

Kapitex Healthcare
making things clearer for tracheostomy patients



KAPITEX®

The Specialists in Laryngectomy,
Tracheostomy, Dysphagia and
Airway Management



preface

In publishing this booklet, Kapitex Healthcare Ltd hopes to provide information and understanding for both the patient and carer in either a hospital or home setting in the principles of airway management for the Tracheostomised patient.

It is important to note that the information given in this booklet is an overview and covers only the main areas in Tracheostomy care. Further information/knowledge should be sought in order to provide a high standard of care relevant to the patient's needs.



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introduction

Tracheostomy involves the surgical placement of a Tracheostomy tube into the trachea to create an airway (Dikeman & Kazandjian, 1966). Today it is a routine procedure that has been performed for over 3500 years (Dikeman & Kanzandjian), 1966).

Indications for a Tracheostomy include maintaining a patent airway, to reduce the risk of the complications associated with endotracheal intubation and increase patient comfort (Mallett & Dougherty, 2000).

A Tracheotomy refers to the procedure, whereas a Tracheostomy refers to the opening that remains following the procedure.

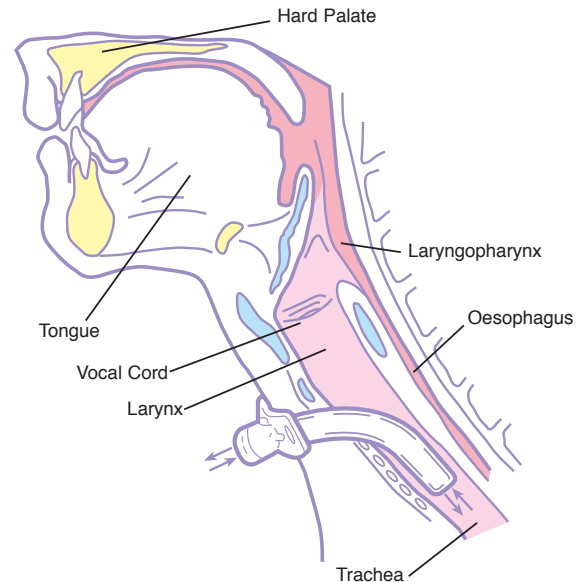
A Tracheostomy can be temporary or permanent.

There are 2 main surgical techniques:

Conventional Surgery: This is almost always performed in an operating theatre with the patient under general anaesthetic by a Otolaryngologist. A surgical opening is made into the trachea

between the second and third tracheal rings and a tube is placed in the opening/stoma.

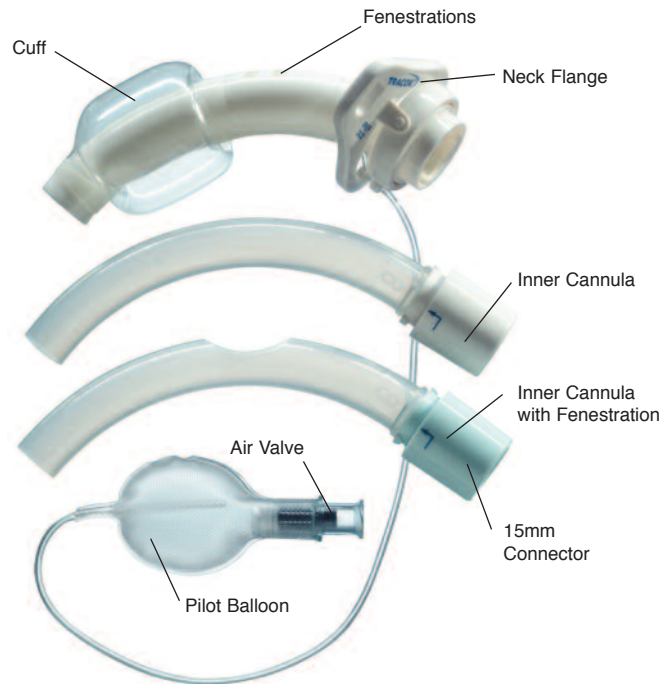
Percutaneous Tracheostomy: This is normally performed in an Intensive Care Unit. A flexible guidewire is inserted into the trachea through a needle. The needle is then removed and the space dilated. The wire is then also removed and a Tracheostomy tube inserted (Mason, 1993).



types of tracheostomy tubes

Today there are a variety of tubes available to suit every airway management problem.

Tracheostomy tubes now come in a variety of different materials ranging from medical plastics, silicone and silver. Single lumen tubes are available; however many tubes today come with both outer and inner cannula which can help to reduce the potential risk of problems of the tube blocking and reduces the number of times the tube needs to be changed.



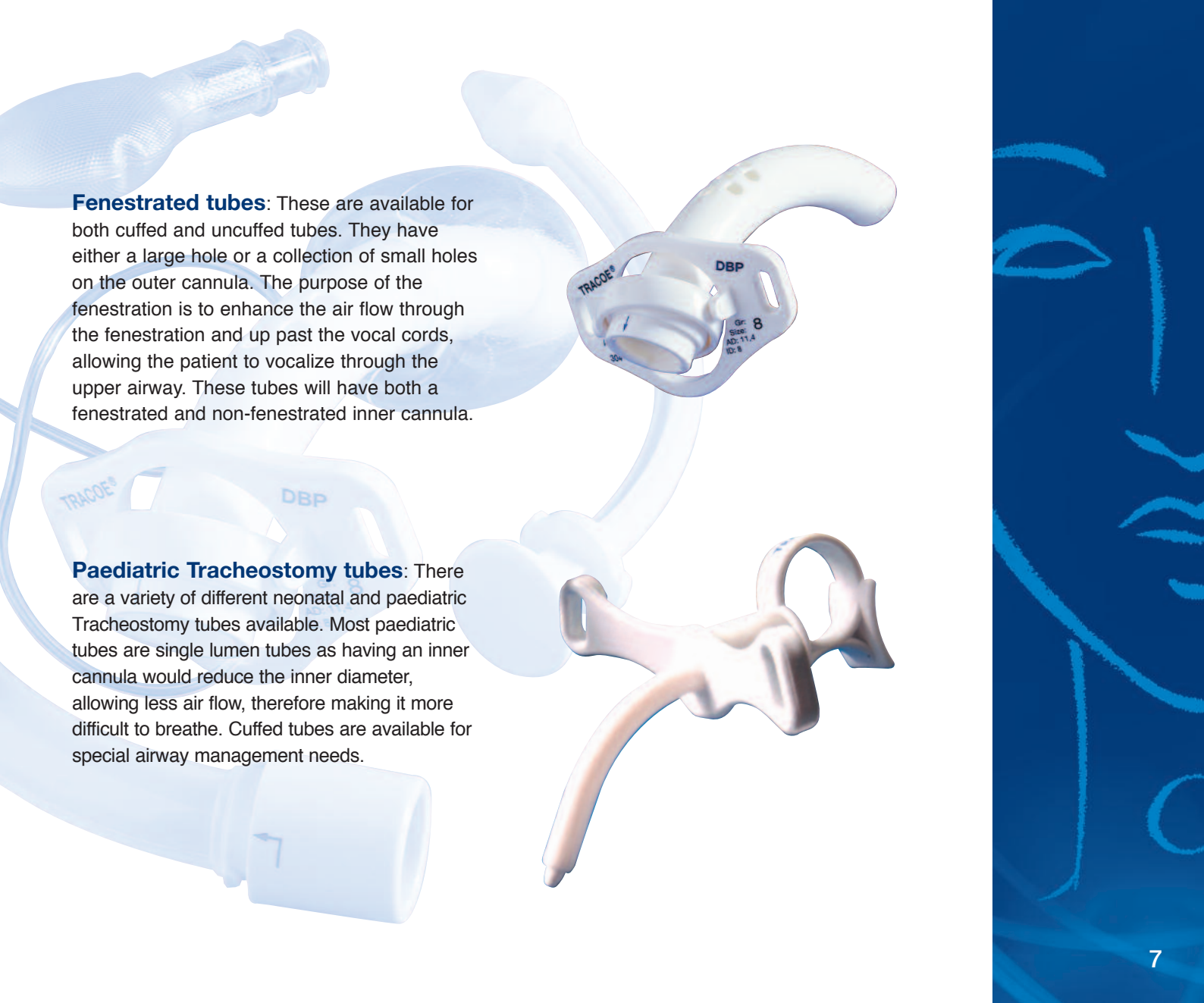
Cuffed tubes: These are often the first choice of tubes used in theatre during the immediate postoperative phase or when a Tracheostomy is required in an emergency situation.

The main aims of a cuff are to prevent air escaping around the tube during mechanical ventilation, and to prevent secretions entering the trachea. Most cuffed tubes today are low pressure, high volume; however due to the problems associated with cuffed tubes, they should be replaced with an uncuffed tube as soon as it is possible.



Uncuffed tubes: These are often used when a Tracheostomy tube is still required to maintain the patient's airway. A variety of long term tubes are available in different materials (silver, P.V.C., silicone).





Fenestrated tubes: These are available for both cuffed and uncuffed tubes. They have either a large hole or a collection of small holes on the outer cannula. The purpose of the fenestration is to enhance the air flow through the fenestration and up past the vocal cords, allowing the patient to vocalize through the upper airway. These tubes will have both a fenestrated and non-fenestrated inner cannula.

Paediatric Tracheostomy tubes: There are a variety of different neonatal and paediatric Tracheostomy tubes available. Most paediatric tubes are single lumen tubes as having an inner cannula would reduce the inner diameter, allowing less air flow, therefore making it more difficult to breathe. Cuffed tubes are available for special airway management needs.

speaking valves

Speaking Valves: As the name suggests, Speaking Valves help the tracheostomised patients to communicate orally. A Speaking Valve either fits on to the end of the Tracheostomy tube or is part of the inner cannula.

The valve opens on inspiration and closed on expiration. The air is redirected up through the vocal cords and out through the upper airway allowing speech.



Benefits of Speaking Valves are:

- Enhances speech
- Improves swallow
- Reduces aspiration
- Facilitates secretion management by producing stronger and more productive cough.
- Improves olfaction
- Speeds up decannulation process

Speaking valves can be used on both ventilated and non-ventilated patients and are suitable for both adults and children.

If the patient finds it difficult to breathe with a Speaking Valve, it might help to reduce the size of the tube or change to a fenestrated tube to enhance air flow.



Speaking with Speaking Valves may be difficult with excessive and thick secretions. This should be treated and for advice contact your doctor.

Decannulation Cap/Plug: When it is considered that the patient may be ready to have the Tracheostomy tube removed, the patient may be assessed by using a decannulation cap. The cap fits over the tube preventing air entering the Tracheostomy tube. This allows the patient to breathe normally through the mouth and the upper airway. Patients who have initially had difficulty tolerating this can benefit using a speaking valve (e.g. Passy Muir) as part of the weaning process (Feber, 2000),

Tracheostomy Tube Holders: Today there are several styles of Tracheostomy tube holders available. Traditionally, twill tapes were used. The more modern approach is to use holders produced from laminated foam and brushed nylon which are flexible and soft against the neck.

The design of these holders helps to reduce sore necklines and feature Velcro® fastening for extra security. Holders are available in various sizes for adults and children.



Tracheostomy Dressings: Sometimes to protect the Tracheostomy site it is necessary to wear a Tracheostomy dressing which lies behind the tube neck flange. Tracheostomy dressings help to keep the area dry, by absorbing mucus around the opening. It is important that dressings should be changed regularly to ensure a dry stoma area. Dedicated Tracheostomy dressings are thin so as not to raise the tube away from the neck.

care of the patient with a tracheostomy

There are some basic universal principles in caring for the patient with a Tracheostomy; however, it is important that you should always refer to your hospital/community trust policies and procedures.

Informing the patient: Communication is always essential for the patient and carer relationship. Explaining all procedures and providing information to the patient is vital for their confidence, compliance and overall wellbeing. It is also important to ensure good communication is maintained with the healthcare team involved.

Clear documentation is necessary, highlighting the type, size and make of Tracheostomy tube the patient has in-situ and when the tube needs to be replaced or cleaned. This helps to ensure up-to-date and accurate information is provided to all involved.

Maintaining the airway: In a hospital setting, a trolley or Tracheostomy box is often set up with useful equipment beside the patient's bed. Equipment includes tracheal dilators, suction machine and catheters, plastic apron, protective glasses and disposable gloves, 2 spare Tracheostomy tubes (1 the same size of that the patient is wearing, 1 size smaller), lubricating gel for tube insertion, pack of spare inner tubes, Tracheostomy cleaning fluid and cleaning swabs to clean inner tubes, small jug with sodium bicarbonate diluted in water to rinse suction tubing, additional Tracheostomy holders and Tracheostomy dressings.

Suctioning: Suctioning helps to clear the airway of secretions but should only be done as required (Hooper, 1996) and (Feber, 2000). The use of the suction catheter should be no greater than half the diameter of the Tracheostomy tube. Gloves, protective glasses and plastic apron should always be worn by the carer whilst suctioning.

Humidification: Humidification is important in caring for the patient with a Tracheostomy as the upper airway is bypassed and incoming air is unable to be warmed, filtered or humidified. Artificial humidification that is placed directly onto the Tracheostomy tube (HME's) or through a Tracheostomy mask will help to prevent tracheal secretions drying and causing further airway problems.

Tube changes: How often a Tracheostomy tube should be changed will always vary according to the patient's needs and manufacturer's advice. In general, the longest period a Tracheostomy tube can stay in situ is 28 days. Thereafter the tube should be taken out of the body and replaced if a tube is still required.

Cleaning: Care of the Tracheostomy tube will vary according to the material of the Tracheostomy tube and advice should be sought from the manufacturer. Cleaning kits with a mild detergent are recommended, but in general sterile water can be used. Cleaning brushes tend not to be used unless with silver tubes due to the risk of the brushes causing damage to both the inner and outer tubes. As previously discussed, Tracheostomy cleaning swabs now offer an effective and quick way of cleaning both the inner and outer tubes.

The stoma and surrounding area should also be regularly cleaned. If necessary a non-adhesive dressing applied to prevent skin becoming sore. There are products available to improve skin protection and help reduce pressure problems



caused by the neck flanges on the tubes eg. Trachi-Wipes (alcohol free skin wipes) and Kapi-Gel (silicone Tracheostoma spacers).

Cuff pressure monitoring: This is an important part of caring for a patient who has an air-filled cuffed Tracheostomy tube in-situ. Tracheal ischemia can result when too much

pressure by the cuff being inflated is exerted against the tracheal wall (Harper & Lippincott, 1981).

Most Tracheostomy tubes today are high volume, low pressure cuffs which do reduce the risk of tracheal wall damage, but without careful monitoring can still be damaging to the tracheal mucosa.



A cuff pressure manometer will give indication to whether the cuff pressure is within satisfactory limited. Minimal Leak Technique (MLT) is a popular method to ensure appropriate pressures are present in the cuff. This is when enough air is inserted into the cuff to maintain ventilation pressures and allowing some air to pass around the cuff. A stethoscope is used to monitor the upper airway. A seal occurs when no air can be detected and a small amount of air is then removed creating the minimal leak. Minimal Occlusion Volume (MOV) aims to insert the minimum amount of air in the cuff to prevent a leak around the tube. This involves inflating the cuff until no air can be heard escaping around the cuff into the upper airway (Mason, 1993).

complications of a tracheostomy

Complications can always arise with any medical procedure/operation and below are some of the possible complications/problems that can occur with a Tracheostomy.

Breathing problems - Airway infection will increase secretions and suctioning may have to be done more frequently.

The tube becoming blocked - This is often due to dried secretions due to inadequate humidification.

Infection - Blood stained secretions - These can occur due to poor suction technique where the suction catheter causes trauma to the tracheal mucosa. Advice should be sought if this continues or fresh blood is suctioned.

Patient requires resuscitation - In the hospital setting procedures for resuscitation will apply. Most Tracheostomy tubes have a 15mm connector attached to the flange (see diagram on page 5) to enable all hospital equipment to be

attached if necessary.

For patients in the community resuscitation must be done through the Tracheostoma on the neck. Mouth-to-opening treatment to be commenced if required. Further information should be sought through your hospital and ambulance service for specific details.

Potential long-term problems

Tracheal Stenosis - This causes a narrowing within the trachea and is often at the tracheal stoma and cuff site. This may be due to excessive cuff pressure. Trauma from suctioning and infection can also be contributing factors (Harper & Lippincott, 1981).

Tracheomalacia - This can be caused by the softening of the cartilaginous structure of the trachea. This is often a result of erosion of the tracheal rings.

Tracheal granuloma - This is abrasion caused by the Tracheostomy tube (Dikeman & Kazandjian, 1996).

problem solving

Today there are many Tracheostomy tubes available to suit all airway management issues. Tracheostomy tubes should meet the patient's needs, fit well and be comfortable..

Sizing the Tracheostomy tube: The size of a Tracheostomy tube will normally be marked on the flange of the tube and always on the tube packaging box. Sizes of tubes will vary depending on manufacturer. In general a Tracheostomy tube should fit two thirds of the tracheal lumen.

Special tubes: A range of Tracheostomy tubes are available to solve difficult airway problems e.g. a patient with a large neck.

Some Tracheostomy tubes can be customised to specific requirements of the patient's needs e.g. increase tube length, alter position of fenestration.

Conclusion:

The care management of patients with tracheostomy tubes in the majority of cases should run smoothly. This can be ensured by working and communicating together with all parties involved.



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