



Tracheostomy Management

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Aims

- To ensure high standards of patient post operative tracheostomy care in PACU, cuff management, practical suction techniques, together with indications, contra-indications and safe and effective use of suctioning equipment.

Learning Outcomes

- To be able to identify key features in the management of post operative tracheostomy patient.
- To be able to clean, change inner cannula and trachy dressing and collect sputum specimen.
- To set up humidification unit.
- To suction and demonstrate safe and non-touch techniques.

Factors to be considered in the care of patient with tracheostomy

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- Airway patency
- Mobilisation of secretions
- Humidification
- Emergency equipment

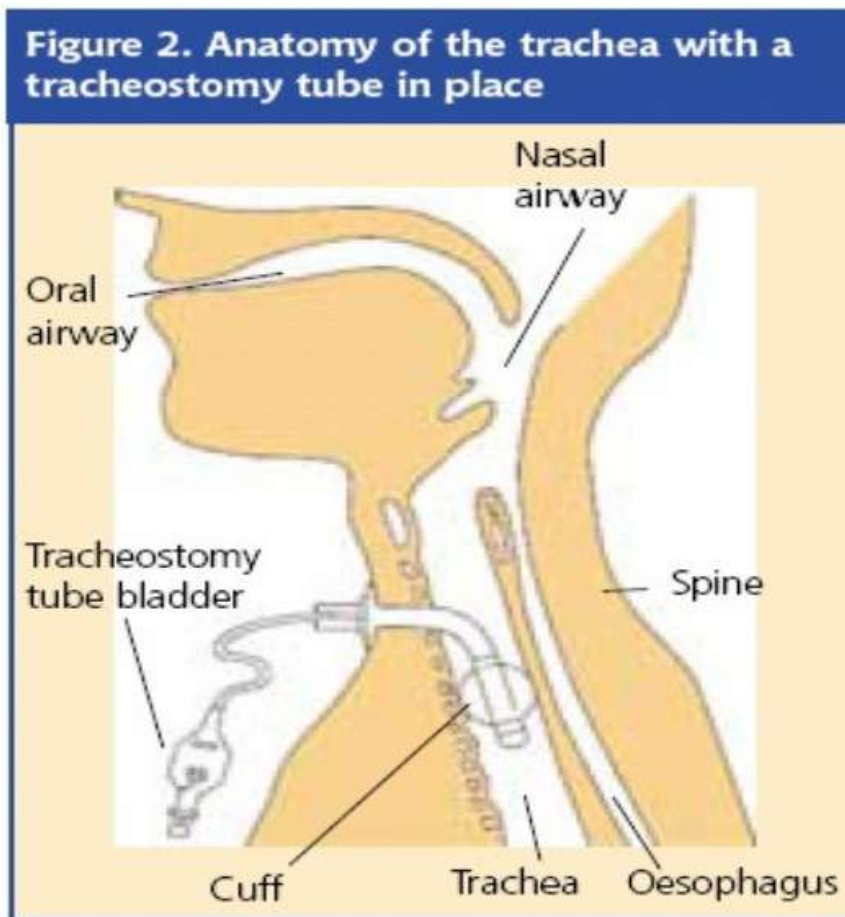
- <https://www.youtube.com/watch?v=gc1GS-Gf9Mk>
- <https://www.youtube.com/watch?v=d2wSiWuTxoc>
- <https://www.youtube.com/watch?v=MlwIN5fMDns>

What is tracheostomy?

What is Tracheostomy

It is a surgical procedure to create an opening into the trachea through the neck. The anterior incision is made below the cricoid cartilage through the 2nd- 4th tracheal rings. Through this stoma, a tracheostomy tube will be inserted.

(S.K. Adam & S. Osborne, Critical Care Nursing 2009)



Types of Tracheostomy

Types of Tracheostomy

- PDT Percutaneous Dilatational Tracheostomy
- Surgical tracheostomy
- Mini tracheostomy
- Permanent
- Temporary
- Emergency

PDT Tracheostomy

- It is quicker, simpler, reduces risk of infection and heammorrhage and leaves a smaller scar.

(Walts et al., 2006)

Surgical Tracheostomy

- If PDT is contraindicated and the patient is coagulopathic, cervical injury preventing extension of the neck, enlarged thyroid gland, neck tumour, neck oedema, burns to the head or neck and ARDS surgical tracheostomy will be performed.

(Astle, 2011)

Types of Tracheostomy Tubes

Types of Tracheostomy Tubes



Cuffed Tube



Cuffless Tube

Types of Tracheostomy Tubes



Cuffed Tube with disposable inner cannula



Cuffless Tube with disposable inner cannula

Types of Tracheostomy Tubes



Cuffed Tube with reusable inner cannula



Cuffless Tube with reusable inner cannula

Types of Tracheostomy Tubes



Fenestrated Cuffless Tube



Metal Tracheostomy Tube

Cuffles vs. Cuffed Tubes

- **Cuffless tubes**

- are primarily used in non-ventilated patients that have no difficulty swallowing and have no danger of aspiration. It allows air to pass into the upper trachea and larynx so the patient can cough and speak normally.

- **Cuffed Tubes**

- provides an airtight seal, to facilitate positive pressure ventilation and reduce the risk of aspiration to patients during critical illness.

Fenestrated and Non-Fenestrated



Fenestrated Tracheostomy Tube



Red colour coded inner cannula has matching multiple fenestrations.
Clear white colour inner cannula has no fenestrations.

- **Fenestrated tubes** may be considered for patients undergoing weaning from ventilation, as they facilitate **speech and reduce the work of breathing** in comparison to **non-fenestrated** tubes.
- Nurses should be aware that **two types of inner** cannula are supplied with fenestrated tubes; **one with a fenestration to promote air flow and speech**; and one without a fenestration for **suctioning**.

Shiley tracheostomy tubes



Cuffed with disposable inner cannula



Cuffed with reusable inner cannula



Neonatal and pediatric



Portex Tracheostomy Tubes



Cuff Management

- **Assessing Cuff status**

The pilot balloon will always be the best guide for helping to determine if a cuff is inflated, deflated, or somewhere in-between. If the balloon is flat, the cuff is largely deflated. If it is “puffy,” some level of inflation exists.

- **Maintain cuff pressure** – using **cuff manometer**. Between **15-25mmHG (green zone)** or as per medical instructions to ensure seal is maintained. This is to reduce tracheal injury & aspiration. **COP** within the tracheal wall is **30mmHG**.
(P. Woodrow 2006)

- **Cuff pressure checked** - upon arrival to PACU

Monitored and recorded at least once every shift in the ward (8-12 hourly) and repeated as clinically indicated. If air leak persist despite re-insertion of air contact the doctors.

Indications

- Medical conditions that require the use of a breathing machine (ventilator) for an extended period, usually more than one or two weeks
- Medical conditions that block or narrow your airway, such as vocal cord paralysis or throat cancer
- Paralysis, neurological problems or other conditions that make it difficult to cough up secretions from your throat and require direct suctioning of the trachea to clear your airway

Indications

- Preparation for major head or neck surgery to assist breathing during recovery
- Severe trauma to the head or neck that obstructs breathing
- Other emergency situations when breathing is obstructed and emergency personnel are not able to intubate by ETT.

Problems Associated with Tracheostomy tube placement

- Tube displacement or dislodgement
- Tracheal stenosis, fibrosis, infection, bleeding
- Aspiration, Surgical emphysema
- Loss of normal humidifying and warming mechanisms
- Scarring of the airway or erosion of the tube into the surrounding structures.
- Increased risk of nosocomial pneumonia

Contraindications

- Ca in upper GI or respiratory tract
- Severe bronchospasm
- Stridor
- Oesophageal or high GI surgery
- Acute face, neck or head injury
- Raised ICP or suspected CSF leak
- Tracheo / Oesophageal fistula

When to suction

When to Suction

- If clinically indicated. Assess for the following:
- Noisy breathing
- Visible and audible secretions
- Coarse breath sounds
- Decreased Oxygen saturation
- Vital signs abnormality
- Patients inability to cough
- Prolonged expiratory breath sounds

Frequency of Suctioning

- To be based on individual patient assessment and clinical need to avoid **adverse effects**.

Adverse effects:

- Tracheal trauma
- Suctioning induced hypoxia
- Infection
- Hypertension
- Cardiac Arrhythmias
- Raised ICP

Suction Equipment

- Wall suction / portable suction machine checked and in working order
- Suction catheters (appropriate sizes)
- PPE (gloves, goggles, apron, and mask) as per standard precautions
- Disposable receptacles
- Alcohol wipes
- Sterile water for rinsing suction tubing

Suction Catheters

- Size. Standard are FG 10, 12, 14

Catheter size = Tube size – 2 x 2

So, if Tube is 8, $8 - 2 = 6$

$6 \times 2 = 12$

(P. Woodrow 2006)

Suctioning

- Check pressure gauge by kinking the suction tubing and occluding the suction port.
Pressure: 80-120 cmH2O or 14-16 kPA
- For patients who are at risk of post suctioning Hypoxia, consider **hyper oxygenating** and monitor oxygen saturation levels.

Care of Stoma

- Assess the tracheostomy stoma (edges of the stoma) upon arrival to PACU or minimum daily in the ward as clinically indicated.
- Change dressing if becomes wet, soiled or increased secretions to decrease the risk of infection and impaired skin integrity.
- Assess for signs of bleeding, infection, pressure from trachy flanges, secretions crusting, redness, drainage, odour, pain and irritation.

Communication

- Assess and recognise the communication needs of patient with tracheostomy
- MDT will facilitate, evaluate and implement a **communication care plan** specific to patient needs.
- **Plan may include:**
 - **Speaking valves, alphabet, picture and phrase books, electronic larynx.**

Humidification

- The upper airway
 - warms, moistens, filters

If bypass, humidification maybe achieved by:

- warm H₂O Humidifiers
- cold H₂O Humidifiers
- Nebulizers (N.Saline)

Bed side emergency equipment

Ensure the ff equipment are present in the bedside:

- Tracheal Dilators
- Spare Tracheostomy tubes
 - 1 the same size
 - 1 size smaller
- Catheter mount
- 10 mls leur lock syringe
- PPE
- If fenestrated tube is insitu, a non-fenestrated inner cannula must also be present to facilitate manual ventilation.

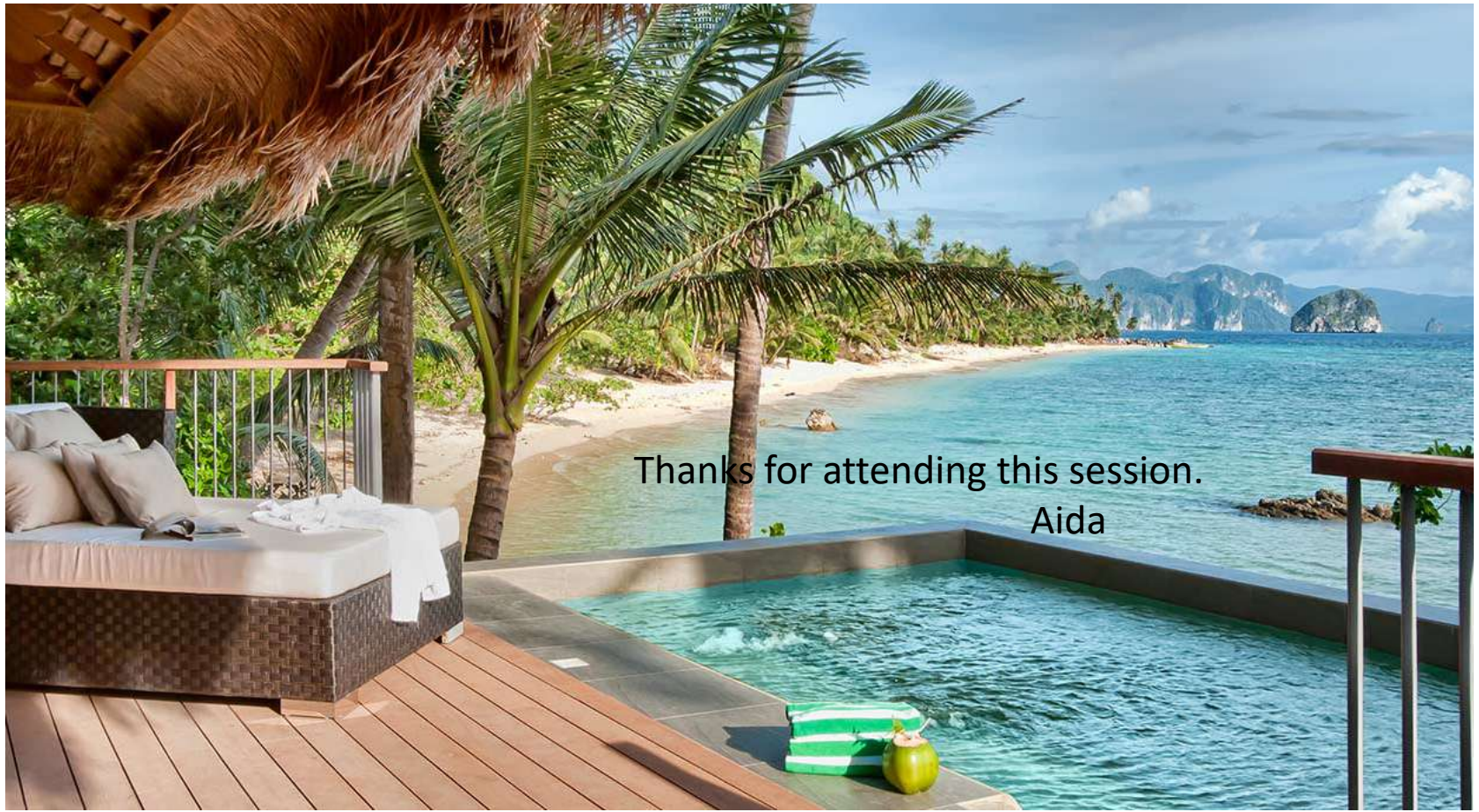
Demonstration and workshop

- Cuff pressure check
- Changing of Tracheostomy Dressing
 - (secure dressings, application of Velcro strap, assess tightness of strap)
- Oral hygiene
- Wall suction assembly
- Safe suctioning
- Humidifier assembly
- Collect sputum specimen

Summary

- Define Tracheostomy
- Types of Tracheostomy and inner cannula
- Indications and contra-indications
- Communication
- Dressing change, safe suctioning, collecting sputum specimen and gather bedside emergency equipment

Questions



Thanks for attending this session.

Aida

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