

Framework for open tracheostomy in COVID-19 patients

Dear Colleagues,

You will have last week received ENT UK's recommendations regarding PPE along with a timely paper by James Ramsden & colleagues on the subject of tracheostomy in a COVID patient. There has also been further information from the National Tracheostomy Safety Project (NTSP).

The requests for a tracheostomy in suspected or confirmed COVID ventilated patients are likely to begin coming our way very soon. It is difficult to predict the level of burden at this point but we ought to prepare for the worst. We (ENT UK) believe it is appropriate therefore to release further guidance and cognitive aids to help departments in the preparation for COVID tracheostomies.

We would like to reiterate that a tracheostomy is a high risk procedure in this patient cohort and most certainly is an Aerosol Generating Procedure (AGP) representing significant risk to surgeons and our immediate colleagues. Decisions regarding the requirement for tracheostomy in critically ill COVID patients should not be taken lightly, balancing the risks and burdens to both patients and staff. Emerging outcome data will help to inform consultant-level decisions. It is beyond the remit of this document to try and stipulate when and in whom a tracheostomy ought to be considered as there are just too many evolving variables at play. It must be also made clear that these guidelines should be regarded as an early framework and an aspirational model, as the available resources in various trusts could have an enormous impact on how best practice can be delivered.

The question about whether a percutaneous tracheostomy is less aerosol generating than a controlled open tracheostomy is debatable and the evidence is limited at best. There are proponents of both techniques and again we felt that local factors, competencies, and experience are likely to influence the chosen technique. **This guidance therefore is aimed at outlining the steps that can be taken by ENT / Head & Neck Surgeons to best protect themselves and minimise aerosol generation when called on to perform open tracheostomies on COVID patients.**

We felt it would be desirable to start by creating and identifying a "COVID Airway team" within all ENT / Head & Neck departments. A suggested constitution of the team would be 2-3 consultants (preferably Head & Neck trained) and 2-3 registrars or middle grade staff. This core team should then take responsibility to familiarise themselves with the attached guidance and liaise with their own ICU to decide how this can be adapted to local circumstances and expertise. They should, where possible, run simulations with ICU / anaesthetics and theatre staff. Through experiential learning, these core teams will quickly develop a sense of what works locally and why. These teams should then take a lead in training the rest of the department who will likely be required to enter the airway service to cover for sickness, service demand, and to distribute the burden of these high risk and stressful events.

Framework for open tracheostomy in COVID-19 patients

In addition, there should be careful consideration of where is best to perform tracheostomies for a COVID patient. Whilst it would be best practice if procedures are done in a negative pressure room / theatre, these are not always available. The designated area should have only the essential personnel in them with a clean runner situated in the antechamber being the only conduit to the outside. Some units may prefer to perform tracheostomies within ITU. Whilst this may be attractive in terms of minimising transfer, the surgical team must be able to perform tracheostomy with maximum efficiency and safety. Nearby staff, patients and equipment must be risk assessed for potential aerosol contamination. The decision of where best to perform the procedure therefore will be influenced heavily by local factors.

Planning must start now before we hit the steepest part of the epidemiological disease curve. The next few days and weeks would be very well spent in running simulations within your department to become familiar with the environment, the equipment, and the special steps recommended to minimise aerosol generation. The situation continues to evolve rapidly and will no doubt be in a state of flux for some time. We will of course continuously monitor developments and as our collective experience evolves we will update the guidance as necessary.

The accompanying guide has had invaluable input from the Head & Neck Society of ENT UK, the British Laryngological Association, the National Tracheostomy Safety Project and the ENT UK executive. We have also discussed this guide with the British Association of Head & Neck Oncologists (BAHNO) and have agreed to cooperate with any future updates as our shared knowledge evolves.

Finally, I would like to acknowledge the hard work of three colleagues at University Hospital Lewisham in rapidly developing these guidelines: Abigail Walker, ENT ST7; Angelos Mantelakis, ENT FY2; and Oliver Keane, Consultant Anaesthetist.

With best regards & stay safe,

Tony Jacob MSc., FRCS, FRCS (ORL-HNS)
Consultant ENT & Head and Neck Surgeon
Department of ENT & Head and Neck Surgery, University Hospital Lewisham

PLANNING (Days / weeks prior to procedure)

PPE

Review ENT UK guidance on high-risk procedures
Surgeons and runners must wear full PPE
Consider additional protection for surgeons (eg. Stryker hood, powered purifying respirator)

Place

Ideally in a negative pressure theatre or isolation room
If not available consider a normal theatre with closed doors during the procedure
Consider turning off laminar flow (if present)
Antechamber or anaesthetic room (for donning/doffing and for clean runner)

Patient

Review indications for tracheostomy with ICU; specifically timing and prognosis.

Equipment

Pre-prepare tracheostomy sets in grab bags and store in a designate clean zone
Only use **cuffed, non-fenestrated** tracheostomy tubes
Ensure there is an adequate supply in various sizes
Establish a system to record what has been used and what needs restocking

COVID Airway Team

Designate staff to form a core COVID Airway Team to help facilitate efficiency during the crisis
Suggested team make up of ENT / Head & Neck consultant, registrar, ICU Consultant, Senior Theatre Nurse
Run simulation training with all key staff - on location

When

Semi – elective
Planned theatre slot with experienced anaesthetist and scrub team

PREPARATION (Day of Procedure)

Check

Ensure PPE is available for all staff
Take tracheostomy grab bag and check contents – tracheostomy set, **cuffed non-fenestrated** tubes of appropriate sizes and HME with viral filter
Confirm designated staff are available and prepared (Anaesthetic, ENT, and scrub team)

Confirm

Indication and appropriateness of tracheostomy to be reconfirmed and documented
Consider whether the patient is relatively stable and will tolerate laying flat with periods of brief apnoea

Briefing

To include but not limited to

Airway management steps generic to tracheostomy
Steps particular to COVID tracheostomy (see additional documents from ENT UK and page 5)
Request full paralysis throughout to reduce risk of cough

Equipment

Don PPE and perform “buddy check”
Lay out tracheostomy equipment including tube
Attach syringe to tracheostomy balloon ready for inflation
Consider preloading the HME onto the inner tube
Ensure only closed in-line suction is used for ETT and tracheostomy tube
Consider use of surgical ties rather than diathermy to prevent vapour plumes containing viral particles

Patient

Confirm readiness with surgeons, runner, nursing, anaesthetic team
Only now send for the patient

PERFORMANCE (Once trachea is exposed)

Pause

Inform anaesthetist of readiness to open trachea
Confirm paralysis
Pre-oxygenate with PEEP then stop ventilation and turn off flows
Allow time for passive expiration with open APL valve

Advance

Consider clamping ETT then advance cuff beyond proposed tracheal window
Hyperinflate cuff and re-establish oxygenation with PEEP
When adequately oxygenated, communicate clearly and cease ventilation prior to opening the trachea

Tracheal window

Create tracheal window taking care to avoid the ETT cuff
Turn off flows with open APL valve, allow passive expiration, consider clamping ETT
Deflate ETT cuff and draw back proximal to the tracheal window under direct vision
Ensure window is of sufficient size to allow easy insertion of tracheostomy tube without injury to cuff
Insert cuffed, non-fenestrated tracheal tube

Circuit connection

Immediately inflate tracheostomy tube cuff
Replace introducer with non fenestrated inner tube and HME
Prompt attachment of circuit
Resume ventilation

Confirmation

Confirm position of the tube in a 30 degree head up (ICU nursing) position
Confirm position with end-tidal CO₂ only (*avoid contamination of stethoscope by auscultation*)
Withdraw clamped ETT carefully

Secure

Secure tube with sutures and tracheostomy tapes
Use appropriate dressing
Doffing of PPE with “buddy check” in appropriate area with disposal of equipment as per local guidelines
Decontaminate theatre using local infection control guidance

POST-PROCEDURE (ICU and beyond)

First week

Exercise extreme care in transfer
One dedicated team member allocated to holding tracheostomy tube whenever being prone or turned
Humidified oxygen to be avoided if possible, HME only

Nursing care

Use only in line closed suction circuits at all times
Periodic check of cuff pressures
Cuff should not be deflated without considering risks to patient, staff and the environment.
Do not change dressings unless frank signs of infection

First tube change

Delay first tube change to 7-10 days
Full PPE
Perform same sequence of pause in ventilation with flows off before deflating cuff and inserting new tube with immediately re-inflation of cuff and reconnection of circuit

ICU stepdown

Ideally to a dedicated COVID tracheostomy ward with trained nursing staff
Cuffed non-fenestrated tube to be used until the patient is confirmed COVID negative
Subsequent planned tube changes at 30 day intervals

Decannulation

If patient is confirmed COVID negative and is to be moved to a COVID negative ward then consider trials of cuff deflation
Readiness for decannulation should be made with close liaison with SLT and physiotherapy