

Procedure for Percutaneous Tracheostomy in the Intensive Care Unit

This is the most commonly used technique in the intensive care setting as it is simple, quick, can be performed at the bedside using anaesthetic sedation and local anaesthetic, and therefore is often the technique of choice in the critically ill.

The procedure involves the insertion of a needle through the neck into the trachea followed by a guide-wire through the needle. The needle is removed and the tract made gradually larger by inserting a series of progressively larger dilators over the wire until the stoma is large enough to fit a suitable tube (Seldinger technique).

Patient preparation:

- Explain procedure to the patient: obtain consent or adult incapacity form is completed.
- Fast at least 6 hours prior to the procedure. Aspirate NG tube and place on free drainage.
- Review most recent blood results: U/E's, FBC and coagulation screen.
- BTS: check that blood sample has been obtained for 'group and save'.
- Check that anti-coagulation has been with-held: acceptable to have been administered the previous day's dose i.e. last dose usually at 1800hrs.

Essential equipment:

- Spare ET tube and Frova bougie.
- Laryngoscope and suction.
- Fibre-optic scope and light source: obtain from Endoscopy Unit.
- Catheter mount.
- TRACHOE expc set, marking pen and sterile lubricant.
- Percutaneous tracheostomy tray, fenestrated drape, 2% chlorhexidine sponge and scalpel.
- Sterile gown, gloves, cap and surgical facemask.
- Lignocaine with 1/200000 adrenaline.
- 2/0 hand-held stitch, tracheostomy dressing and tracheostomy tapes.
- Continuous capnography should be used during the procedure.
- New ventilator tubing is needed: this can be prepared once the tracheostomy tube is finally in place.

Nursing care:

- The patient is sedated, pharmacologically paralysed and ventilated in a mandatory ventilator mode i.e. BIPAP/PC or SIMV with 100% oxygen.
- A couple of towels are rolled and placed under the shoulders to maximally extend the neck.
- Two trained medical operators are required: one to administer anaesthesia and related airway care – this person stands at the head of the bed to maintain the patient's airway during the transition from ET to tracheostomy. The second person performs the procedure.
- Nursing staff assist by monitoring the patient's heart rate and rhythm, blood pressure, oxygen saturations, ETCO₂ waveforms and responds to any alarms including ventilator alarms.
- The doctor standing at the head of the bed suctions the patient's oro-pharynx and also down the ET tube. The tapes securing the ET tube are loosened. The ET tube cuff is deflated and is withdrawn to a level just below the vocal cords. Ventilator settings may need to be adjusted (to compensate for the air leak whilst the tracheal cuff is deflated).
- The second doctor prepares and drapes the anterior neck. A small vertical incision is then made around the midline of the patient's neck: between the 1st and 2nd or the 2nd and 3rd tracheal rings.
- The doctor standing at the head of the bed operates the bronchoscope, inserting through the ET tube so that the instruments can be visualised as they are advanced through the tracheal wall.
- Once the tracheostomy tube is in place, the cuff is inflated. End-tidal CO₂ monitoring will verify tube placement. The ET tube is then removed and suction applied to the patient's oro-pharynx.
- The tracheostomy site is cleaned and a keyhole dressing is applied. The flanges of the tracheostomy tube are sutured to the patient's skin and the tube is secured further using Velcro tapes.
- Chest x-rays are not routinely required if tube placement has been confirmed endoscopically and via ETCO₂ and provided the procedure has been uneventful.
- The fibre-optic scope needs to be cleaned as per unit policy and then returned to the Endoscopy unit in its tray with protective cover.
- The procedure is documented in the patient's medical notes – along with the tracheostomy tube barcode sticker.
- A sticker is put on the ICU chart to alert nursing staff regarding tracheostomy method. Nursing staff should also complete the ICU tracheostomy chart and this needs to be completed once daily.