ENT Emergencies

Airway Management

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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

53a

53b
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
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