Tracheostomy care

Part 1 – Using suction to remove respiratory secretions via a tracheostomy tube

INTRODUCTION
One of the indications for creating a tracheostomy is to provide access to the airway to clear respiratory secretions. However, when a tracheostomy tube is inserted, the patient’s ability to remove respiratory secretions will usually be compromised. This is because the normal coughing mechanism is hindered as the patient is unable to close the glottis. Closure of the glottis allows intrathoracic pressure to increase and generate the high gas flow/velocity required for coughing.

The consistency of respiratory secretions is also affected by the tracheostomy as the mechanism of warming and humidifying air through the upper airway is lost. Secretions become thick and dry, which inhibits mucociliary transport. They can build up and may block the tracheostomy tube.

Endotracheal suctioning is performed to maintain a clear airway and optimise respiratory function (Dougherty and Lister, 2008). It can be performed via a tracheostomy tube. A number of risks are associated with it. These include:
- Hypoxia – as oxygen flow is interrupted and the airway partially obstructed;
- Alveolar collapse – as gas is aspirated out of the bronchial tree;
- Tracheo-bronchial trauma;
- Infection;
- Haemodynamic instability resulting from stimulation of the vagus nerve which supplies the larynx, trachea, lungs and heart.

When to perform suction
The decision to perform suction must be based on a comprehensive patient assessment rather than using set times.

This assessment will include a review of characteristics such as respiratory rate and pattern, chest excursion and palpation and auscultation of the chest (Higgins, 2005).

The equipment needed is as follows:
- Vacuum generator/collection device/tubing;
- Selection of appropriate-sized catheters;
- Gloves;
- Apron;
- Eye protection;
- Gallipot/small bowl;
- Saline/water solution.

There appears to be some controversy over the use of sterile or non-sterile gloves. The Department of Health (2001) recommends that gloves should be worn as single-use items and not be powdered. Local policies should be consulted.

Patients having suction should be observed closely for any signs of cardiovascular instability during and after the procedure.

PROFESSIONAL RESPONSIBILITIES
This procedure should be undertaken only after approved training, supervised practice and competency assessment, and carried out in accordance with local policies and protocols.
Carrying out suction via a tracheostomy puts staff at risk from splash/inoculation injury. Local infection control procedures must be followed.

THE PROCEDURE

- Prepare the patient, obtain informed consent and discuss any anxieties.
- Wash hands and put on an apron, non-sterile gloves and eye protection as required.
- Encourage deep breathing and, if the patient is receiving oxygen and there are no contraindications, increase inspired oxygen concentration. Any change in concentration must be prescribed. These measures may help to reduce the risk of hypoxia and alveolar collapse (Higgins, 2005).
- Select vacuum pressure (Fig 1). This should be at a low level. The general recommended pressure range is 8–20kPa (Pryor and Prasad, 2001).
- Select a suction catheter. This should be no more than half the internal diameter of the tracheostomy tube – a useful rule of thumb is to use the smallest catheter possible that is effective at aspirating the secretions. Using catheters with more than one suction eye cuts the risk of trauma. Suction catheters should be sterile and single-use only.
- Open the end of the catheter package to expose the catheter port. Hold the catheter, which is still in its packaging, and attach the catheter port to the suction tubing (Fig 2).
- Put a sterile/clean glove on the dominant hand; remove the catheter from the packaging, avoiding contamination (Fig 3).
- Introduce the catheter into the tracheostomy to approximately one-third of the catheter length (Dougherty and Lister, 2008). Introduce the catheter no further than the carina (the point at which the trachea divides into right and left bronchi). Direct stimulation of the carina will, in most cases, stimulate a cough. However, this stimulation can cause trauma and the aim should be to remove secretions without touching the carina (Fig 4).
- Apply suction by placing the thumb over the port control and withdraw the catheter, rotating the catheter (if suggested by local policy). Ensure the catheter is inserted for less than 10 seconds (Fig 5).
- Wrap the catheter around the dominant hand, remove the glove over the catheter and discard (Fig 6). This reduces risks of cross-contamination and splash injury.

NEXT WEEK

Tracheostomy care 2:
How to change an inner tube

REFERENCES


