Six Essentials to Success

FIBEROPTIC INTUBATION

The “Open it up, line it up” approach

Proper patient

Choose the appropriate evaluation fiberoptic intubation mode.

Your first step is to decide whether to do a fiberoptic intubation with the patient anesthetized or awake. Make your choice based on your ability to ventilate the anesthetized patient or your need to evaluate the awake patient after intubation. Once you’ve decided on anesthetized or awake, chose either the oral or nasal route.

Anesthetized Nasal

An anesthetized nasal approach may be indicated in patients having operations in their oral cavity. In addition, if the anesthetized oral approach proves unsuccessful because of a difficult airway found on laryngoscopy, you may need to resort to an anesthetized nasal approach.

Anesthetized Oral

The only way to become skilled at fiberoptic intubations is to do a large number of them. However, the number of patients who must have fiberoptic intubation is relatively small. Therefore, you should consider doing fiberoptic intubations on the many ASA I and II patients who are normally intubated orally with a laryngoscope. You can justify using the fiberoptic bronchoscope because it is less traumatic to teeth and soft tissues and causes smaller increases in blood pressure than the laryngoscope. The fiberoptic intubation does take a few seconds longer.) You should also consider an anesthetized oral approach in patients whom you have anesthetized but cannot intubate using a laryngoscope. You may consider using an awake oral approach in Mallampati Grade III and IV patients (Figure A). With these patients, the posterior pharyngeal wall is not visible and the thyromental distance is less than 7 cm. You can also use the awake oral approach in patients with unstable or abnormal necks, e.g., fat neck, no neck and/or neck abscesses.

Awake Nasal

An awake nasal approach is indicated in patients undergoing an operation on the mouth and/or oral cavity.

A place for

Set up the fiberoptic scope.

Place the bronchroscope and its cart on the left side of the patient. Because the cables insert on the left side of the bronchroscope handle when the bronchroscope lever is on the under side (as it should be). Make sure all cables are free of loops.

Turn the light source on high when you place the video adapter on the bronchroscope handle and rotate the adapter so the picture from the fiberoptic tip is oriented correctly. Tighten the screw on the adapter.

Lubricate the fiberoptic shaft with a small amount of silicone gel. Dab a bit of defogging solution on the shaft tip.

Choose an appropriate endotracheal tube. Small tubes (6.0-6.5 mm for female patients and 7.0 mm for male patients) advance more easily. The smaller the gap between the shaft and tube wall the less likely the tube tip will hang up on the arytenoids (Figure H in Section 6). (The fiberoptic shaft diameters are approximately 3.5–5.5 mm.) Flexometallic tubes advance more easily than Rae tubes. Soften plastic tubes by placing them in a bottle of warm water.

Slide the endotracheal tube up the full length of the shaft and gently secure it to the beveled end of the bronchroscope handle. Smear a little lubricant on the cuff and distal end of the endotracheal tube.

Turn the light source on high when you start the intubation.

Optional—Flow oxygen through the scope suction port to improve oxygenation and to displace secretions.

Awake Oral

You may consider using an awake oral approach in Mallampati Grade III and IV patients (Figure A). With these patients, the posterior pharyngeal wall is not visible and the thyromental distance is less than 7 cm.

If done well, the

Prepare the awake patient.

Carefully explain the intubation procedure to the patient. Administer supplemental oxygen via nasal prongs. Give glycopyrrrolate (.2–.3 mg IV) and sedate with 1–2 mg midazolam IV 30 minutes prior to topical anesthesia. Then before topical anesthesia, titrate fentanyl 50 to 250 μg IV. Keep the patient responsive!

If the patient is to have a nasal endotracheal tube, apply oxymetazoline (Afrin) to the nasal passages, and inject 2–3 cc of 2% viscous lidocaine into a nostril.

Topical anesthesia:

Trans-oral trickle

This approach can be used any time but is especially useful if for some reason (fat neck, neck abscess or neck deformity) you cannot do a transstrachal injection. Use it to minimize coughing or to avoid sticking a needle in the patient’s neck. Remember, have a drying agent on hand! While you are in the holding area, fill a 10-cc syringe with 2% or 4% lidocaine and attach a 14-gauge plastic catheter. Place the patient in the sitting position and have them tilt their head back. Holding the patient’s tongue with a gauze pad, very slowly trickle lidocaine in .1–.2 cc increments in the back of the throat (Figure B). Time the injection of each increment to coincide with inspiration. Pause for a minute after the first 2 cc but continue to hold the tongue to prevent swallowing. Total lidocaine dose should not exceed 3–4 mg/kg.* Reduce the dose if the patient has impaired liver function.

Topical anesthesia:

**Transtracheal injection** An alternative approach, especially for obese patients with excessive oral mucosa, is to use a 20-gauge plastic catheter and inject 4 cc of 4% lidocaine through the cricothyroid ligament. Then, while the patient inhales, spray the oropharynx with 4% lidocaine and allow 10 minutes for analgesia to take effect. Superior laryngeal nerve blocks can be done at this time, but they aren’t needed if there is a good transtracheal injection and pharyngeal spray.

**Note** If the patient is awake prior to intubation, place a dental bite block between the teeth to one side (Figure C). Remember, one bite of the scope shaft costs about $2,000.

Once on the operating room table, whether the patient is awake or to be anesthetized, elevate the head at least 8 cm. Lower the table as far as possible and/or stand on a lift. Your goal is to straighten the fiberoptic shaft and hence gain better control of the tip.

**Create an open pathway from mouth to glottic opening.** While artificial airways are available to aid in exposing the cords, the tongue pull method, described here, does not require such an airway at all. Use the tongue pull for both oral and nasal approaches.

**Figure C**

**Figure D**

**Open up the airway.**

**Know where that line up the fiberoptic shaft.**

Stand on a lift so that the fiberoptic bronchoscope shaft will be straight when you hold it above the patient. Hold the bronchoscope handle in your right hand with the thumb lever down. With your left hand, hold the bronchoscope shaft between the 3rd and 4th white rings or at a point 15 to 20 cm from the shaft tip.

**Figure E**

**Figure F**

**Insert the fiberoptic Advance the shaft and endo- tracheal tube.**

In an oral approach, as you advance the fiberoptic scope tip through the glottic opening, straighten (extend) the tip so it faces directly down the trachea. If you don’t, all you may see is the pink mucosa of the anterior tracheal wall after the tip passes the cords (Figure G). Advance the fiberoptic scope tip until you can just see the carina. If the patient is awake, don’t advance the tip past mid-trachea because you may induce coughing.

Use your left hand to loosen the endotracheal tube connector from the bronchoscope handle.

Now, grasp the endotracheal tube at its midpoint and rotate it 90 degrees counterclockwise so the Murphy eye is anterior.

This maneuver prevents the tube tip from hanging up on the right arytenoid. Hang-up occurs because the fiberoptic shaft falls posteriorly into the interarytenoid fissure (Figure H). If the tube still hangs up, rotate the tube another 90 degrees counterclockwise.

Advance the endotracheal tube into the trachea over the bronchoscope shaft until the 22-cm or 23-cm mark on the tube is at the teeth.

Withdraw the fiberoptic shaft and secure the endotracheal tube.

With a nasal approach, the endotra- cheal tube generally hangs up on the epiglottis. To avoid this hang-up, rotate the tube 90 degrees clockwise as you advance it.

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