Rescue Airway Devices

I. Overview

1. At this station we are going to review some of the rescue airway devices –LMA, ILMA, Combitube, King Tube, bougie as an adjunct to DL/VL
    a. You may choose to place some of these if you predicted a difficult airway or would prefer a extraglottic device (eg – in a cardiac arrest, where you don't want to pause chest compressions to intubate)
    b. These may also be your rescue devices in your "can't intubate, can't ventilate" (CICO) situations
2. Predictors of a difficult direct laryngoscopy – LEMON
    a. Look externally (gestault)
        i. Not sensitive but specific – if an airway looks difficult it probably is
    b. Evaluate 3-3-2
        i. Gives an idea of the geometry related to mouth opening, the size of the mandible, position of the larynx
        ii. Mouth opening, thryomental distance (under the chin), hyoid bone to thyroid notch
    c. Mallampati
        i. Class I and II associated with intubation success
        ii. Class IV – may exceed 10% failure rate
        iii. Not sensitive or specific
    d. Obstruction
        i. Upper airway obstruction
        ii. Muffled voice, difficulty with secretions, stridor
    e. Neck mobility
        i. Cervical spine immobilization
        ii. Intrinsic spine immobility – RA, ankylosing spondylitis
3. Predictors of a difficult extraglottic device – RODS
    a. Restricted mouth opening
    b. Obstruction/Obesity
    c. Disrupted/Distorted airway
    d. Stiff lungs
        i. Increased ventilator pressures – eg asthma, COPD, ARDS, term pregnancy

2. Laryngeal Mask Airways – LMAs

1. Indications
    a. Rescue device in a “can’t intubate, can oxygenate” situation
    b. Attempt to oxygenate in CICO failed airway as you set up for cricothyrotomy
    c. Cardiac arrest
2. Not a definitive airway
    a. Does not prevent aspiration of blood and gastric contents
    b. Cannot intubate through
3. Sizes
    a. LMA3: 10-12 yo and small adults
    b. LMA 4: 50-70 kg
    c. LMA 5: >70 kg LMA5
    d. Borderline, better to choose larger mask (provides a better seal)

3. Intubating LMA (Fast Trach)

1. Indications
    a. Combines the high insertion and ventilation success rate of LMA with features to facilitate blind intubation
2. Use of Device
    1. Deflate cuff (flipped back, “boat shape”), lubricate with water-soluble lubricant to both anterior and posterior surfaces
    2. Hold in dominant hand, insert in midsagittal plane with laryngeal surface facing tongue
    3. Advance and rotate mask into place with a circular motion maintaining firm pressure against until resistance is met, then inflate cuff, ventilate
    4. Subsequent orotracheal intubation
        a. **can be performed with or without fiberoptic scope
        b. Pass appropriately sized, lubricated ETT down LMA lumen (keep longitudinal line towards provider) to approximately 15 cm (transverse black line at metal handle)
        c. Lift the handle of the LMA slightly as ETT is about to pass into larynx to improve success of intubation
            i. Consider placing a fiberoptic device in ETT, visualize cords and carina, advance scope
            ii. Advance ETT through cords
        d. Inflate ETT cuff, deflate LMA cuff, ventilate and confirm tube placement
        e. May leave both LMA and ETT in place or use stabilizer rod to push ETT through ILMA and prevent inadvertent extubation when removing ILMA
        f. Remove LMA and grasp tube as soon as you can in the mouth, replace cap

4. Supraglottic Devices – King Tube and Combitube

1. Combitube
    a. Place the device blindly into the esophagus

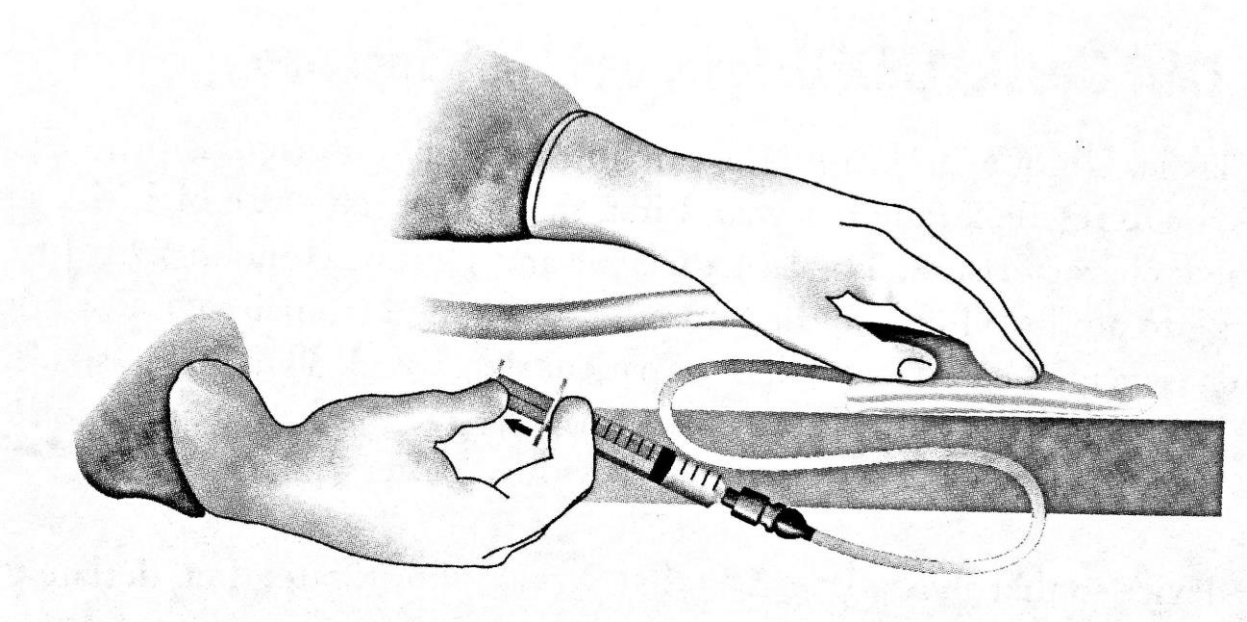
i. One balloon seals the esophagus, the other the oropharynx, trapping the larynx between the two
ii. Has two lumens, allowing to ventilate through the pharyngeal orifice or through the bottom of the tube it the trachea was intubated (rare)
iii. Two sizes – 37F (6' and below) and 41F

b. Check balloons, lube device
c. Lift tongue and jaw up with nondominant hand or with laryngoscope
d. Insert device at midline until teeth are between the black rings
e. Inflate proximal OP balloon with 85-100 cc (blue)
f. Inflate distal balloon with 5-15 cc (white)
g. Ventilate through longer blue pharyngeal tube – should have breath sounds, ETCO2
h. 5% of time will intubate trachea, then ventilate other tube

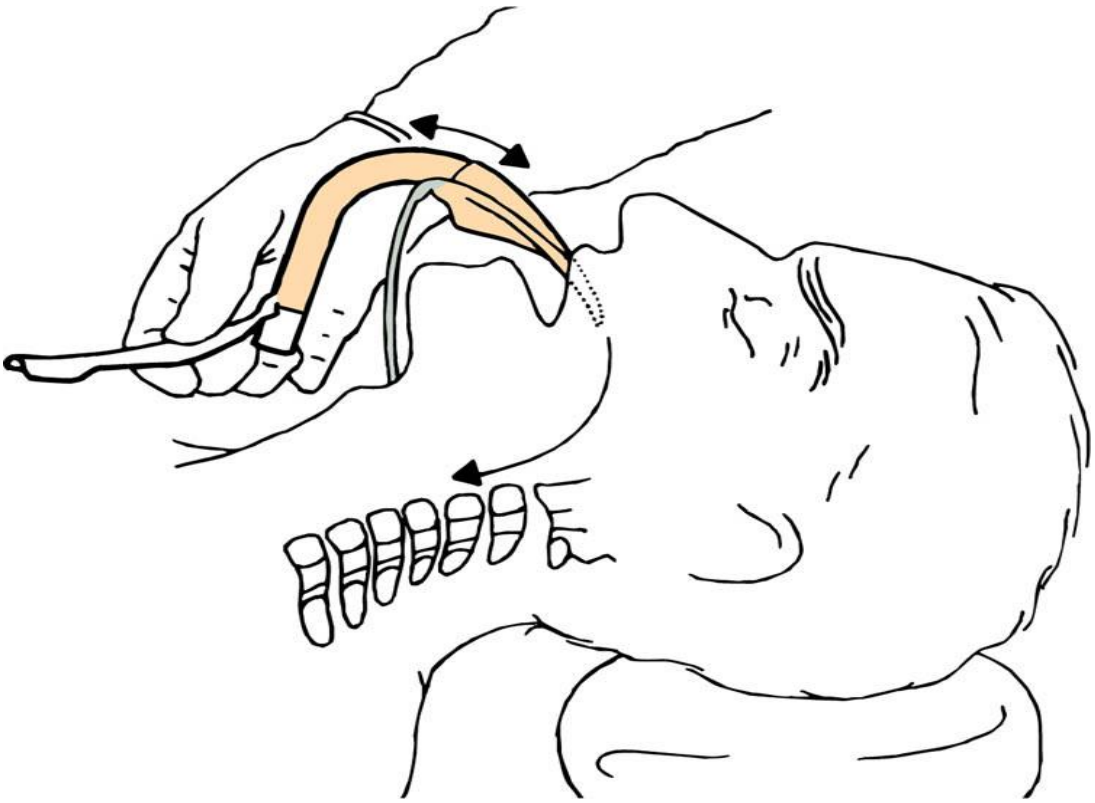
2. King LT Airway
    a. Similar to the Combitube
        i. King LT-D – single lumen, King LTS-D – double lumen (allows for gastric emptying)
        ii. One balloon in the esophagus, the other in the OP
        iii. Maybe easier to insert and use than the Combitube
        iv. 5 sizes of LT-D, 3 sizes for LTS-D
    b. Chin and control the tongue with non-dominant hand or use laryngoscope
    c. Insert into the esophagus- insert tip at 45 deg angle, pass behind the base of tongue, rotate to midline, advance connector to teeth
    d. Inflate both balloons (one port) - 60-70 cc
    e. Ventilate and check placement, may need to retract slightly

5. Bougie

1. Adjunct for difficult airways, grade 3 views (just epiglottis)
2. Techniques
    a. Use laryngoscope to find epiglottis
    b. "Ride" bougie under epiglottis and into the trachea
    c. How do you know you are in? Either feel tracheal rings or it will STOP when you hit the carina or mainstem bronchus at about 40 cm… if it keeps going, you are in the esophagus
    d. Have partner place ETT over bougie, KEEP laryngoscope in the mouth
    e. Have partner hold bougie as you advance the tube
    f. If gets caught on cord, rotate tube counterclockwise and gently advance



Correct Method for Deflating the ILMA Cuff



Correct Method for Inserting the ILMA cuff