Intra-operative accidental extubation- An unexpected complication of the flexo-metallic tube

Madam,

We would like to share an unexpected complication, which is hitherto unreported, that we encountered while using a flexometallic tube in a child undergoing thyroid surgery.

Written parental consent was obtained for publication of the data.

Reinforced or flexometallic tracheal tubes (TTs) are known for their flexibility combined with sturdiness, and therefore, are the preferred mode of securing the airway in any situation where a kink or compression of the TT is anticipated during the intraoperative period. In spite of this advantage, reinforced tubes can at times lead to complications. Most of these reports deal with inability to ventilate and suction either because of persistent tube deformity after bite\(^1,2\) or structural damage due to weakening of the tube framework after repeated sterilization.\(^3\)
A 14-year-old child was scheduled for total thyroidectomy for a malignancy. The thyroid gland was enlarged to a size of 8 cm × 4 cm and consistency varied from firm to hard with a lobulated surface. After an uneventful induction of anesthesia, airway was secured with a 5.5 size cuffed, flexometallic tube, which was taped to the left side of the mouth. Along with total thyroidectomy, central compartment clearance and bilateral neck dissection were carried out. The period of surgical dissection was accompanied by significant external manipulation of the neck and thyroid. After a while, loss of the end-tidal carbon dioxide graph was observed, and the child desaturated to 94%. It was also not possible to bag ventilate the child by hand. On direct laryngoscopy, the TT was found to have slipped out of the trachea and lying in the left pyriform fossa. However, it was still secure at the angle of the mouth because of the adhesive tapes. Surgery was interrupted to mask ventilate the child with 100% oxygen, with which the oxygen saturation increased to 100%. The patient was then reintubated immediately with a classical cuffed TT and surgery continued.

Here, we would like to highlight that the very characteristics that confer the advantages, also render certain disadvantages to the reinforced TT. The metal or nylon wire wound into the silicone rubber wall of the tube adds to its strength, and thereby, prevents the lumen of the tube from collapsing in case of any external compression. In addition, the increased flexibility prevents the tube from kinking in the event of acute flexion of the tube. However, this wire also imparts an added elastic recoil force to the tube, which could increase its tendency to dislodge from the secured position.[4] This can lead to accidental extubation and result in loss of the airway which can have catastrophic results if not detected immediately and intervened. Deanovic et al. have reported a case of accidental extubation with reinforced tube in cleft palate surgery where they encountered the problem due to intraoral adjustments before the procedure.[5] However, external manipulation of the thyroid gland was not anticipated to cause such an outcome.

While the reinforced tube will continue to be considered the sturdiest way to secure an airway against kinking or compression, we wish to draw our colleagues’ attention to the possibility of accidental extubation, and thereby, exercise caution while choosing a flexometallic tube in situations where significant manipulation of central neck structures may be anticipated.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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