Tracheostomy pdf slideshare

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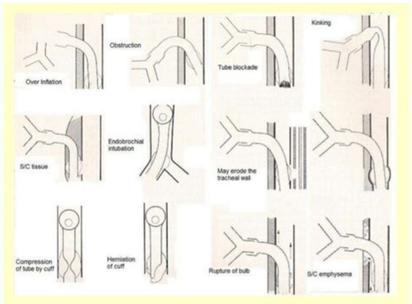

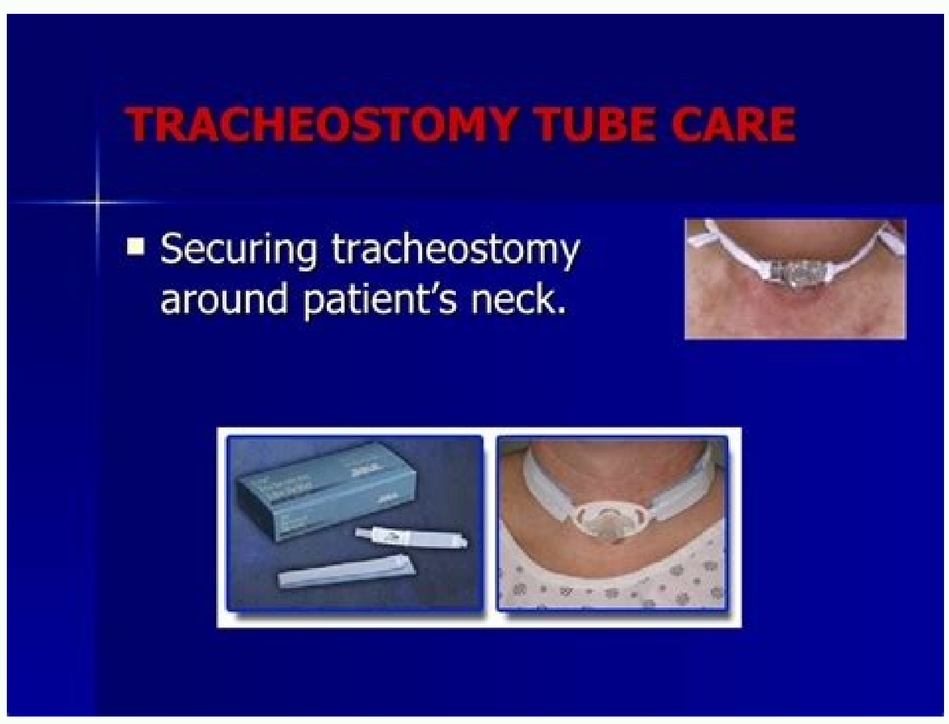

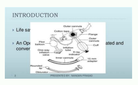

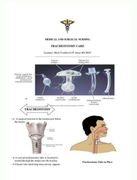

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Clinical reviews

Tracheostomy management

A basic understanding is essential for dealing with emergency blockages and displacements

- **By**: Andrew Cumpstey, Stuart J Benzie, Stuart McKechnie

A tracheostomy (or tracheotomy) is a direct opening in the anterior trachea communicating with a stoma on the surface of the neck. This allows air to pass directly into the trachea below the vocal cords (fig 1). Different forms of this operation have been carried out for over 3000 years, by Alexander the Great and Galen among others.[1] The procedure is common in modern medical practice, and doctors are likely to encounter patients with tracheostomies in the early years of their training.[2] Junior doctors might find themselves having to manage patients with emergency tracheostomies.[1]

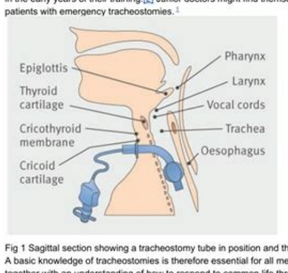

Fig 1 Sagittal section showing a tracheostomy tube in position and the relevant anatomy

A basic knowledge of tracheostomies is therefore essential for all medical practitioners, together with an understanding of how to respond to common life threatening complications related to tracheostomies, particularly displacement and obstruction of the tracheostomy tube.[3]

This article outlines the main indications for tracheostomy and the different types of tracheostomy tube in widespread use. The initial management of tube displacement and tube obstruction are also discussed.

Top

Indications for tracheostomy

Contraindications of tracheostomy slideshare. Percutaneous tracheostomy slideshare. Complications of tracheostomy slideshare. Care of patient with tracheostomy slideshare. Tracheostomy suctioning slideshare. Tracheostomy slideshare for nursing students. Tracheostomy tube slideshare. Indications for tracheostomy slideshare.

1. Dr Manpreet Singh Nanda Associate Professor ENT MMMC&H Solan 2. Surgical procedure in which opening made in anterior wall of trachea and converted into a stoma on skin by inserting a tube Chevalier Jacksen 1932 standardized Tracheotomy – opening into trachea 3. Prolonged intubation (mc) Upper airway obstruction bypass – oral cavity, pharynx, larynx (trauma, malignancy, FB, congenital) Retained tracheo-bronchial secretions suction clearance – head injury, stroke, tetanus, coma, poisoning Prevents aspiration of secretions and blood For administering general anaesthesia – trismus, laryngeal growth, administering medications Respiratory insufficiency for improving alveolar ventilation by reducing resistance to airflow and reducing anatomical dead space – emphysema, chronic bronchitis CONTRAINDICATIONS – in emergency no , elective – bleeding disorders 4. I – Emergency and Elective Emergency – urgent need to establish airway Endotracheal intubation/cricothyrotomy not possible High complication rate Elective – plannned surgery II – Temporary and Permanent Temporary – only till cause is corrected Permanent – laryngectomy, b/l abductor paralysis, laryngeal stenosis Tracheal stump brought to surface and stitched to skin 5. III - High, mid and low tracheostomy HIGH –above thyroid isthmus at level of first tracheal ring Ca larynx with stridor when total laryngectomy plannned Replace it by mid tracheostomy within 24 hrs Complications – perichondritis of cricoid cartilage, subglottic stenosis MID – preferred, at level of thyroid isthmus through 2nd and 3rd tracheal ring Excise the isthmus or retract it Complication – isthmus bleed LOW – below thyroid isthmus In laryngeal papillomatosis to prevent implantation Lower trachea more deeper so less preferred Complication – injury to vessels, dome of pleura 6. Anaesthesia – preferred – GA, endotracheal intiubation Local anaesthesia – 2% xylocaine with adrenaline Position – supine, pillow under the shoulder to get full extension of neck and head to bring trachea forward Skin Incision – vertical or transverse Vertical – from cricoid cartilage to just above suprasternal notch – preferred in emergency, less bleed, easier Transverse – 5 cm or 2 finger breadth above suprasternal notch between cricoid and suprasternal notch – less 7. Dissection and retraction – superficial fascia, deep cervical fascia and strap muscles which are divided in midline and retracted. Anterior jugular vein Thyroid isthmus retraction or divided – pretracheal fascia dissected next thyroid isthmus retracted with blunt tracheal hook Inferior thyroid vein 4% lignocaine drops into trachea – suppress cough and confirm airway Cricoid retraction with a sharp cricoid hook 8. Tracheal incision – vertical incision between 2nd and 3rd or 3rd and 4th tracheal rings Converted into circular opening or tracheal flap sutured to skin Never 1st tracheal ring – perichondritis and stenosis Dilation of trachea – tracheal dilator Correct size tracheostomy tube introduced Inflate the cuff Tied to neck, flap sutured to skin, light wound closure 9. Speech not possible Loss of olfaction – no nose breathing Loss of humidification and warming of air Increased risk of pulmonary infection – no protective filtration by resp mucosa Loss of chest fixation – no weight lifting, defaecation, micturition Swimming and shower bath not possible FB like flies can enter 10. Trained nurse Watch for bleeding, displacement, blockage Call bell/ paper and pen Half hourly or hourly suctioning using sterile catheter Install few drops NS/RL/5%Sod Bicarb into trachea every 2-3 hrly to loosen crusts Use wet gauze for proper humidification to prevent crusting Inner tube cleaned every 4 hrly Outer tube change after 3 days (early – soft tissue collapse). Later 7-10 days to prevent granulations 11. Deflate cuffed tube for 5 min every hrly to prevent tracheal stenosis Antibiotics Mucolytics Anti inflammatory Chest physiotherapy Daily dressing of stoma Temp/pulse/RR 12. Immediate (intraoperative or within 24 hrs) Haemorrhage RLN damage Damage to thyoid, larynx Pleural injury leading to pneumothorax. Intercostal drains Damage to post tracheal wall and oesophagus – TOF – ryle's tube Aspiration of blood Air embolism Vagal stimulation – resp arrest – 4% lignocaine Anaesthesia complications Apnoea due to sudden CO2 washout - carbogen 13. Intermediate/delayed - 1to 14 days Reactionary bleeding – within 48 hrs Secondary bleeding – after 5 to 8 days Displacement of tube Obstruction of tube Dysphagia Crust formation Infection Tracheal erosion Subcutaneous emphysema extending to eyelids and genital due to air leakage but tight sutures- release sutures and multiple incisions at site 14. Late – after 14 days Secondary haemorrhage Laryngeal stenosis due to perichondritis of cricoid Tracheal stenosis due to infection Delayed TOF Difficult decannulation Keloid or scar Tracheomalacia if large area of trachea excised FB trachea Septicaemia 15. Process of weaning the patient off the tracheostomy tube once the causative condition treated If kept longer – lead to granulation and stenosis Pre investigations – DL Scopy/X Ray Neck to rule out proximal obstruction Occlude the tube or use progressive smaller tubes (children) for 48 hours Preferably in OT where intubation facility available 16. Failed decannulation – do endoscopic examination of larynx, trachea and bronchi Persistence of etiology Granulations around stoma and trachea Tracheal oedema Subglottic stenosis Tracheomalacia Psychological dependence Physiological dependence as cant tolerate upper airway resistance 17. Vertical incision Under GA with endotracheal intubation No excision of trachea only incision Not too much extension of neck – pulls up chest structures like pleura and innominate artery Don't insert knife deep in trachea – trachea soft and compressible – TOF Post op X Ray Neck and Chest – to confirm position of tube 18. Metallic – Jackson's, Fuller's Inner and outer tube Inner longer to remove secretions Inexpensive Disadvantages – Not in RT No air tight seal (cuff) – aspiration, not on ventilator, not for GA 19. Plastic – cuffed/non cuffed Disadvantage – can get blocked, expensive Cuffed Cuff is a balloon at distal end of tube when inflated provides seal between tube and tracheal wall Prevents aspiration Subglottic stenosis Non cuffed – Ramson's 20. Laryngotomy/Coniotomy Opening made in the airway through cricothyroid membrane Indication – emergency life saving procedure to buy time, should be converted into tracheostomy within 24-48 hrs C/I – infants and children, inflammation, malignancy Complications – Perichondritis of cricoid cartilage Subglottic oedema and stenosis 21. Steps Skin incision – vertical midline 1cm between thyroid cartilage and cricoid ring Transverse incision to cut the cricothyroid membrane Keep it open with a handle of small knife turned right side 4mm endotracheal tube inserted 22. Insertion of tracheostomy tube through pretracheal skin and soft tissues without direct surgical visualisation of trachea under sedation Done in intubated adult patients with long neck in ICU Advantages – easy, shorter time, less bleed, no need for OT/GA Disadvantage – expensive C/I – emergency, children, neck mass, obese, short and thick neck,cervical spine dis Complications – wrong entry of dilator – false passage, haemorrhage, surgical emphysema 23. Steps Skin incision – 1cm transverse incision between 2nd and 3rd tracheal ring (2 cm below cricoid) Dissection of pretracheal tissues Thyroid isthmus pushed down 14 G IV cannula with needle inserted into trachea then needle removed Guide wire inserted through cannula then cannula removed Teflon dilators passed into wire which creates stoma Tracheostomy tube advanced through guide wire, guide wire and dilators removed 24. Etiology External RTA (mc), cut throat wounds, gun shot wounds, accidental fall, strangulation/hanging Internal Traumatic endoscopies or intubation, prolonged intubation, high tracheostomy, sharp FB like pin, glass, radiotherapy to neck, burns and chemical injury Degree of trauma Age>40 yrs – calcification, fracture laryngeal cartilages Force of impact- low velocity/ high velocity Angle of impact – front (more dangerous)/lateral 25. External bruises Tears and lacerations of mucosa of larynx and pharynx Fractures of laryngeal framework Trauma to hyoid bone, laryngeal cartilages (upper thyroid – epiglottis avulsion, lower thyroid – vocal cord disruption), upper tracheal rings Haematoma and oedema of larynx Dislocation of joints – cricoarytenoid (arytenoid avulsion), cricothyroid (RLN injury) Laryngotracheal separation Injury to vessels and nerves 26. Depending on site and force of impact Stridor Hoarseness Dysphagia/odynophagia Aspiration of blood, secretions, fluid Hemoptysis Local pain and tenderness Cervical bruises Subcutaneous emphysema Thyroid prominence lost Associated injuries to chest, cervical spine, abdomen, extremities 27. IDL/Fibreoptic laryngoscopy Mucosal oedema, avulsion of epiglottis, disruption of vc, asymmetrical laryngeal inlet.. DL Scopy not done as increases distress X Ray soft tissue Neck – emphysema, fracture, displacement CT Scan of laryngeal framework Chest X Ray Complications – laryngeal stenosis, abscess, perichondritis, vc paralysis 28. Hospitalization Voice rest Airway management – oxygen/tracheostomy IV fluids/blood transfusion Humidification of inspired air Steroids Antibiotics and anti inflammatory Surgical – surgical exploration of larynx, debridement, open reduction and fixation of fractures, repositioning of cartilages, laryngeal stent to prevent post op adhesions, silastic keel to prevent web formation End to end anastomosis for laryngotracheal separation 29. Etiology Laryngotracheal trauma Cricothyrotomy High tracheostomy Prolonged intubation Corrosive poisoning Post radiotherapy Chronic granulomatous dis – TB, Scleroma Pathology – fibrosis, adhesions C/F – hoarseness, stridor, dysphonia IDL – narrowing, web formation 30. Diagnosis Endoscopies, CT Scan, X Ray Neck Prevention Avoid prolonged intubation Cuff management Avoid high tracheostomy Use seat belt Prognosis – poor 31. Treatment Tracheostomy Laryngofissure/Laryngotracheoplasty Excision of granulation tissue or scar Stent placed for 3-4 weeks (to prevent adhesions)

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