Leaks around the endotracheal tube cuff – A must know fact in COVID Era and a simple solution!

Dear Editor,

COVID - 19 is an infectious disease that spreads through aerosols, droplets and direct contact.

Personal protective equipment (PPE) of level 3 is recommended for giving care to the COVID-19 patients. However, due to its shortage, PPE is reused at some centres. There are also concerns that many frontline clinicians are not getting a correct PPE.[1] Patients on positive pressure ventilation (PPV) pose the highest risk for disease transmission. Leakage around the ETT cuff, although small is not uncommon in patients on PPV. In a COVID patient, it is of utmost importance to prevent even the slightest amount of leakage around the ETT.

There can be several instances in the operating room when the leakage is likely to occur such as cuff under inflation, cuff rupture, cephalad migration of the ETT, high peak airway pressures, during the placement of abdominal retractors, change in the table position and with the use of uncuffed ETT.[2] . We report a simple modification of a N-95 mask that can be used to decrease the aerosols load generated from leaks around the ETT cuff.

On the right side of an N-95 mask (3m 9504 IN), one cm vertical incision is made at the centre [Figure 1a]. The endotracheal tube (ETT) is then passed through the cut end of the mask before the patient's trachea is intubated [Figure 1b]. The mask is wrapped around the endotracheal tube in such a way that it doesn't obstruct the intubator view [Figure 1c]. After securing the airway, ETT is fixed *in situ* with the adhesive tapes. The mask is then properly placed over the patient's mouth and the nose. The cut ends of the mask and the Ryle's tube exit point are sealed with the micropore [Figure 1d].

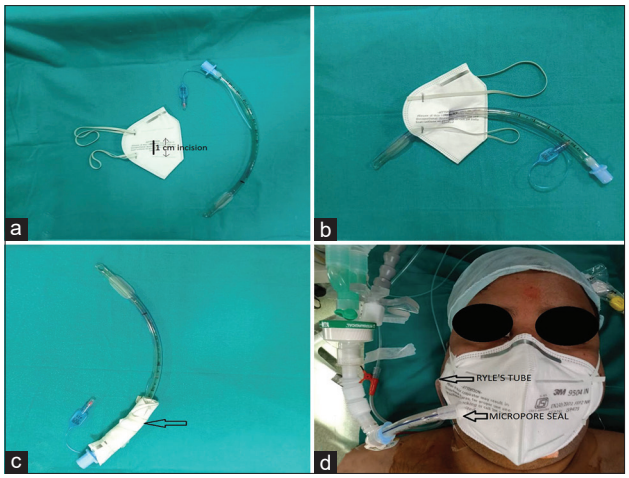

Figure 1: (a) On the Right Side of an N-95 Mask a 1 cm Vertical Incision is Made at the Centre. (b) Endotracheal Tube is Passed Through the N 95Mask. (c) Arrow is Showing the Wrapped Mask Around the Endotracheal Tube. (d) The Cut Ends of the Mask and the Ryle's Tube Exit Point are Sealed with the Micropore as Shown by the Arrows

The N-95 mask costs around forty rupees only and is easily available in India. In our technique, by covering the mouth and the nose of the patient by a N-95 mask, it is expected that the aerosol load inside the room will be further minimized.[3]

We recommend to use our technique in a COVID positive patient posted for surgery under general anaesthesia and can also be used routinely for all long surgeries under general anaesthesia for the following reasons –

1) Operation theatre is a highly closed space where the likelihood of getting infection is disproportionately high.[4]
2) It is difficult to wear the PPE effectively for long duration surgeries such as hepatectomy, oesophagectomy, and liver transplantation and many times the COVID-19 status of the patient is either not known or maybe falsely negative.[5]

The limitation of our technique is that the detection of ETT displacement or kinking may get delayed. Therefore, capnography should always be used with our technique. Another limitation is its restricted use in head and neck surgeries.

To conclude, leakage around the ETT cuff should not be neglected in this COVID era and a simple N-95 mask should be used routinely in the operation theatre especially in a COVID positive patient posted for the surgery under general anaesthesia.

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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