Concealed kinking of pediatric flexometallic tube at fixation point

Sir,

There have been several instances of endotracheal tube kink reported in literature. However, kinking and obstruction of an armored tube is uncommon[1] and difficult to diagnose. We hereby present a case of airway obstruction due to concealed kinking of the flexometallic tube at the point of its fixation with tapes during a neurosurgery in prone position.

A 1-year and 9-month-old female child was posted for emergency repair of a leaking lumbosacral meningomyelocele in prone position. Preoperatively, the child had a history of mild cough (nonproductive) without any fever or nasal catarrh for 5 days and taking antitussive, antiallergic medication along with steam inhalation. There was no other medical history, apart from a congenital meningomyelocele, which had started leaking the night before presentation to our tertiary care center. The chest was bilaterally clear with no other laboratory or systemic abnormalities. Preoperative Glasgow coma scale was 15, and all vital parameters were within normal limits. Standard general anesthesia with muscle relaxation and endotracheal intubation was administered with the insertion of a 4.5 mm uncuffed oral flexometallic tube. After confirming bilateral air entry, the wire-reinforced tube was fixed with tapes at the 14 cm mark to the right corner of the mouth, before turning the patient prone. After an uneventful surgery, the child was turned supine, and preparations for reversal and extubation were made. On initial return of spontaneous respiration, there was a slight increase in the end-tidal CO_2 ($ETCO_2$) levels, and there was increased resistance felt in the ventilation bag of the pediatric circuit (Jackson Rees modification of Ayre's T-piece). In view of a previous history of cough and raised bag resistance, a decision to perform endotracheal tube suction was made under sterile conditions. Suction catheter could not be passed beyond the corner of the mouth. Successively smaller suction catheters could also not be negotiated beyond that point, despite successful ventilation through a pediatric Ambu bag. No obvious tube kink or obstruction was visible on direct laryngoscopic inspection of the oropharyngeal cavity. Immediately, preparations were made to change the flexometallic tube to a normal polyvinyl chloride uncuffed tube of equivalent size after adequate preoxygenation and keeping the difficult airway cart ready. On removal of the armored tube and oral suction, an uncuffed 4.5 mm portex tube was inserted using direct laryngoscopy and bilateral air entry confirmed. A suction catheter was now able to be passed through the fresh endotracheal tube and thin, watery secretions suctioned out. The child was then extubated using standard extubation protocols. The child maintained oxygen saturation and other vital parameters well during the entire perioperative period. The rest of the postextubation period was uneventful.

On closer examination of the removed flexometallic tube, no kink was visible from outside till the time the fixation tapes were removed completely. A definite kink was noticed at the external diameter of the armored tube at the 14 cm mark, which was concealed in the intraoperative period under the wraps of the fixation tapes [Figures 1 and 2]. Tube

Figure 1: The removed flexometallic tube along with the fixation tapes

obstruction was diagnosed only at the time of extubation due to nonpassage of suction catheters. Ventilation despite a tube kink has been reported in literature.[2] Other factors supporting a tube obstruction were the slowly rising $ETCO_2$ and airway resistance[3] on turning the child supine. Sustained external pressure on the flexometallic tube at the site of tube fixation in the prone position could have resulted in tube kinking. We acted promptly on suspicion of tube obstruction, by immediate tube change, confirming bilateral air entry, and passage of suction catheter through the fresh endotracheal tube. The external tube kink, which is uncommon in an armored tube, was visible only on removal of the fixation tapes. This concealed flexometallic tube kink at the fixation point is a rare complication, with disastrous consequences, if not diagnosed and managed promptly. There have been several instances of tube blockade or kinking in pediatric anesthesia and in surgeries done under prone position.[4] Eternal vigilance by the anesthesiologist along with quick securing of the airway with a fresh tracheal tube is the key to success.[5]

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Uma Hariharan, Priyanka Shrivastava, Alka Gupta, Nihar Nalini Senapati

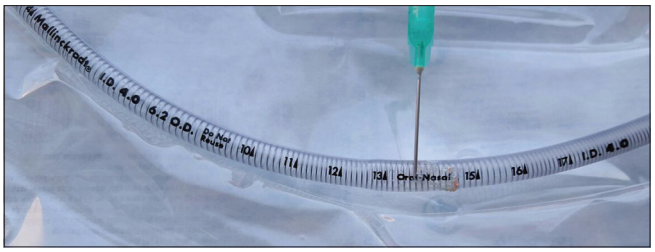

Figure 2: Kinking of the armored endotracheal tube at the fixation point (14 cm mark)

Departments of Anaesthesia and Intensive Care, Dr. Ram Manohar Lohia Hospital, Central Health Services, Postgraduate Institute of Medical Education and Research, New Delhi, India

Address for correspondence:
Dr. Uma Hariharan,
[Fellowship Oncoanaesthesia] Assistant Professor, BH 41, East Shalimar Bagh, New Delhi - 110 088, India.
E-mail: uma1708@gmail.com

References

1. Sweeney B. Franz Kuhn. His contribution to anaesthesia. Anaesthesia 1985;40:1000-5.
2. Hariharan U, Baduni N, Singh BP. Ventilation despite an endotracheal tube kink! Sri Lankan J Anaesthesiol 2014;22:74.
3. Harless J, Ramaiah R, Bhananker SM. Pediatric airway management. Int J Crit Illn Inj Sci 2014;4:65-70.
4. Populaire C, Robard S, Souron R. An armoured endotracheal tube obstruction in a child. Can J Anaesth 1989;36:331-2.
5. Hariharan U, Garg R, Sood R, Goel S. Intraoperative kinking of the intraoral portion of an endotracheal tube. J Anaesthesiol Clin Pharmacol 2011;27:290-1.

Access this article online	
Website: www.saudija.org	Quick Response Code
DOI: 10.4103/sja.SJA_219_17	

How to cite this article: Hariharan U, Shrivastava P, Gupta A, Senapati NN. Concealed kinking of pediatric flexometallic tube at fixation point. Saudi J Anaesth 2017;11:507-8.