Prevention of aerosolisation during a tracheostomy

Sir,

Airway management in the operating room (OR) during the coronavirus disease-2019 (COVID-19) pandemic poses unique challenges. Airway interventions can cause a high amount of aerosolisation, putting all the team members at a high risk of acquiring COVID-19 infection during the procedure.[1,2]

During airway management, in addition to ensuring patient safety, additional measures to prevent the aerosol generation and reduce viral spread are required to ensure the safety of the airway manager and the other

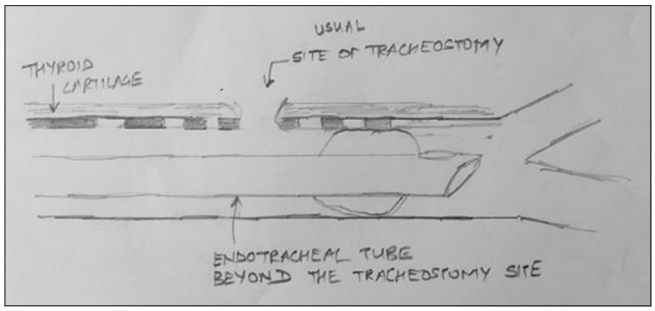

Figure 1: Graphical representation of the concept. The ETT pushed to lie just above the carina and the cuff beyond the tracheostomy incision. (Figure not to scale)

OR personnel.[2] The optimal way to prevent aerosol transmission is to use a combination of interventions and not just the personal protective equipment alone. Applying a combination of protective strategies can provide added safety even if one intervention fails or is not available.[3]

Tracheostomy is probably the most common procedure that has been performed around the world in this pandemic on patients with COVID. Tracheostomy represents the third-highest risk of COVID-19 transmission to staff after endotracheal intubation and noninvasive ventilation.[4]

The tracheostomy can be performed via a percutaneous dilatation technique or an open surgical technique or a combination of the two where the exposure up to the trachea is performed via a small surgical incision and the rest of the procedure is like a modified Seldinger technique.

In all these types, common practice involves withdrawing the oral/nasal endotracheal tube just above where the tracheotomy is to be carried out. In the open technique, the trachea is opened by making a small flap that may or may not be sutured to the soft tissue and skin. During this procedure, there is an increased risk of the aerosolisation as a result of the blast of air through the open trachea and so the ventilation is required to be stopped. This break in ventilation continues till the trachea is ready for the tracheostomy tube to be inserted, which at times can be several minutes. There is again an extremely high risk of aerosolisation in case ventilation needs to be initiated before the procedure is complete.

In order to reduce this risk of aerosolisation and also continue ventilation when the tracheal flap is being raised and sutured, we propose to push the endotracheal tube far enough inside the trachea to

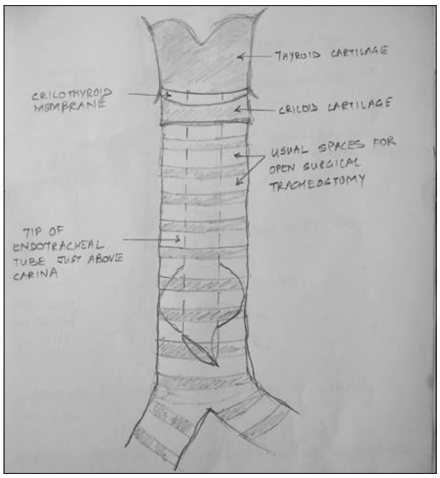

Figure 2: Graphical representation of the concept. (Figure not to scale)

make sure that the cuff of the endotracheal tube is beyond the site where the tracheal incision is to be taken [Figures 1 and 2]. At the same time, confirming both lungs are still being ventilated can be easily done by clinical observation of chest movement, airway pressure monitoring, observing spirometry loops on the ventilator if available. During the movement of the endotracheal tube inside the trachea, the cuff of the endotracheal tube is kept inflated. This allows continuous ventilation of the lungs, with reduced risk of aerosolisation during the preparation of the tracheal flap making it a less-demanding procedure during the critical time of the surgery. However, there could be an argument to stop the ventilation, deflate the cuff, move the tube inside, reinflate the cuff and then resume ventilation. The potential problem of this would be trauma to the main bronchus by overinflation of the cuff in case of inadvertently pushing the tube too far on one side. Also, literature search did not reveal any case reports of trauma to the trachea because of tube movement inside the trachea with an inflated cuff. In our institute, we have performed a series of cases with this method with great ease, success and no complications so far.

Anaesthesiologists are working hard in modification of existing equipment and miscellaneous material, designing newer equipment for protection from aerosols, simple innovations to protect themselves and others from disease transmission, ideas generation to manage the sudden surge of patients with COVID-19 in the case of deficit supply of ventilators, simple innovations, designing and restructuring of ORs with minimal resources, modifications in examination equipment and developing various other measures

to fight against this pandemic.[5] Securing the airway swiftly and successfully without getting ourselves and the airway team infected should be our ultimate goal. 'Think globally, act locally, but, carefully' should be our mantra (slogan) for airway management during COVID times.[6]

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Conflicts of interest

There are no conflicts of interest.

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