AnaesthesiaUK

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ENT anaesthesia

Management of airway fire in laser microlaryngoscopy. How can this be avoided?

Laser microlaryngoscopy

- High energy laser (CO_2 or Nd-YAG) used along side the ETT
- 0.5%-1.5% incidence of airway fire
- Usually laser igniting ETT or swabs

Minimizing risk

- Surgeon
  - Control of laser direction and operation
  - Non-reflective instruments
  - Moistened swabs
  - Copious sterile water on setup
  - Fire drill should be agreed or rehearsed
- Choice of ETT
  - Metal tube: Mallinkrodt "Laser Flex"
  - Metal coated silicone tube: Xomed "Laser Shield"
  - Metal tape coating on regular tube
    - Flammability silicone < rubber < PVC
    - Toxic debris silicone > PVC > rubber
  - Cuff is still vulnerable
    - Fill with saline ± methylene blue
    - Second cuff on Laser Flex
    - Distal placement of cuff (out of sight)
    - ?Place moist swabs on wires above cuff
  - Metal can be ignited or cut by Nd-YAG laser
  - Consider jet ventilation or oscillator
- Airway gases
  - Minimize use of oxidant gases
    - Minimal required FiO_2
    - No N_2O
    - Helium retards ignition
  - Air available for ventilation in case of fire
- Maintenance
  - Immobility required: deep anaesthesia or paralysis
  - High level of vigilance for fire
  - Good communication with surgeon

Managing fire

- Remove source of fire and extinguish with water
- Stop ventilation, turn off O_2
- Mask ventilate with air, then 100% O_2 once fire is extinguished
- Laryngoscopy and rigid bronchoscopy to remove debris
- Lavage and fibreoptic bronchoscopy if indicated by airway injury
- Common pattern is worst injury at the surgical site and little distal injury
- If severe injury
  - Maintain ventilation
  - Consider low tracheostomy
  - IV corticosteroids may be helpful
  - CXR, ABG with co-oximetry for smoke inhalation assessment

Outline management of anaesthesia for resection of pharyngeal pouch

- Surgery
  - Elective, moderate risk
  - High risk of aspiration

        - Close to major structures in neck
- Assessment
    - Routine plus
    - History
        - Dysphagia, regurgitation and aspiration of food
            - Positional or on waking
    - Examination
        - Complications of lesion
            - Malnutrition, pneumonia
    - Investigations
        - Imaging of pouch: contrast studies, CT
- Preoperative
    - Premedication to reduce aspiration risk: H2 blocker
- Monitoring
    - Routine plus
    - Arterial line, CVC
    - Epidural if thoracic incision
- Induction
    - Rapid sequence induction with cricoid pressure
    - Pharynx may need to be suctioned
    - Avoid high-pressure mask ventilation
        - Risks distension ± rupture of pouch
    - Consider cervical plexus block if neck incision
- Maintenance
    - Usually supine with head turned to side
    - If lateral, increased risk of pressure areas
    - No nasogastric before surgery
        - May pass into pouch
- Emergence
    - Aim for extubation when awake
    - Usually do not require HDU care

Local anaesthetic for tonsillectomy

- Anatomy
    - Tonsil innervated by branches of glossopharyngeal n. which runs along stylopharyngeus and anterior palatal arch
- Technique
    - Initial topical anaesthesia to pharyngeal arches with lignocaine
    - Tongue depressed with spatula
    - Infiltration of posterior palatal arch, then anterior palatal arch (IX n.)
    - Tonsil grasped with forceps and drawn medially
    - Tonsillar attachment infiltrated
    - Careful aspiration at all points because of proximity of ICA
- Local anaesthetic
    - Lignocaine 0.5% 10-15 ml each side

Kindly provided by Dr James Mitchell from his pharmacodynamics series