

Notes for Demonstrators

Basic Scope Care and Handling

Basic principles behind fibre-optic instruments

- Light and image transfer via coherent(image transmission) and incoherent (light) bundles
- Fibre coating with lower refractory index allowing for clearer image
- Working channel port
- Diopter rings/focusing
- Distal mobile segment
- Portable lithium light source or light guide cable

Scope Cleaning and Maintenance

- Checking the scope cleaned(soapy water) and sterilised
- Checking working channel flushed and working e.g. patent

Scope Handling

- Movement in 2 dimensions
- Body position/ straight scope technique
- Height of the patient/bed
- Angle of approach
- Lubrication
- Scope temperature/ Defogging

Practical demonstration of the fibre-optic scope

Demonstrate Oxford Box

- Allow delegate time to familiarise themselves
- Emphasise straight arm technique and planes of movement
- Orientation marker
- Emphasis on fine movements
- Emphasis on damaging the scope on withdrawal if tip bent

Demonstrate Oral Fibreoptic Intubation

- Demonstrate conduit airways-Ovassapian/Berman/VBM mask
- Tube introduction via oral route
- Repositioning Manoeuvres

Notes for Demonstrators

Nasal Fibre-optic Techniques

Preparation

- Reinforce scope handling and body positioning
- Drying Agents
- Sniff Test
- Vasoconstrictors

Discuss differences in asleep technique

- Apnoea technique or ventilated technique
- Jaw thrust
- Laryngoscopy
- Pulling tongue forward

Demonstrate Different Tubes and Aids

- Tube Sizes 6/6.5/7/7.5
- Chimney airway/endoscopy mask/ nasal airway
- Best success rates ILMA soft tip reinforced best first pass success
- Lubrication
- External Scope diameter: internal tube diameter ratios for best first pass success
- Tongue protrusion in awake patients
- Suction-oral via yanker and via scope

Demonstrate fibre-optic intubation using AIRSIM manikin

Reinforce; stay in the black and out of the red!

- Check for tracheal rings
- Orientation/ post tracheal ring defect
- Check scope not advanced with tube (bronchospasm as carina tickled)

Correct Tube Placement

- Capnography
- Bag + chest movement
- Check Carina

Suggested Discussion Points

- Reversible short acting sedation
- Adrenaline nebulisers
- Prophylactic Cricothyroid Oxygenation
- Split Nasopharyngeal Airways
- Awake Tracheostomy

Notes for Demonstrators

Needle Cricothyroidotomy

Equipment

- Manikin
- Needles –Ravussin, Patil, Venflon, Quicktrack
- Manujet

Discuss principles behind Cricothyroid Puncture

- Oxygenation not ventilation
- Quick fix. Maximum 40 mins
- Airway obstructed completely –air outlet required
- Elective Cricothyroid insufflation
- Local Anaesthesia with vasoconstrictor

Discuss Limitations of needle Cricothyroidotomy

Discuss Ravussin

- luer lock connector
- 15mm standard circuit connector
- Discuss conversion via guide wire to larger airway
- 13g kink resistant

Practical demonstration

- Positioning
- Laryngeal stabilisation
- 90 degree puncture aspiration
- Turn to 60 degree angle
- Advance cannula over needle
- Check air aspiration
- Demonstrate Manujet Ventilation and connections

Show casing and needles Ravussin/Quicktrack/Patil/Venflon

Demonstrate

- Show Patil Set
- Show Quicktrack
- Reinforce Quicktrack very short and only 4mm internal diameter i.e. unlikely to sufficiently ventilate only oxygenation possible
- Reinforce minitracheostomy performs poorly compared to needle and surgical and seldinger techniques

Notes for Demonstrators

Surgical Cricothyroidotomy

Explain

Traditional Cricothyroidotomy- Thyroid cartilage lifted cephalad
Rapid Four Stage Technique- Cricoid cartilage lifted caudad
Seldinger approach- insertion of a guidewire

Discuss Complications of Cricothyroidotomy

Bleeding
Misplaced tube and subsequent problems
Surgical Ephysema Pneumothorax
Trauma

Discuss Prior Preparation and Planning ABC

Infiltration with local anaesthetic and adrenaline

Practical Demonstration of RFST

Stand cephalad
Positioning like intubation
? More anaesthetist friendly
Size 10/11 Blade
Tracheal hook (double hook less likely to snap cricoid ring)
Patient positioning
Immobilise the larynx
1cm incision through membrane (single step or skin sweep first)
Insert hook and lift cartilage
Insert size 6 tube cuffed
Check ventilation

Practical Demonstration of Melker Seldinger Set

Demonstrate pre peel set
Reinforce set comes disassembled
Size 6 malleable tube cuffed or uncuffed
Cuffed tube longer
Flexible tip guide wire to avoid piercing trachea and aids passage
90⁰ skin puncture and air aspiration followed by re-angulation to 60⁰
Insertion of guide wire removal needle
Stab incision at least 1cm to skin and membrane
Melker dilator over guide wire
Remove guide wire- obturator complex leaving Melker tube in situ
Inflate cuff
Check ventilation

Notes for Demonstrators

Intubating and Proseal Laryngeal Mask Airways

Discuss principles behind ILMA

- 93-99% (blind insertion) success rate with up to 2 attempts
- Oesophageal placement
- Trauma
- Fibreoptic assistance increases success rate
- Avoids unnecessary trauma
- Slightly slower

Clinical application

- Anticipated airway challenge
- Can ventilate cannot intubate

Disadvantages

- Expensive
- Requires 20mm mouth opening
- Training and skill retention
- Lower success with cricoid pressure
- Trauma used blind
- End of tube/Murphy's eye mistaken for carina

Practical Demonstration of ILMA

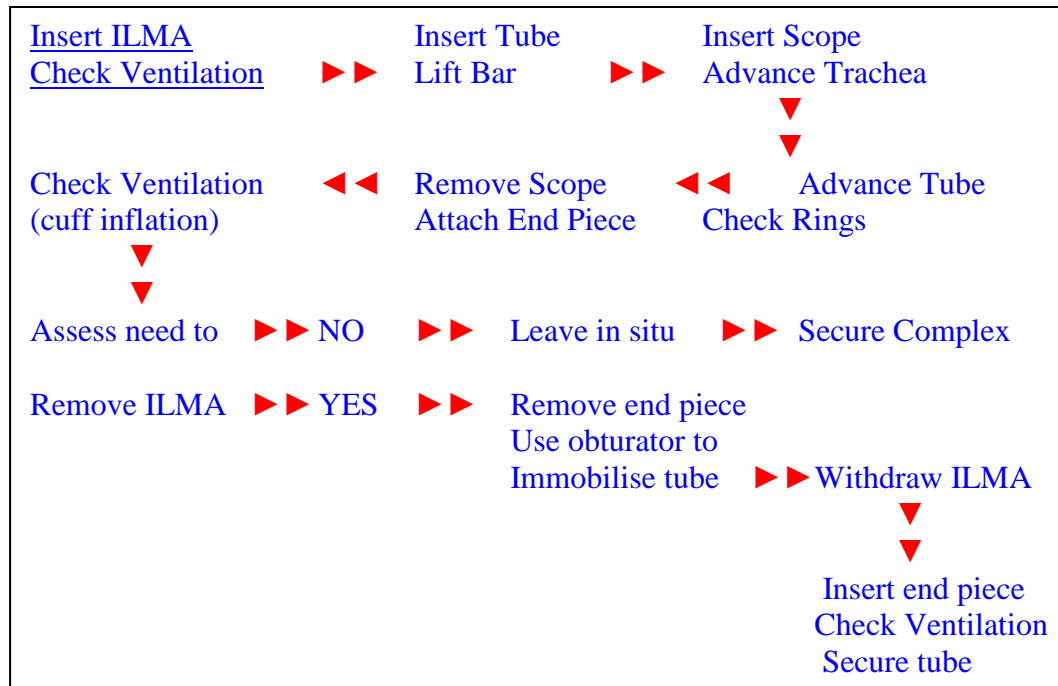
- Anatomical curve aids insertion without head and neck manipulation
- Rigid airway tube –centralises tracheal tube minimises arytenoid trauma and misplacement
- Guiding handle
- Standard 15mm connector
- Elevating bar-rigid, elevates + protects epiglottis but may damage scope

Practical Demonstration of Tubes

- Multiuse or disposable tubes
- Reinforced
- Standard detachable end connector
- Bevelled end (lower risk of impinging on vocal cords)
- Specific Obturator

ILMA and Proseal cont.

Practical Demonstration of ILMA Insertion



Proseal LMA

Discuss principles of Proseal LMA

- Drain tube -clinical confirmation of correct mask position
- Designed to protect against aspiration Drain tube may prevent gastric insufflation in artificial ventilation
- PPV
- Seal pressures greater
- Introducer reduces need to place fingers in the patient's mouth

Practical Demonstration of Proseal LMA

Double cuff /Drain tube/Confirmation of placement/ use with NG tube

Notes for Demonstrators

Rescue Airway with LMA and Aintree Catheter

Indications for Aintree assisted Oral Intubation

- Anticipated Difficult Airway e.g. spinal injury
- Can't intubate can ventilate via Berman or LMA

Demonstrate Aintree

- 4mm internal diameter blue conduit specifically designed for use with fibre-scope
- Ability to jet ventilate – show connections to Manujet
- Ability to connect to circuit 15mm standard connector- show connections

Serious Considerations

- NOT a tube exchange catheter
- Too short and stiff for nasal route
- Barotrauma
- Direct Trauma to trachea/lungs and oesophagus
- Misplacement and inflation of stomach

Demonstrate Limitations Intubation via LMA

- Size 4 reusable LMA will allow passage size 7 tube (NOT all reinforced 7's though)
- Disposable LMA's differ dramatically
- Reinforce- awareness of knowing if tube passes via LMA if using in rescue situation

Practical Demonstration fiberoptic assisted intubation via LMA

Practical Demonstration fiberoptic assisted Aintree Intubation

- Insert LMA/Berman- check ventilation
- Demonstrate placing aintree onto scope with lubrication
- Insert aintree scope complex and confirm tracheal rings
- Remove scope (**reinforce not** an aggressive aintree over scope railroad or trauma via bronchi will ensue; aintree left in situ as scope removed)
- Demonstrate aintree connections to 15mm & manujet
- +/-Remove LMA
- Demonstrate tube over aintree
- Check ventilation
- Check rings

Notes for Demonstrators

Airway Anatomy and Anaesthesia of the Airway

Discuss Nerve Supply;

- Nasal Mucosa- Trigeminal (Ethmoidal Nerves)
- Oropharynx- Glossopharyngeal
- Superior Larynx and Cords - Superior Laryngeal Nerves
- Infraglottic Airway-Recurrent Laryngeal Nerve

Discuss Methods of Anaesthesia

- Nerve Blockade
- SAYG

Emphasise

- LA Preparations Amide/ Ester
- Infection and pH of tissues- lipid soluble free base release
- First pass metabolism- 70%
- Plasma lignocaine concentrations primarily from trachea and bronchial tree
- Toxic Doses 1-10mg/kg have been described but textbook 7mg/kg with vasoconstrictor

Demonstrate Topicalisation of Nasal Mucosa

- Otrivine (Xylometazoline 0.1%)
- Nebulised lignocaine
- Instillagel (2%)
- Phenylephrine and Lignocaine preparations
- Cocaine (5%)

Demonstrate Topicalisation Oropharynx

- Nebulisers (smaller particles go further!)
- Swish and Swallow with Instillagel
- 10% spray (banana essence)
- SAYG

Demonstrate Topicalisation Vocal Cords

- SAYG directly via scope working channel port
- SAYG via epidural catheter via working channel
- MAD devices oral and nasal
- Mad devices and topicalisation via nasopharyngeal airways

Practical Demonstration of Anaesthesia for Awake Fiberoptic Intubation

- Demonstrate and discuss drying agents
- Demonstrate and discuss sedation
- Demonstrate topicalisation
- Ask delegate to topicalise airway

Discuss

- Glossopharyngeal Nerve Block
- Superior Laryngeal Nerve Block
- Cricothyroid Puncture