

Department of Anaesthesia and Intensive Care

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Awake fiberoptic intubation under topical anaesthesia

A. Drugs required

- 4% lidocaine x1 25ml bottle
- Adrenaline 1:1000 x 1 ml
- 8.4% Sodium Bicarbonate x 1 ampoule
- ? Sedation- Propofol TCI or Remifentanyl TCI

B. Equipment required for topical anaesthesia

- 18G Venflon
- Oxygen tubing with flexible ends
- 2 Oxygen cylinders – 1 portable and 1 on patient trolley. *Do not use the anaesthetic machine common gas outlet supply for topicalisation. The breathing system will therefore be ready for intubation or airway emergencies.*
- Nasal oxygen sponge
- Epidural catheter

C. Drug Calculations

Maximum dose of lidocaine for topical use=9mg/kg

Calculate the maximum dose for the patient and do not exceed it.

4% lidocaine=40 mg/ml.

70 kg patient has a maximum dose of 630mg lidocaine = 15.75 ml 4% lidocaine

D. Drug preparation

Nasal solution

In a 5 ml syringe, draw up

4.5ml x 45 lidocaine
0.5ml x adrenaline 1:1000 (vasoconstrictor)
0.5ml x 8.4% sodium bicarbonate (mucolytic)

Oral solution

In a 5 ml syringe, draw up 5ml x 4% lidocaine.

Spray-as-you-go solution

In three 10 ml syringes, draw up 1ml x 4% lidocaine and 9 mls of air.

So far you will have drawn up 12.5 mls x 4% lidocaine. This is a safe dose for patients over 55kg. The amounts will need to be reduced for patients lighter than this.

E. Patient preparation.

1. Gain iv access
2. Give 200mcg Glycopyrrolate IV to help reduce secretions
3. Consider using conscious sedation. Suggested options are propofol TCI 0.5-1mcg/ml or remifentanyl 0-0.05 mcg/kg/min, or 0-1 ng/ml TCI. Avoid sedation if the airway is critical.
4. Sit the patient up on a trolley.
5. Decide which nostril is the most patent-get the patient to sniff through each nostril in turn and ask them to tell you which feels best.
6. Insert a nasal sponge into the least patent nostril. Connect this onto the oxygen cylinder on the patient's trolley. Tape the tubing to the patient's cheek to keep it out of the way.

F. Topical administration of local anaesthetic.

1. Set up the LA atomiser- Remove the sharp trocar from the 18G venflon and attach the venflon to one end of the oxygen tubing. Connect the other end of the tubing to the portable oxygen cylinder. Connect the nasal solution LA syringe to the injection port of the venflon. Set the oxygen flow rate at 2 l/min.
2. Spray the most patent nostril. Gently squirt the LA out of the syringe, via the venflon into the nostril. Start at the outside and gradually work your way along the nostril as far as the venflon reaches. Move the venflon around to coat all sides of the nostril. Get the patient to breathe in and out through their nostril whilst doing the procedure. This carries the LA further down the nasopharynx towards the larynx. If the patient coughs this is a good sign as it shows the LA is reaching the larynx and trachea. Aim to use about half the nasal solution in this nostril. The rest can be kept in case you cannot pass the scope down the nostril and you have to try the other one.
3. Connect the oral solution to the atomiser device.

4. Ask the patient to open their mouth and breathe in and out through their mouth. Spray the LA onto the oropharynx. Ask the patient to intermittently say “Aah” so you can reach the posterior oropharynx. Try to coat all parts of the posterior oropharynx. Again, coughing is a good sign.
5. At this point, it is worth spraying a little more into the nose, using either solution. This ensures the nostril is maximally coated and reassures the patient that the nose has gone numb.
6. Once you are happy that the airway that the airway is coated with solution and the local anaesthetic has taken effect, proceed to the fiberoptic intubation.

G. Fiberoptic intubation.

1. Lightly lubricate the scope and mount the appropriate ET tube onto the scope. A reinforced 6 or 6.5 is recommended as it facilitates the corkscrew action on insertion as described below.
2. Pass the scope through the nostril, nasopharynx and into the oropharynx.
3. Position the tip of the scope above the cords.
4. Feed a 16G epidural catheter through the suction channel of the scope. It will come into view through the scope. Advance the catheter until it sits just above the cords. Inject one of the ‘Spray-as-you-go’ syringes including air and lidocaine. Invert the syringe so the LA is propelled in with the air as the driving gas.
5. Advance the tip of the epidural catheter through the cords and repeat the above process with the second syringe. If there is a marked cough response, repeat with the third syringe, positioning the epidural catheter close to the carina.
6. Remove the epidural catheter.
7. Pass the scope through the cords and position the tip above the carina.
8. Railroad the ET tube over the scope, through the nostril, pharynx and cords into the trachea using a corkscrew action to avoid the bevel of the ET tube catching on the cords.
9. Visualise the carina to confirm position of the ET tube in the carina.

10. Connect the breathing system and look for an end tidal CO₂ trace.
11. Inflate the ET tube cuff.
12. It is now safe to induce anaesthesia.
13. Check how far the tip of the ET tube is sitting above the carina. To do this, advance the scope to the carina, hold onto the scope at the 15mm connector of the ET tube and withdraw the scope from the tube until the tip of the ET tube comes into view. The distance between your fingers holding the scope and the 15mm connector equals the distance between the tip of tube and carina. Adjust as necessary.
14. Secure the ET tube firmly to the patient's face.
15. Perform direct laryngoscopy, if possible, to obtain a Cormack & Lehane grade. Document this in the patient's notes.

H. Extubation.

1. At the end of the case, perform direct laryngoscopy and suction the pharynx.
2. Get the patient onto a trolley- a bed is not appropriate as the patient must be sat up.
3. Reverse neuromuscular blockade as appropriate.
4. Turn off anaesthetic agents and get the patient breathing on 100% oxygen. Sit the patient up.
5. When the patient is awake and has a regular pattern of breathing, deflate the cuff of the ET tube and withdraw the ET tube from the trachea leaving the tip of the tube in the patient's nasopharynx.
6. Screw the APL valve down and deliver nasal CPAP via the ET tube. This helps to overcome any transient or partial airway obstruction that may have occurred following extubation.
7. Confirm the patient is still breathing and that the reservoir bag is still moving- as there is pressure in the breathing system, the bag will be distended but movement will still be discernible.
8. Now reduce the CPAP pressure and confirm that the patient can still breathe adequately. Once you are happy that the airway remains patent with no CPAP needed, the ET tube may be removed completely.