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

**Laser microlaryngoscopy**
- High energy laser (CO\textsubscript{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\textsubscript{2}
    - No N\textsubscript{2}O
    - 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\textsubscript{2}
- Mask ventilate with air, then 100% O\textsubscript{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

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