

Anaesthetic management of a patient with Montgomery T-tube *in situ* for T-tube removal

Sir,

The Montgomery T-tube was devised by William Montgomery in 1964 to prevent post-operative tracheal stenosis following reconstructive surgery on cervical trachea. It can be used as a combined tracheal stent and as an airway following laryngotracheal surgery.^[1] The T-tube has a vertical intraluminal (intratracheal) limb and a horizontal extraluminal end. It is available in various sizes ranging from 4.5 mm to 16 mm external diameter.^[2]

A 14-year-old boy weighing 50 kg was admitted for Montgomery T-tube removal. The patient had a history of attempted hanging 9 months back, for which, he was intubated, mechanically ventilated and was discharged later.

After two months, the patient developed difficulty in breathing and noisy respiration which was diagnosed as tracheal narrowing for which emergency tracheostomy was done. However, the symptoms persisted for which he was evaluated further. Computed tomography neck revealed tracheal stenosis at the level of C5–C6.

The patient was planned for tracheal exploration and excision of the stenosed segment under general anaesthesia. He was intubated using a 6 mm laser resistant endotracheal tube which was introduced through the tracheostomy stoma and was maintained under controlled ventilation [Figure 1a].

Laser excision of the membranous band in the tracheal lumen was done and the granulation tissue found around the tracheostomy stoma was removed using coblation and diathermy and the stenotic segment was adequately widened. Following this, the neuromuscular blockade was reversed and when the spontaneous efforts were adequate, the endotracheal tube was replaced with an 8 mm Montgomery T-tube and the wound was closed after local infiltration [Figure 1b]. The post-operative period was uneventful. He was subsequently discharged and was advised for monthly follow-up.

Now, after 6 months, the patient got admitted for the Montgomery T-tube removal since the extraluminal limb of the T-tube got damaged. T-tube removal was attempted under local anaesthesia but was unsuccessful due to extensive granulations. Hence, it was planned at a later time.

This time, the patient was planned for T-tube removal under general anaesthesia. His general examination and basic investigations were within normal limits. The patient was shifted inside the operation theatre and standard monitors were connected. He was pre-medicated with injection glycopyrrolate 0.2 mg intravenous (IV), injection midazolam 1 mg IV, injection fentanyl 100 µg IV and injection ranitidine 50 mg IV. He was pre-oxygenated with 100% oxygen for 3 min after occluding the extraluminal limb with the spigot. He was induced with intermittent doses of propofol along with increasing concentrations of sevoflurane. A size 3 laryngeal mask airway (LMA) was placed and was maintained under spontaneous ventilation with oxygen, nitrous oxide and sevoflurane 1%–2% along with propofol infusion. Local infiltration of the site was done and the T-tube was removed with some

difficulty due to the extensive granulations around the tube [Figure 1c].

As the T-tube was removed, the LMA was removed and a 6.5 mm cuffed flexometallic tube was introduced orally which extended intraluminally beyond the T-tube removal site and was secured. After confirming the ET tube position, the patient was immediately paralysed with injection atracurium 25 mg iv and was maintained under controlled ventilation. The T-tube closure was done after excising the granulomatous tissue around the site. Neuromuscular blockade was reversed and the patient was extubated after full recovery. The post-operative period was uneventful. He was discharged after 1 week and was advised regular follow-up.

The main advantage of the T-tube includes the preservation of normal respiration and phonation with minimal tissue reaction to the silicone material.^[3]

The main drawbacks are the need of a tracheostomy stoma and unpleasant cosmetic appearance. It is not suitable for positive pressure ventilation and in patients at risk of aspiration.^[3]

The management of patients with T-tube *in situ* poses difficulty in controlled ventilation as T-tubes are not provided with standard connectors to fit with the anaesthesia breathing circuits.^[4] Misplacement of the upper or lower limb can cause acute airway loss. Moreover, the upper open-end causes dilution and leakage of inspired gases leading on to inadequate depth of anaesthesia and chances of awareness.^[3] In surgeries involving the upper airway, sharing of the

surgical field poses an added challenge.^[5] Furthermore, many anaesthesiologists are unfamiliar with the device.

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Conflicts of interest

There are no conflicts of interest.

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REFERENCES

- Hu H, Zhang J, Wu F, Chen E. Application of the montgomery T-tube in subglottic tracheal benign stenosis. *J Thorac Dis* 2018;10:3070-7.
- Kerai S, Gupta R, Wadhawan S, Bhadoria P. Anesthetic management of a patient with Montgomery t-tube in-situ for direct laryngoscopy. *J Anaesthesiol Clin Pharmacol* 2013;29:105-7.
- Shetty DJ, Chidananda Swamy MN, Tandon S. Airway challenges in laryngotracheoplasty with montgomery t-tube for subglottic stenosis. *Indian J Anaesth* 2018;62:145-7.
- Sanjay J, Kaur K, Mamta B. Airway management in patient for montgomery t-tube insertion. *Indian J Appl Res* 2015;11:79-80.
- Gadre VN, Ramteke DB, Yadav SR, Mundrawala EG. Anaesthesia for tracheal reconstruction-Neither a dilemma nor a catastrophe. *Indian J Anaesth* 2019;63:152-3.



Figure 1: (a) 6 mm laser resistant endotracheal tube was introduced through the tracheostomy stoma. (b) Montgomery T-tube. (c) Montgomery T-tube removal

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