal mucosa.^[3,4] Peri-tubal leak around the T-tube (persisting after proximal lumen occlusion) reduced with oropharyngeal packing and intermittent oropharyngeal packing was planned to combat the same intra-operatively.

The oropharyngeal pack was removed followed by the application of a rigid laryngoscope by the surgeon to visualize the glottis and proceed with trimming of the T-tube. Fixing laryngoscope with its stand improved ventilation and fresh gas flow requirement. Rigid laryngoscope-induced obliteration of the leak space between the T-tube and reconstructed trachea seems to be the most plausible hypothesis behind the serendipitous finding. The trimming of the T-tube underwent successfully without the need of oropharyngeal packing. Following procedure, intraluminal gauge, and rigid laryngoscope were removed and oropharyngeal packing done, which was removed after reversing muscle relaxation.

Controlled ventilation through a T-Tube poses unique challenges due to leak from the proximal end and around the tube.^[5] Occlusion of the T-tube proximal end by a gauze piece proved to be a simple means of reducing the leak and providing a clear surgical field. Oropharyngeal packing further improved ventilation by reducing the peri-tubal leak. However, it restricts access to the surgical field necessitating intermittent unpacking thereby prolonging the procedure. The serendipitous finding of a reduction in leak following rigid bronchoscopy obviated the need for intermittent oropharyngeal packing, expediting laryngotracheal surgery with T-tube *in situ*.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Access this article online	
Quick Response Code:	Website: https://journals.lww.com/joacp
	DOI: 10.4103/joacp.JOACP_445_20

How to cite this article: Gupta P, Gupta M. *In situ* remodelling of Montgomery T-tube: Anaesthetic challenges and serendipitous discoveries. *J Anaesthesiol Clin Pharmacol* 2022;38:493-4.

Submitted: 19-Jul-2020

Accepted: 07-Mar-2021

Published: 02-Sep-2022

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