Anaesthetic Management in a Patient with Montgomery T-tube *in situ*

Sir,

Montgomery T-tube is used after laryngotracheoplasty to act as both tracheal stent and an airway. It is an uncuffed, silicon tube having a long intratracheal limb and a short extratracheal limb projecting through tracheostomy stoma.[1] It presents challenges during its surgical insertion and also during anesthetic management of patients with T-tube *in situ*. While many authors have described anesthesia for insertion of T-tube,[1-5] there are few case reports of anesthetic management in patients with T-tube *in situ*.[1,3,6]

A problem associated with Montgomery T-tube is that a fraction of gas passes across the tracheal stoma into the lungs and the rest leaks out through the upper laryngeal end of the tube. Also the open superior end of the T-tube intratracheal lumen allows entrainment of air during inspiration resulting in dilution of anesthetic gases.[6] Therefore, induction and maintaining adequate depth of anesthesia with inhalational anesthetic alone is difficult. Moreover, controlled ventilation is ineffective and hazardous. Furthermore, the nonstandard fitting at the external opening of the extratracheal lumen of Montgomery T-tube requires modification with a tracheal tube 15 mm connector for attachment of an anesthetic circuit.

A 42-year-old female, 40 kg, presented with complaints of difficulty in breathing and hoarseness of voice. She was clinically diagnosed as a case of tracheal stenosis. Radiograph of the cervical soft tissue showed narrowing of airway at C7 vertebra and C7-T1 disc. Computed tomography (CT) scan showed initial stenosis of infraglottic airway due to circumferential mural thickening. She underwent cricotracheal reconstruction 2 months back and Montgomery T-tube was inserted in the trachea. Next, patient was posted for upper airway assessment under general anesthesia to assess the chances of establishment of a physiological airway after removal of T-tube. On clinical examination, patient was ASA–II and Mallampati Class 2. Replacement of the device with a cuffed tracheostomy tube before induction would leave the tracheal cartilage graft unsupported and is considered the last resort of airway management.[6]

In order to overcome the above-mentioned problems, we modified a Bains circuit with a Y-connector at the patient end to which two circuit limbs, borrowed from the Jackson Rees Modification of Ayre's T-Piece, were attached, so that gas flow in Bains circuit was divided into two parts. In our case, universal connector of endotracheal tube number (no.) 7 was found to be fitting snugly to T-tube size 10 *in situ*. One of the dual limbs of the circuit was attached to the universal connector and the second limb was attached to the face mask. High flow rates were used to compensate for the escape of gases from the upper end of intratracheal lumen and to compensate for our alteration of Bains circuit. Premedication was done with fentany l80 µg intravenous (iv) and glycopyrrolate 0.2 mg iv. Induction was done with Inj. propofol 80 mg. iv, and oxygen (O_2), nitrous oxide (N_2O), and halothane via the facemask. It was followed by insertion of proseal laryngeal mask airway (LMA), but it failed. Repeat attempt was done with the help of a laryngoscope, but it failed too. So the primary plan was abandoned and the Bains circuit was directly attached to the Montgomery T-tube via universal connector. Anesthesia was maintained with O_2 33%, N_2O 66%, and Halothane 0.4–0.8% and iv propofol infusion at the rate of 2–3 mg/kg/h. Patient was allowed to breathe spontaneously. Since the surgeon could not assess the upper airway with fiber optic bronchoscope, a rigid bronchoscopy was performed. The vocal cord mobility was limited bilaterally and the patient had endolaryngeal edema. Hence, it was decided to retain the Montgomery T-tube *in situ*.

We successfully managed the case by simultaneous delivery of anesthetic gases via T-tube and the face mask and using propofol infusion along with volatile anesthetics for maintenance of anesthesia. This method not only provides a means to ventilate the patient's lungs but also leaves the upper airway patent for bronchoscopic assessment of upper airway. Anesthetists in a similar situation may find our technique useful.

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