

ENT Emergencies

Airway Management

Registrar

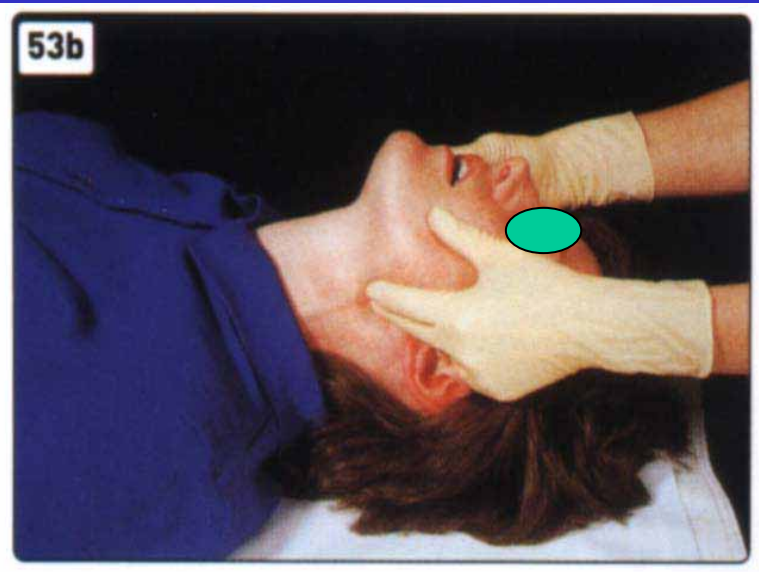
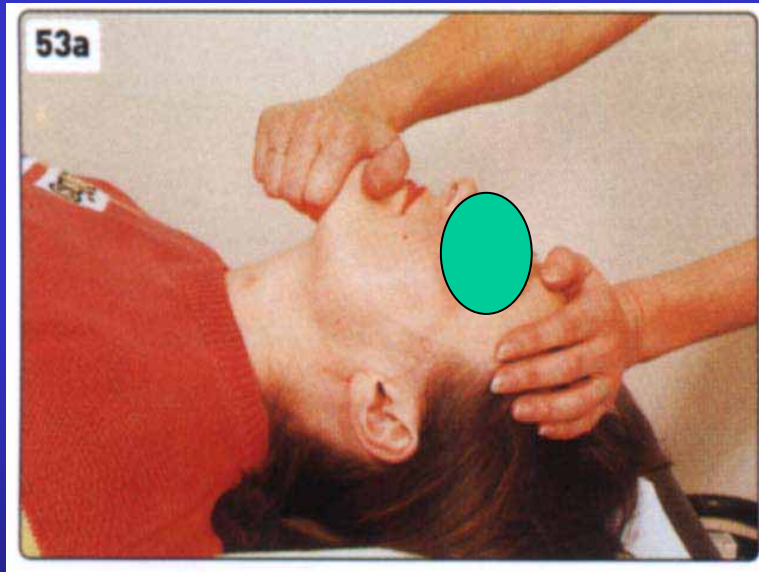
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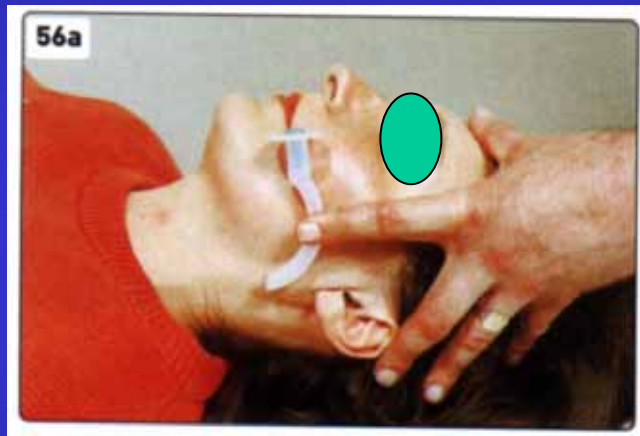
Airway Management

- Airway obstruction most rapidly and certainly fatal condition for any patient
- Step wise management of airway:
 - Airway manoeuvres (chin lift, jaw thrust)
 - Guedel's (oropharyngeal) airway
 - Nasopharyngeal airway (not in head injuries)
 - ET tube
 - Surgical airway (cricothyroidotomy – needle for temporary jet insufflation or cric tube)
- Threats to the airway and specific management

Airway Manoeuvres



Airway Adjuncts



Intubation

- Rapid Sequence Intubation (RSI) – implies non-fasting, emergency intubation
- Get equipment ready and check working order
- Get drugs ready (omit drugs if patient is apnoeic)
- Preoxygenate if possible (important!)
- Induction agents and cricoid pressure
- Insert laryngoscope into vallecula and visualise VC
- Tube through vocal cords and inflate cuff
- Check position – listen, capnograph, sats, CXR
- Ventilate and fix tube in position

Definitive Airway



Surgical Airway

- **Indications:**
 - complete airway obstruction
 - failed intubation
- Needle or complete surgical cricothyroidotomy – same anatomical landmarks (no time for proper tracheostomy)
- Anterior midline of neck/throat between thyroid cartilage and cricoid ring is a small space – cricothyroid membrane
- Aseptic technique
- Take time to identify and find landmarks
- In an awake patient – local anaesthetic

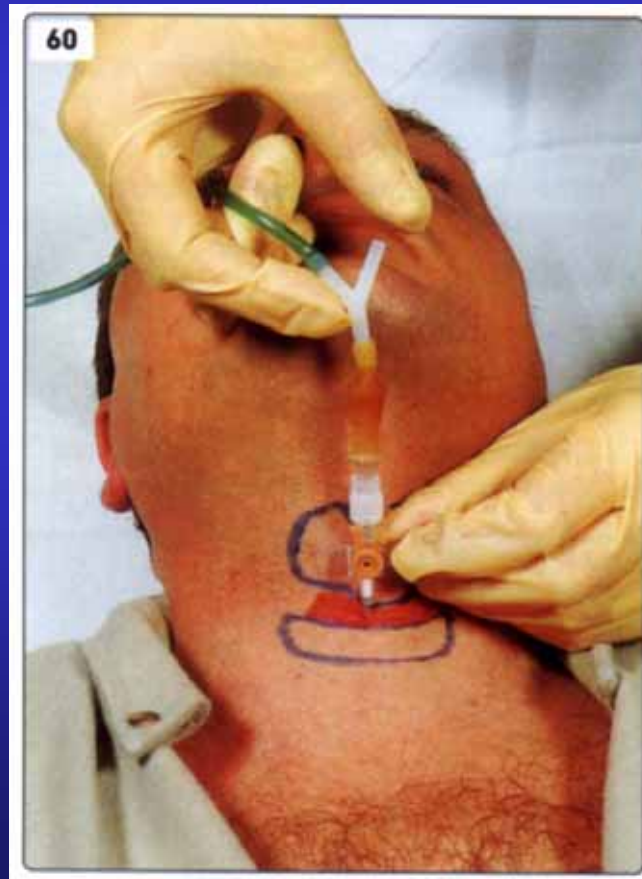
Needle Cric

- Over needle cannula through cricothyroid membrane into trachea
- Only temporary airway – buys time to get to theatre (roughly 30-40 min.)
- Relies on jet insufflation to provide oxygenation
- Attach 5ml syringe to 14G needle
- Direct through cricothyroid membrane at angle of 45 degrees caudally, aspirating as you go
- If aspirating air – in trachea
- Pull needle out, fix cannula in place

Jet Insufflation

- Attach O₂ tubing to cannula
- O₂ delivered at high pressure through small tubing
- Problem is O₂ gets in, but ventilation doesn't take place (not getting rid of CO₂ – builds up and respiratory acidosis develops)
- Attach Y connector or cut small hole in one side of tubing for controlled occlusion
- Occlude for 1 second, leave for 4 seconds to allow limited passive exhalation
- Risk of false passage into tissue – rapid, significant surgical emphysema

Emergency Surgical Airway



Surgical Cric

- Find landmarks
- Incision through skin down to cricothyroid membrane
- Incise cricothyroid membrane transversely
- Put handle of scalpel into incision and rotate 90 degrees to open incision
- Insert ET tube or tracheostomy tube through opening and inflate cuff (remove trochar from trachy tube)
- Ventilate and check position (listen, capnograph, CXR), fix in place

Emergency Surgical Airway



Threats to the Airway

- FB inhalation (supra glottic, vocal cords, sub glottic)
- Oedema (anaphylaxis, angio-oedema, inhalation burns)
- Infective processes (epiglottitis, croup, bacterial tracheitis, para-/retropharyngeal abscesses)
- Trauma (direct – larynx, facial fractures)
- Pressure effect (haematoma, external mass)
- Inability to protect own airway in normal way (decreased LOC)

FB Inhalation

- History of sudden respiratory distress and or choking in previously well person, usually children
- May present with stridor, wheezing, and respiratory distress, agitation, cyanosis or collapse
- As long as patient is making effort to cough, assist only with gentle backslaps
- Only when patient is completely unable to cough, start Heimlich manoeuvre (back slaps and abdominal thrusts in kids)
- Most patients with FB in larynx/subglottic area with complete obstruction will not reach hospital alive

Management FB

- Patients with incomplete obstruction but compromised – don't disturb, O2, removal in theatre by anaesthetist/ENT Surgeon as soon as possible
- Any intervention at this stage can potentially make situation worse
- There may be time to obtain XR lateral soft tissue neck to show position of FB (should not delay treatment)
- These patients may progress to complete obstruction if FB moves or oedema develops
- Must be accompanied by someone trained to perform surgical airway at all times

Management FB

- Patients who are dying (complete obstruction)
 - start basic airway manoeuvres and have a look (no finger sweep in children)
- Remove FB if visible
- Try to visualise FB and attempt removal on direct vision (laryngoscope and McGill's forceps)
- Last option before needle/surgical cric – push FB down into bronchus (remove later by bronchoscopy)
- Remember narrowest part of child's airway is at cricoid ring (needle cric may not bypass obstruction)
- Only needle cricothyroidotomy in children

Oedema

- Secret is EARLY intubation, especially with inhalation burns
- Treatment of anaphylaxis:
 - 0,5mg of 1/1000 adrenaline IM
 - 10 mcg of 1/10 000 adrenaline IV in boluses if severe oedema, bronchoconstriction and hypotension
 - nebulised adrenaline (5ml of 1/1000) and or B2
 - H1 and H2 receptor blockers IV (chlorpheniramine and cimetidine)
 - Hydrocortisone IV

Infection

- Epiglottitis: (H. influenza)
 - don't disturb in any way, O2 if tolerated
 - intubation in theatre
 - will require careful gaseous induction
- Bacterial tracheitis: (H. influenza, S. aureus)
 - humidified O2
 - early intubation

Infection

- Croup/LTB: (various viruses)
 - steroid and or adrenaline nebs (5ml 1/1000)
 - oral dexamethasone
 - if getting worse – intubation by anaesthetist
- How do we know if croup is getting worse?
 - GRADE 1: Inspiratory stridor
 - GRADE 2: Inspiratory and expiratory stridor
 - GRADE 3: Grade 2 + intercostal recession
 - GRADE 4: Grade 3 + central cyanosis

Trauma

- Midface fractures and unstable mandible fractures may threaten an airway (soft tissue obstruction and swelling, blood and aspiration)
- Intubate if airway compromised in any way, or if potential to become compromised
- Direct trauma to throat/neck can result in a fractured larynx – hoarseness, crepitus, surgical emphysema – may need surgical airway (oedema, instability)
- Penetrating injuries to trachea will cause bleeding, swelling and sometimes also pneumothorax (oropharyngeal intubation or intubation through wound)

Conclusions

- Airway is the first step in management of any patient with any problem
- Cannot proceed to B and C if A is not sorted out first
- When patient not stabilizing or things go wrong later on – go back to A,B,C
- Remember that any airway (adjuncts, ET tube or surgical) may become blocked or displaced
- Surgical airways will be replaced by tracheostomy once life threatening conditions have been treated