

# Translaryngeal tracheostomy

Interventional procedures guidance

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[www.nice.org.uk/guidance/ipg462](http://www.nice.org.uk/guidance/ipg462)

## Your responsibility

This guidance represents the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take this guidance fully into account, and specifically any special arrangements relating to the introduction of new interventional procedures. The guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the [Yellow Card Scheme](#).

Commissioners and/or providers have a responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties. Providers should ensure that governance structures are in place to review, authorise and monitor the introduction of new devices and procedures.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

# 1 Recommendations

- 1.1 The evidence on the efficacy and safety of translaryngeal tracheostomy is adequate for use with normal arrangements for clinical governance, consent and audit.
- 1.2 Clinicians wishing to undertake translaryngeal tracheostomy should receive specific training and should be experienced in using the procedure because carrying it out safely requires different skills to other methods of percutaneous tracheostomy insertion.

# 2 Indications and current treatments

- 2.1 Tracheostomy is commonly carried out for patients in intensive care to maintain their airway, to remove excessive airway secretions and to enable mechanical ventilation to be gradually withdrawn. This may be performed surgically but anaesthetists and intensive care physicians usually perform the procedure using a percutaneous technique, inserting a tube from the outside of the neck into the trachea, using various devices and commonly under endoscopic guidance.
- 2.2 The translaryngeal tracheostomy technique may lead to lower rates of bleeding, trauma and infection to the tissues surrounding the insertion area, compared with surgical and other percutaneous techniques. It may also avoid the risk of damage to the posterior wall of the trachea and tracheal rings because of a lack of external compression during insertion.

# 3 The procedure

- 3.1 Translaryngeal tracheostomy is a method for inserting a tracheostomy tube using

direct endoscopic visualisation. It is usually carried out with the patient under general anaesthesia with muscle relaxation. The patient lies supine with the head extended, and the endotracheal tube is partially withdrawn to allow an endoscope to be passed into the trachea. A small introducer needle is inserted percutaneously between the second and third tracheal rings and visualised endoscopically as it enters the trachea. A metal guide wire is then passed through this needle into the trachea and pulled upwards and out through the mouth. The existing tubes are then temporarily replaced with a narrower ventilation tube for the remainder of the procedure. There are variations in this part of the technique: for example, the guide wire may be fed through the distal end of the endotracheal tube or a rigid tracheoscope and recovered at the tube connector.

- 3.2 The guide wire is attached to a special tracheostomy device consisting of a flexible plastic cone with a pointed metal tip, joined to an armoured tracheal cannula. The tracheostomy device is then drawn back through, in turn, the oral cavity, the oropharynx, the larynx, the trachea and finally out to the surface of the neck, through the small stoma created by the introducer needle. Traction is applied to the guide wire with one hand, and counter pressure to the neck with the other hand. The cone is then separated from the tracheostomy tube, which is rotated 180° so the open end of the tube faces down towards the carina and bronchi. Correct placement of the tracheostomy tube is confirmed by auscultation of the lungs and endoscopy.

## 4 Efficacy

This section describes efficacy outcomes from the published literature that the committee considered as part of the evidence about this procedure. For more detailed information on the evidence, see the [overview](#).

- 4.1 A case series of 245 patients undergoing translaryngeal tracheostomy reported successful insertion in 99.2% (243 of 245) of patients.
- 4.2 A randomised controlled trial of 139 patients comparing translaryngeal tracheostomy (n=67) against surgical tracheostomy (n=72) reported no significant differences in quality of life between the groups (assessed in

31 patients using the SF-12 Health Survey questionnaire) at 1-year follow-up.

- 4.3 The specialist advisers listed key efficacy outcomes as reduced trauma, bleeding and infection, good cosmetic outcome, and technical suitability in patients with coagulopathy or those with neck masses or altered tracheal anatomy, compared with surgical or other methods of percutaneous tracheostomy.

## 5 Safety

This section describes safety outcomes from the published literature that the committee considered as part of the evidence about this procedure. For more detailed information on the evidence, see the [overview](#).

- 5.1 Massive haemorrhage due to an erosive lesion in the dorsal wall of the brachiocephalic artery was reported in a single case report 6 days after translaryngeal tracheostomy. After bleeding had been controlled a 'conventional' tracheostomy was performed.
- 5.2 A 4 cm perforation of the posterior tracheal wall with severe damage to the second and third tracheal rings and massive subcutaneous emphysema occurred during 180° rotation of the tube in 1 patient in the translaryngeal tracheostomy group in a comparative study of 100 patients comparing translaryngeal tracheostomy (n=50) against guide wire dilating forceps tracheostomy (n=50). An emergency surgical tracheostomy was performed. Lateral tracheal wall lesions caused during the 180° rotation of the cannula were reported in 3 patients in a case series of 470 patients; 1 needed thoracotomy to suture the defect, the other 2 patients were treated with laser therapy.
- 5.3 Loss of the airway causing hypoxia was reported in 6% (3 of 47) of patients in the translaryngeal tracheostomy group in a randomised controlled trial (RCT) of 100 patients comparing translaryngeal tracheostomy against forceps dilatation tracheostomy because of difficulties re-intubating patients with the narrower type of endotracheal tube.
- 5.4 Stomal infection was reported in 3% (2 of 67) of patients in the translaryngeal tracheostomy group in the RCT of 139 patients.

- 5.5 The tube was accidentally pulled completely out of the neck during insertion in 9 patients in a case series of 145. The RCT of 100 patients reported problems with tube placement in 23% (11 of 47) of patients. These included the guide wire breaking in 3 patients and difficult retrograde passage of the guide wire in 3 patients.
- 5.6 The RCT of 100 patients reported a significant decrease in post-procedural partial pressure of oxygen in blood in the translaryngeal tracheostomy group (from 311 mmHg to 261 mmHg;  $p=0.0069$ ) but not in the forceps dilatation tracheostomy group (from 289 mmHg to 284 mmHg; not significant).
- 5.7 The specialist advisers listed anecdotal adverse events as directional misplacement of tube, dislocation of the tube, difficulty in delivering the tube through the larynx, pneumothorax and airway obstruction by the device. Theoretical adverse events reported by the specialist advisers were: damage to the recurrent laryngeal nerve, and thyroid injury.

## 6 Committee comments

- 6.1 The committee was advised that the tracheostomy tubes used in this procedure may become blocked because of contact with the posterior tracheal wall and difficulties with tracheal suctioning because of the shape of the tube.
- 6.2 The committee was also advised that the tubes cannot readily be replaced and are not suitable for patients who need long-term airway management.

## 7 Further information

### Sources of evidence

The evidence considered by the Interventional Procedures Advisory Committee is described in the [overview](#).

## Information for patients

NICE has produced [information on this procedure for the public](#). It explains the nature of the procedure and the guidance issued by NICE, and has been written with patient consent in mind.

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## Endorsing organisation

This guidance has been endorsed by [Healthcare Improvement Scotland](#).