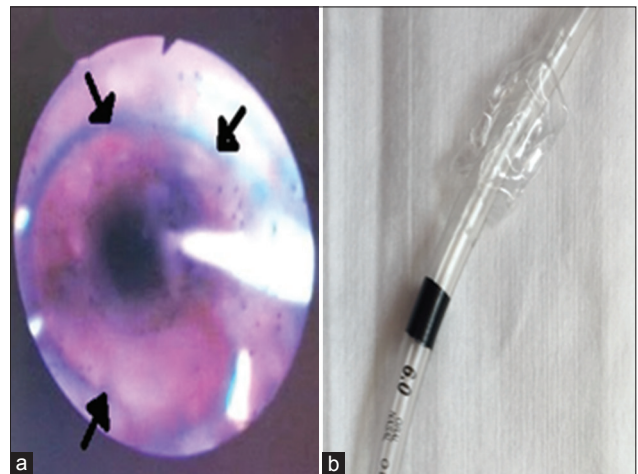


## Entrapped Tracheal Tube, an Unusual Cause of Extubation Failure Following Tracheal Resection and Reconstruction

Sir,

Early extubation failure following tracheal resection and reconstruction (TRR) is mostly due to tracheal edema, suture line dehiscence, wound hematoma, or delayed recovery from anesthesia. Here, we like to report extubation failure due to entrapment of tracheal tube (TT) by surgical sutures and its successful management in a patient who underwent TRR. Thirty-three-year-old, ASA 1, female patient was diagnosed as a case of post extubation tracheal stenosis and had a tracheostomy to relieve the proximal tracheal obstruction. She had an alleged history of organophosphate poisoning which resulted in respiratory failure and was mechanically ventilated for two weeks. Preoperative fiberoptic bronchoscopic (FOB) examination showed complete tracheal stenosis at the level of fourth tracheal ring at about 3.5 cm distal to the vocal cords with normal mobility of vocal cords. On the scheduled day of surgery, under standard monitoring after intravenous induction, tracheostomy tube was exchanged to 6 mm internal diameter armored cuffed TT and controlled ventilation was started. Another polyvinyl chloride (PVC) TT was inserted through the oral cavity across the glottis into the blind end of stenosed part of proximal trachea. After the resection of the diseased trachea, the posterior half of proximal part of trachea was anastomosed with corresponding distal part with 2-0 vicryl interrupted sutures. To facilitate the anterior anastomosis, the armored TT was pulled out and the proximally placed PVC TT was advanced under surgeon's direct vision and guidance into the distal trachea till the cuff of tracheal tube was kept just below to the suture line and bilateral air entry was confirmed by chest auscultation. Anterior tracheal anastomosis was completed similar to posterior anastomosis and the neck wound was closed in layers. After meeting extubation criteria, an attempted extubation



**Figure 1:** (a) FOB view showing "blue suture" (arrow marks) around the tracheal tube inside the reconstructed trachea. (b) *In vitro* picture of similar tracheal tube without any such blue marking

after complete cuff deflation, the TT was found to be tightly held inside the trachea. Further attempts of extubation were abandoned and FOB was done to find out the cause for this unexpected event. We found a purple structure around the circumference of the tracheal tube region [Figure 1]. As vicryl, a delayed absorbable purple colored suture was used for anastomosis, there was little doubt regarding what must have happened. Re-exploration was done and three anterior sutures were released. After that the TT was found easily moving inside the trachea and anastomosis was completed. She was extubated subsequently and further course in the hospital was uneventful. One of the anterior tracheal suture had formed a tight loop around the tracheal tube during the passages of the tube into the distal trachea. It seems quite obvious that more the number of sutures by the side

of each other, more are the chances that they will entangle with the TT while advancing it into the trachea. Even with experienced surgeon by our side and meticulous monitoring this event did occur. Entrapment of TT by sutures is unlikely but not impossible.<sup>[1]</sup> In a case report, Lang *et al.* reported entrapment of nasotracheal tube by Kirschner wire during internal fixation of zygomatic fractures.<sup>[2]</sup> Akers *et al.* reported that double lumen tube was held tightly by bronchus due to sutures placed around it and examination of the tube revealed no signs of penetration by needle.<sup>[3]</sup> Such scenarios are potentially dangerous as forceful attempts to extubate may results in anastomotic breakdown and precipitate acute respiratory failure. Examination of trachea by FOB after completion of anastomosis may be invaluable, but will not be definitive tool in all cases. Simple gentle to and fro movement of the endotracheal tube after the completion of anastomosis and before the closure of the wound might give an idea about possible entanglement. Avoiding forceful removal, confirming free movement of medical devices before the application of final surgical sutures, and surgical re-exploration were also described to prevent catastrophic bleeding by case reports mentioning entrapment of central venous catheter and pulmonary artery catheter in cardiac surgical settings.<sup>[4,5]</sup>

To conclude, anticipation, high index of suspicion and closed loop communication among the team members are the keys to prevent any catastrophic complications secondary forced extubation of entrapped TT. Documentation and reporting of such event is worthwhile.

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#### Conflicts of interest

There are no conflicts of interest.

**Patil Pranit, Panneerselvam Sakthirajan,  
Rudingwa Priya**

*Department of Anaesthesiology and Critical Care, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry, India*

**Address for correspondence:** Dr. Panneerselvam Sakthirajan,  
27 and 28, 1<sup>st</sup> Smain Street, Priyadarshini Nagar,  
Puducherry - 605 006, India.  
E-mail: sakthiab8@gmail.com

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