TRACHEOSTOMY MANAGEMENT – Adult

Tracheostomy Tube Types, Indications for Use & Placement

Selection of Type of Tube

- The appropriate, management of a tracheostomy begins with the selection of an appropriate tube.
- The Internal diameter (ID) and outside diameter (OD), curvature and distal and proximal length must be considered.
  - If the ID is too small this will increase resistance through the tube and make airway clearance difficult, and increase the cuff pressure required to create a seal.
  - If the OD is too large leak around the tube when it comes to cuff deflation will be problematic.
- Standard tracheostomy tubes are made with a C – shaped curve that maybe in appropriately short for patients with thick necks or long tracheostomy stomal tracts, in such cases, longer tubes with specialised angulations may be needed.
- A tube with excess length may cause increased pressure on the anterior wall leading to microvascular ischaemia and subsequent tracheal stenosis.

A tube that is too short may not be secure and be more subject to accidental expulsion with vigorous coughing or movement, and it obstruct against the posterior tracheal wall

Size of Tube

The size of tubes alters the WOB and airway resistance markedly as demonstrated by Mullins (1993).
Airway resistance can decline by up to 45% when changing from a size 6 to a size 8 and
WOB showed a corresponding decrease of 55% with the same change so as a rule the largest size tube tolerated should be employed.

This generally equates to size 7 -9 in men and 5 -7 in women.

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TRACHEOSTOMY MANAGEMENT – Adult

Tracheostomy Tube Types, Indications for Use & Placement, Continued

Figure 21 – Tracheostomy Placement

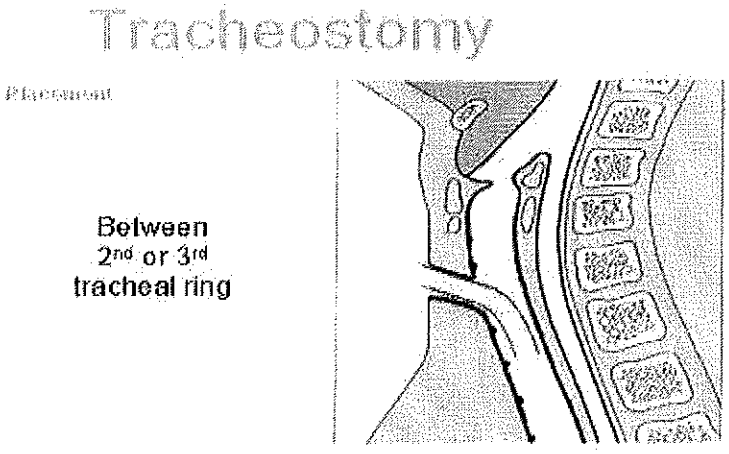
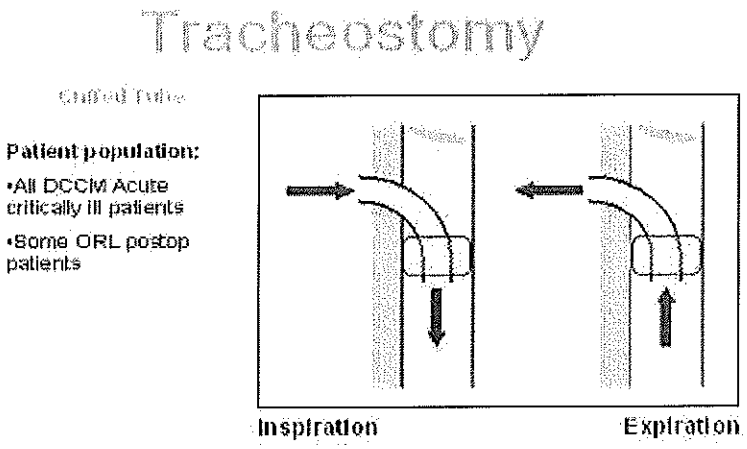


Figure 22 – Tracheostomy Cuffed Tube



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TRACHEOSTOMY MANAGEMENT – Adult

Tracheostomy Tube Types, Indications for Use & Placement, Continued

Figure 23 – Portex Tracheostomy Cuffed Tube

With purple introducer and non disposable inner tube

Portex® Tubes

The range of Portex® tubes generally available includes tubes with and without long-term "Profile" cuffs; with and without double fenestrations; with and without 15mm connector terminations; and several specialised tubes. All are made from siliconised PVC to minimise adhesion of secretions and to aid the suctioning process. Portex® tracheostomy tubes have soft flexible neck flanges for better patient comfort, and for ease of stoma care. Portex® tubes are thermosensitive, and will conform to the patient's anatomy for improved patient comfort and reduced risk of tracheal erosion.

Portex® "Profile" Cuffed Tubes

Available unfenestrated, the Portex® "Profile" Cuffed tubes have a high-volume, low-pressure cuff which requires only a low inflation pressure (less than 25 cm H2O) to obtain a satisfactory tracheal seal. The cuff is also of a tapered design to maximise stability of the tube tip, and minimise tracheal wall contact. These features minimise tracheal wall damage, and permit long-term usage of the tube when required.

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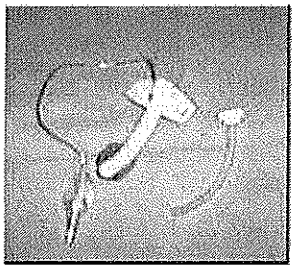
TRACHEOSTOMY MANAGEMENT – Adult

Tracheostomy Tube Types, Indications for Use & Placement, Continued

Figure 24 – Shiley Cuffed Non-Fenestrated Tube



Manufactured of high quality, compliant material that softens at body temperature. Low-pressure cylinder cuff helps to protect sensitive tissue. Smooth, rounded-tip obturator facilitates insertion.

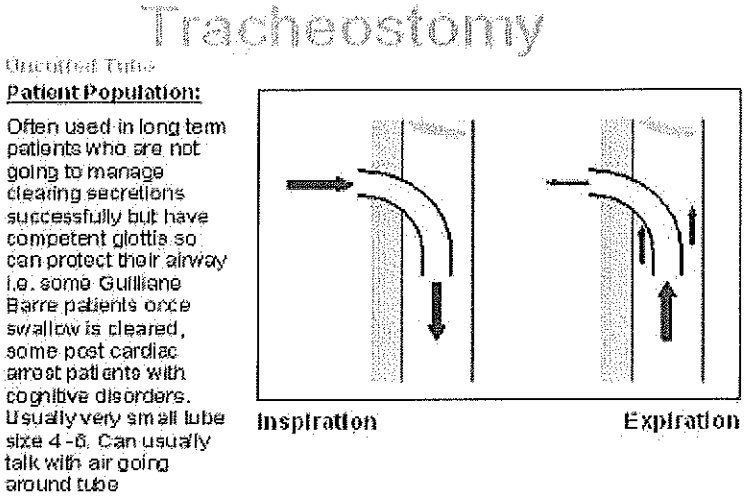
Shiley High Volume, Low Pressure Cuff with Pilot Balloon & Non Return Valve

Shiley produces rigid plastic tubes with rigid hinged neck plates. They are supplied with three inner cannulae; one with 15mm connector, one "cosmetic", and one closed for weaning purposes.

Note, the Shiley tube has no integral 15mm termination; this is available only as part of the inner cannula.

Spare Shiley inner cannula have a red integral 15mm connector. Use only the correct size for the tracheostomy tube in situ.

Figure 25 – Tracheostomy Cuffless Tube



TRACHEOSTOMY MANAGEMENT – Adult

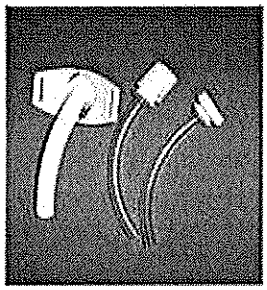
Tracheostomy Tube Types, Indications for Use & Placement, Continued

Cuffless Tubes
a)Non-fenestrated

Brands: Shiley and Portex

- The Portex tube is a plain siliconised thermosensitive tube, supplied with an introducer and neck tapes. It is designed for long-term or permanent tracheostomy patients who require a tube to by-pass an upper airway obstruction, or in whom a cuff is unnecessary in the final stages of weaning off a tube. These tubes are available with and without 15mm terminations.
- The purpose of the 15mm termination is to enable connection to a catheter mount or to Laerdal / resusi bag.

Figure 26 – Shiley Cuffless Non-Fenestrated Tracheostomy Tube



Fenestrated Tracheostomy Tubes

These tubes are useful for patients who have a competent swallow but a weak cough and need suctioning to clear secretions effectively.

Allows a slower weaning process and allows assessment of patients' ability to breathe through normal oral/ nasal route.
The fenestration allows vocalisation (with air able to pass by vocal chords] and aids communication.

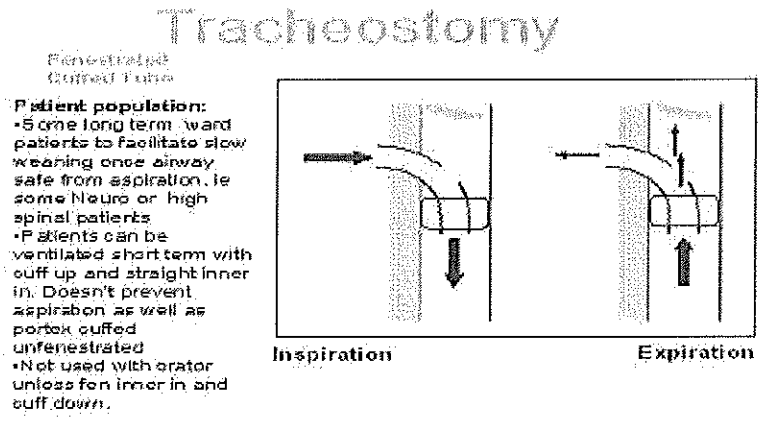
Careful patient selection is required.

Continued on next page

TRACHEOSTOMY MANAGEMENT – Adult

Tracheostomy Tube Types, Indications for Use & Placement, Continued

Figure 27 – Tracheostomy Fenestrated Cuffed Tube



Portex fenestrated cuffed tube

Available in double-fenestrated, the Portex® "Profile" Cuffed fenestrated tubes have a high-volume, low-pressure cuff which requires only a low inflation pressure (less than 25 cm H2O) to obtain a satisfactory tracheal seal. The cuff is also of a tapered design to maximise stability of the tube tip, and minimise tracheal wall contact. These features minimise tracheal wall damage, and permit long-term usage of the tube when required

Shiley Tracheostomy Fenestrated Cuffed Tube

This has a decannulation Plug (DCP) connects to outer cannula to permit upper airway breathing. Inner cannula with integral 15mm twist-lock connector permits connection of ancillary equipment and can be cleaned to maintain airway patency. Fenestrated Inner Cannula with green 15mm connector and white 15mm cap is used for upper airway breathing

Fenestrated Cuffless Tracheostomy Tube

This tube is designed for the patient who does not need a cuffed tube, who is protecting their airway but requires the fenestration to aid breathing through the upper airway. This provides a wide margin of safety in weaning a patient with uncertain ability to maintain upper airway breathing (e.g. Head injury patients).

Continued on next page

TRACHEOSTOMY MANAGEMENT – Adult

Tracheostomy Tube Types, Indications for Use & Placement, Continued

Figure 28 – Tracheostomy Cuffless Fenestrated Tube

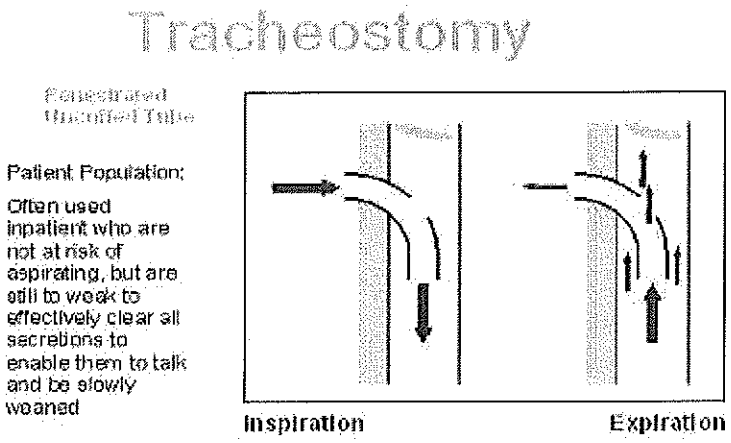
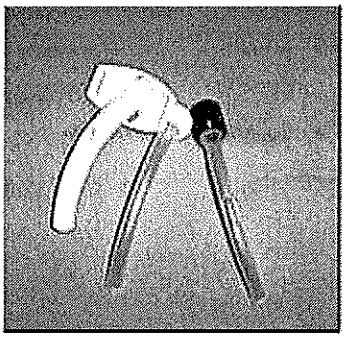


Figure 29 – Shiley Cuffless Fenestrated Tube

Fenestrated inner tube and non fenestrated inner tube for suctioning



Shiley Design: Cuffless Fenestrated Tube (CFN) is designed for pulmonary hygiene and, when used in conjunction with the Decannulation Plug (DCP), directs breathing through the upper airway. Fenestrated inner cannula aids weaning and speaking. Inner cannula with integral 15mm twist-lock connector permits connection of ancillary equipment and is translucent for easy inspection. Smooth, rounded-tip obturator facilitates insertion. Low profile inner cannula minimizes tube profile for long term care. Swivel neck flanges improve patient comfort

Continued on next page

TRACHEOSTOMY MANAGEMENT – Adult

Tracheostomy Tube Types, Indications for Use & Placement, Continued

Shiley XLT: Proximal or Distal tube sizes not same as Portex

Tracheostomy tubes for patients with anatomical challenges. Unlike most extended-length tracheostomy tubes:

- *Shiley* XLT tubes give you the choice of extra length in the proximal or distal portions for a more customized fit.
- In addition, the *Shiley* XLT offers the convenience of a disposable inner cannula.
- Both the outer and inner cannulas are flexible, so they more easily conform to your patient's anatomy.

Figure 30 – Shiley XLT: Proximal or Distal tube

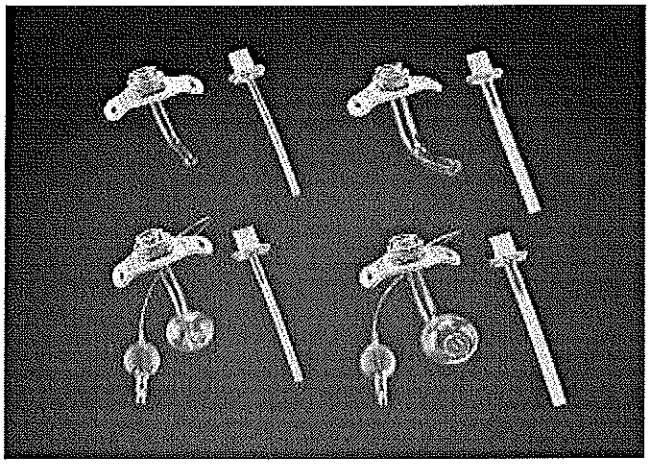
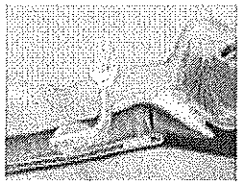


Figure 31 – Shiley XLT: Proximal or Distal tube



Increased skin-to-tracheal-wall distance

Choose extra length in the proximal portion of the shaft to accommodate patients with full or thick necks who have increased skin-to-tracheal-wall distances. Choose extra length in the distal portion to compensate for conditions requiring extra length, such as tracheal stenosis or malacia

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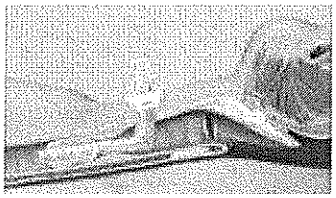
TRACHEOSTOMY MANAGEMENT – Adult

Tracheostomy Tube Types, Indications for Use & Placement, Continued

Figure 32 – Shiley XLT: Proximal or Distal tube



XLT Design Features

- Four adult sizes, cuffed and cuffless, with proximal or distal extension, representing 16 options for patients with anatomical challenges.
- Flexible, disposable inner cannula has a unique locking ring that fastens it securely to the outer cannula.
- Flexible, soft, free-swiveling neck flange improves patient comfort and provides easy inspection of the stoma site.
- Outer cannula tip-to-tip radiopaque line facilitates proper tube positioning.
- High volume, low pressure cuff meets all published cuff criteria.
- ISO sizing indicates I.D. Of disposable inner cannula.
- 100% latex-free.

Indications For Usage

- Bypass upper airway obstructions, provide long-term ventilation support and/or manage tracheal/bronchial secretions.
- For patients with increased skin-to-tracheal-wall distance or for patients with tracheal stenosis or tracheal malacia

Continued on next page

TRACHEOSTOMY MANAGEMENT – Adult

Tracheostomy Tube Types, Indications for Use & Placement, Continued

Adjustable flange Portex

The tube features a unique flange which can be adjusted by a simple locking device. Designed for use in patients with abnormally large anatomies, such as glottic oedema or obesity, who require an extended tracheostomy tube from flange to bend.

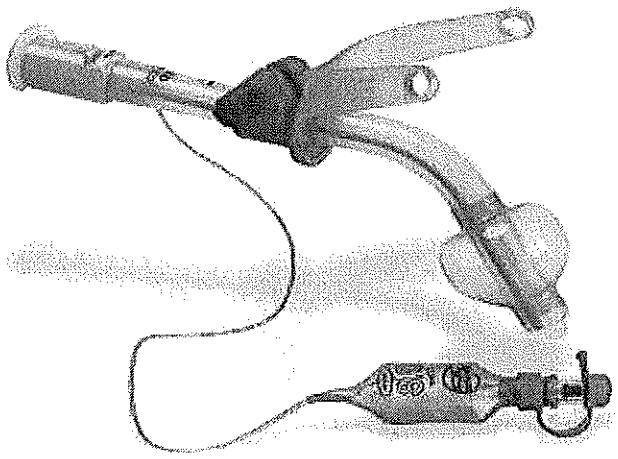
The device can be adjusted along the tube to obtain the most comfortable and safe tube position.

Warning: no inner tube needs suctioning frequently to check tube patency by suctioning frequently

Product Features

- 15mm Connector complies with ISO 5356-1. Allows connection to breathing system, tracheostomy Interface or a Heat & Moisture Exchange, Thermovent T (100/570)
- Smooth obturator facilitates insertion of tracheostomy tube
- Thermosensitive PVC Flange
- Anatomically shaped tube

Figure 33 – Adjustable flange Portex



TRACHEOSTOMY MANAGEMENT – Adult

The Suctionaid Tracheostomy Tube

Description

The Suctionaid tracheostomy tube, manufactured by Portex, is a single lumen, cuffed tracheostomy tube

Reducing the Potential Risk of Infection

Accumulation and stasis of contaminated mucous and subglottic secretions above the cuff of tracheostomy tubes can be uncomfortable for patients and provides an ideal growth medium for pathogens. The integral suction lumen of the Suctionaid allows removal of these pooled secretions

Reducing the Risk of Aspiration

However good the cuff, microaspiration of contaminated material can potentially lead to pulmonary infection. Maintaining tracheostomy hygiene and regular removal of secretions with can help reduce this aspiration. It is the tracheostomy tube used for patients at risk of VAP and aspiration of oral pharyngeal secretions i.e. ORL, Head and facial nerve injuries., patients with swallowing deficiencies, i.e., myasthenia gravis, Guilliane Barre, some spinal injuries. This tube allows for the removal of above-cuff secretions and enables the patient to voice in the presence of an inflated cuff.

Caution Suctioning

- **Suction above the cuff with caution. Use low pressure suctioning when that is possible; otherwise use intermittent suctioning.**
- **Do not apply continuous suction above the cuff as this may cause trauma to the tracheal wall. Cease suctioning once the majority of secretions have been cleared from above the cuff line. Listen carefully for the sound that indicates that the majority of secretions have been cleared. Do not continue to suction for only minimal amounts of secretions due to the risk of trauma to the upper airway.**

Voicing/Talking

Do not use the Suctionaid tracheostomy tube for voicing until 72 hours post-insertion in order to avoid subcutaneous emphysema

Continued on next page

TRACHEOSTOMY MANAGEMENT – Adult

The Suctionaid Tracheostomy Tube, Continued

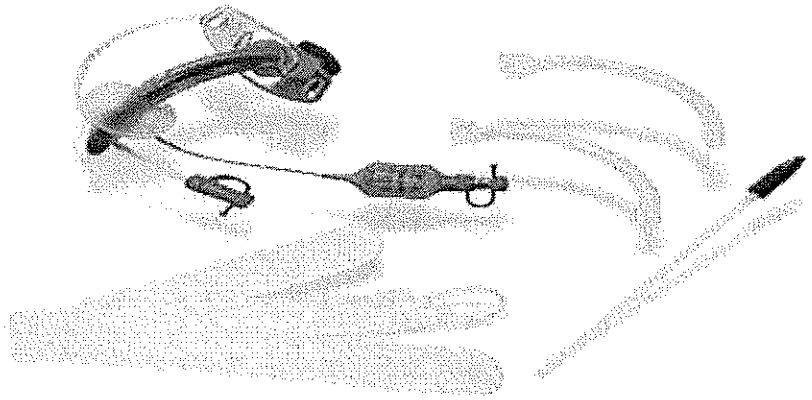
Rationale Suctioning

- Routine removal of above-cuff secretions enables a patient to tolerate cuff deflation as the first step towards decannulation.
- Above-cuff suction is performed to reduce the risk of bacterial loaded secretions accumulating above the inflated cuff and leaking into the lower airway.
- Suction tubing attached to portable or wall suction at <20 mmHg

Voicing/Talking

The Suctionaid tracheostomy tube facilitates voicing in the presence of an inflated cuff. Medical air or oxygen is entrained through an above-cuff suction line and over the vocal cords

Figure 34 – Suctionaid Kit



TRACHEOSTOMY MANAGEMENT – Adult

Procedure

Suctioning Procedure

Follow the steps below to use suction aide feature

Step	Action
1.	Insert the thumb control valve into the blue connector of the above-cuff suction line port. Not the pilot balloon.
2.	Connect the suction tubing to the suction line of the Suctionaid tracheostomy tube.
3.	If available on the ward, attach a low pressure suction regulator to the wall.
4.	Set the wall pressure gauge at 20 mmHg and suction until secretions are cleared.
5.	• If an adjustable gauge is not present, perform intermittent suctioning by briefly (maximum of 3 seconds) occluding the thumb control valve on the suction line. • Remove thumb from the port and if further suctioning is required repeat procedure. • Can also use a syringe with luer lock fitting. Draw back slowly.
6.	• Cease suctioning once the majority of secretions have been cleared from above the cuff line. • Listen carefully for the sound that indicates that the majority of secretions have been cleared. • Do not continue to suction for only minimal amounts of secretions due to the risk of trauma to the upper airway
7.	<u>If the above-cuff suction line becomes blocked:</u> • Connect the above-cuff line and thumb control valve to medical air • Blow 3 to 4 Lpm of air through the line to remove secretions. • Clear the secretions from the mouth with a Yankauer sucker. <u>If this fails:</u> • Inject 1 ml of sterile water into the above-cuff suction line • Suction. • Repeat if required.(Trams Clinical guidelines) • Repeat as often as necessary →assess 1 – 2 hourly.

Continued on next page

TRACHEOSTOMY MANAGEMENT – Adult

Procedure, Continued

Voicing/Talking Procedure

Follow the steps below to use vocal aide feature

Step	Action
1.	Suction as appropriate (via tracheostomy, above the cuff and orally).
2.	Connect medical air (or oxygen source) via the tubing to the Suctionaid tracheostomy tube suction line and set at the flow rate (normal range 2 to 8 Lpm), as tolerated by patient.
3.	Fingers occlude the thumb control valve to direct air into the larynx in synchrony with the patient's attempt at voicing. Follow the recommendation regarding frequency of voice use listed on the Portex Suctionaid Tracheostomy Tube Guidelines sheet posted at patient's bedside.

Document Suctioning

Follow the steps below to document Suctionaid use in clinical notes.

Step	Action
1.	Document the secretions removed from above the cuff: • Amount • Colour • Consistency • Frequency
2.	• Monitor vital signs especially temperature. • If these are changing: – Inform the patient's doctor. – Send tracheostomy secretion specimen to lab.

Document Voicing/Talking

- Document in clinical notes the ability of the patient to voice and any associated problems.
- Notify SLT as required.