Esophageal/Tracheal Double Lumen Airway (Combitube®)

Indications and Use for the Pre-Hospital Provider
CombiTube Kit

General Description

• The CombiTube is
  – A double-lumen tube with one blind end which functions as an esophageal obturator airway and the other as a “standard cuffed ET tube”
  – Inserted blindly and “seals” the oral and nasal pharyngeal cavities
Airway control can be a challenge and it requires solid preparation, staying focused, the right tools and the right decisions.
Indications

• Patients in irreversible respiratory arrest (i.e. narcotic overdose, hypoglycemia).
• Patients in cardiac arrest.
• Ventilation in normal/abnormal airways
• Failed intubation
• Unconscious patients without a gag reflex, and in need of ventilatory support.

Contraindications

• Intact gag reflex
• Under 4 feet tall
• Under 16 years of age
• Conscious – arouseable patient
• Known esophageal disease (cancer, varices)
• Ingestion of caustic substances
• Stoma or functional surgical airway
• Partial or complete FBAO
• Over 5 ½ feet with CombiTube-SA
• CONSIDER: Latex Allergy
And The Survey Says*:

<table>
<thead>
<tr>
<th>Description</th>
<th>CombiTube-SA (37 Fr)</th>
<th>CombiTube (41 Fr)</th>
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</thead>
<tbody>
<tr>
<td>Patient size (manufacturer)</td>
<td>4 to 5 ½’</td>
<td>5’ and more</td>
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<tr>
<td>Study size</td>
<td>4 to 6’</td>
<td>6’ and more</td>
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</tbody>
</table>

Precautions

- Take universal precautions (BSI), including facial protection, as expulsion of stomach content can occur in esophageal placement.
- May be used in trauma in a neutral position. (flexion or extension need not occur to facilitate placement)
- Defibrillation should not be delayed to place Combitube.
- Pulse oximetry may be unreliable in low perfusion states, such as cardiac arrest.
Advantages

- Requires minimal training
- May be more useful in non-fasted patients
- Successful passage and ventilation in many patients via esophageal route
- Portable, useful in remote setting
- Functions in either the trachea or esophagus
Disadvantages

• Only adult and small adult sizes
• Potential for esophageal trauma
• Problems maintaining seal in some patients
Equipment

- Full Body Substance Isolation (BSI). Face mask, eye shield, protective eye-glasses, latex examination gloves and hepa-mask if patient is suspected of infectious disease

- Esophageal Tracheal Airway (Combitube), 140ml syringe, 20ml syringe, fluid deflector attachment
  - Use 37 Fr tube for pts. 4-5’ tall
  - Use 41 Fr tube for pts. over 5’ tall
Equipment

• Suction device with FR suction catheter, BVM with oxygen supply

Insertion Procedures

• Place the patient in a supine position
• Provide artificial ventilation via BVM and hyperventilate the patient with 100% oxygen prior to device insertion
Insertion Procedures

• Inflate both balloons prior to insertion to test the integrity of the balloons
• Should either balloon fail after insertion, maintenance of the patient’s airway cannot be assured

Insertion Procedures

• Position the patient’s neck in a neutral position.
• Lubricate the tube with sterile, water soluble lubricant
• Lift the tongue and lower jaw upward to open the oropharynx
Insertion Procedures

• Insert the Combitube so that it curves in the same direction as the natural curvature of the pharynx.

• If resistance is met, withdraw tube and attempt to reinsert.

Insertion Procedures

• Advance tube until the patient’s teeth are between the two black lines.
Insertion Procedures

- Inflate the #1 blue pilot cuff with 100ml of air from the large syringe
  – (85ml for 37 Fr)

- Inflate the #2 white pilot cuff with 15ml of air from the small syringe
  – (12ml for 37 Fr)
Insertion Procedures

• Begin ventilation through the longer blue tube labeled #1. If auscultation of breath sounds is good and gastric inflation is negative, continue.

Insertion Technique

• Ventilate through the longer #1 ventilation tube. During ventilation, auscultate over the epigastrum and listen for gurgling sounds.
• If no sounds are heard, watch for chest rise and auscultate chest for breath sounds.
Insertion Technique

• If equal chest rise and breath sounds bilaterally are present, then continue to ventilate through the tube #1.
• If you hear gurgling sounds in the stomach then assume that you have inserted the device in the trachea and start to ventilate through the #2 tube.

ASSESSMENT:

• BEGIN VENTILATING THROUGH TUBE #1
  – If auscultation of breath sounds is positive
  – Gastric sounds negative
  – Confirm placement
  – This is a normal esophageal placement
Esophageal Placement

- If the Combitube is placed in the esophagus, the distal balloon will occlude the esophagus.
- Ventilations are provided through perforations in the side of the pharyngeal tube.
- Stomach contents can be safely expelled via the hole in the end of the tube.

Insertion Procedures

- If auscultation of breath sounds is absent and gastric inflation is positive, then begin ventilation through the shorter clear tube labeled #2
Insertion Technique

- Auscultate over the epigastrum, if gurgling is heard then remove the tube.
- If no gurgling is heard then auscultate breath sounds, if the breath sounds are equal bilaterally then continue to ventilate through the #2 tube.
Tracheal Placement

• If placed in the trachea, it functions as an endotracheal tube, with the distal balloon preventing aspiration.
• Ventilations are provided via the hole in the end of the tube.
• Stomach contents can be safely expelled via perforations in the side of the pharyngeal tube.

Tracheal Placement

– If breath sounds are negative
– Gastric sounds positive
– START TO VENTILATE THROUGH TUBE #2
– Confirm placement
– This is a tracheal placed combitube
Verify

• During ventilation observe end-tidal CO₂ monitor or pulseoximetry to confirm oxygenation

Verify

• Reassess the tube placement after each patient move, and periodically check the pilot balloons to ensure that the two cuffs are adequately inflated.
Confirm Placement

- **Breath sounds**
  - auscultate anterior chest bilaterally
- **Absence of abdominal sounds**
  - auscultate over the epigastrium for air movement
- **Rise and fall of the chest**
  - look for equal rise and fall of the chest with ventilation
- **Pulse Oximetry & Capnography**

When To Remove

- When the Pt. returns to consciousness
- When the Pt. becomes able to maintain their own airway
- Orders from OLMC or On-scene Paramedic
Procedure for Removing

• Reassure the patient
• **Preoxygenate** the patient
  – *Increase the depth, not the rate, of ventilation*
• Have SUCTION READY and turned on
• Turn the patient to LEFT side, if possible
• Deflate the large cuff - Tube #1
• Deflate the small cuff - Tube #2

Removal continued

• Have patient exhale forcefully
• Remove the tube quickly and smoothly
• SUCTION / Administer O2
• **Be prepared for vomiting!!! !!! !!!**
• Administer oxygen at 2-6 lpm via nasal cannula
  – Avoid the use of masks due to potential of vomiting
Documentation

- Patient’s presenting signs and symptoms, including vital signs, level of consciousness, and oxygen saturation if available.
- Indications for Combitube use.
- Number of endotracheal intubation attempts.
- Size of Combitube 41 French or 37 French
- Which connecting tube was used for ventilation. (blue or white)

Documentation

- Placement check
  - Manner of check; mist, breath sounds, etc.
  - Perform multiple checks
- Degree of difficulty, if any
- Complications encountered, if any
- EMT performing procedure
- EMT performing check
- Number of attempts made at Combitube placement.
Documentation

• Repeat assessment and vital signs every five minutes.
• Changes from baseline that may have occurred, if any.
• Signature and certification EMT performing insertion.

Summary

• Assessment must be appropriate to the patient presentation
  – Remember: noisy breathing is obstructed breathing, but “quiet” breathing maybe absent
  – Find **and correct** any threats to life
• Assess, document, and report your findings, interventions and changes in patient status
REMEMBER!

- Care for the physical and emotional aspects of the patient
- Remember - the next patient could be you or your loved one
- Be safe, take care of each other as well
- Go home **safe** from all calls

ANY QUESTIONS

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