



# Advanced Cardiac Life Support and difficult airway management

We present a preclinical case of complete heart block with failure of all medical and electrical therapeutic options. Advanced cardiac life support became necessary but endotracheal intubation was not possible even by an experienced emergency physician. The airway was subsequently secured with a supraglottic device. However, ventilating conditions deteriorated with the patient developing hypoxia. Cricothyrotomy was performed to secure the airway.

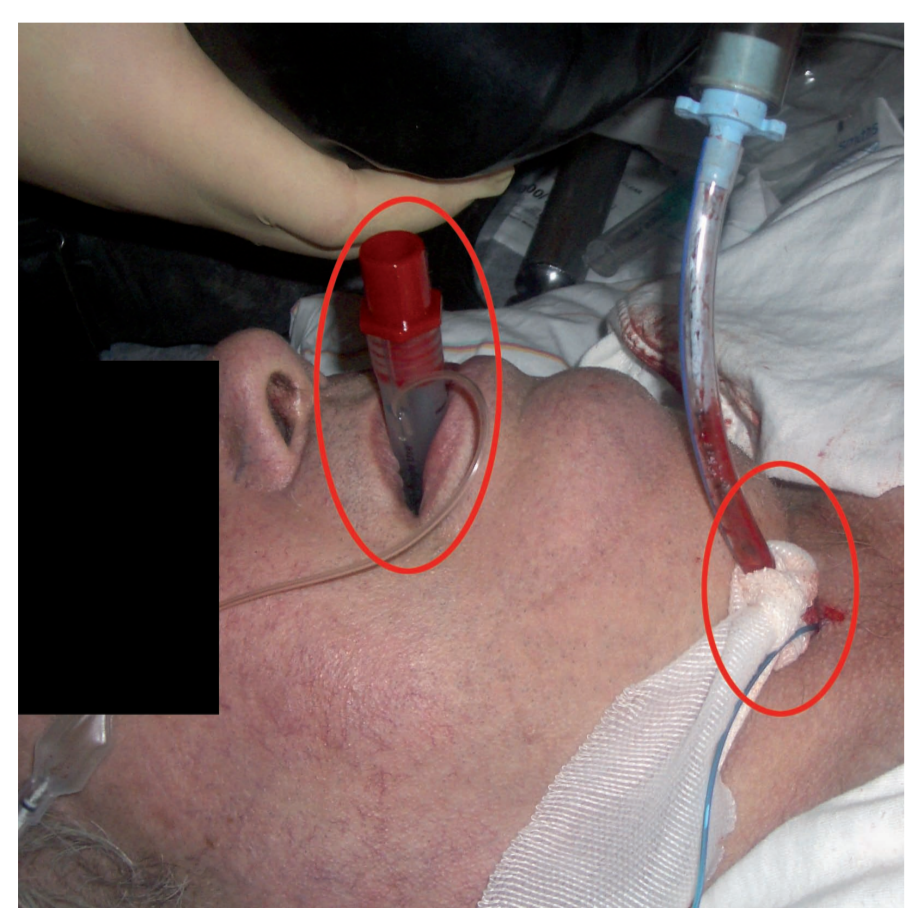
## Introduction

### Case Presentation

After being alerted to acute respiratory distress the ambulance with two paramedics and a physician staffed emergency vehicle arrived. An 80 year old patient with known COPD, a home oxygen treatment and a right ventricular heart failure was sitting in his chair, pale, cold sudor and looking sick. His ECG showed an AV-Block III degree with a ventricular heart rate of 30/min.

After two unsuccessful medicamentous tries to accelerate his heart rate (atropine totaling 1,5mg and epinephrine 500µg twice), the team started preparation for transthoracic pacing with resuscitation readiness. During these preparations the patient went into cardiac arrest, with missing carotid pulse and an ECG showing only p waves.

During the following resuscitation an intubation attempt by an experienced emergency physician failed, even after optimization of head and neck positions and the BURP maneuver the vocal



chords could not be seen. As fighting hypoxia has highest priority an airway alternative was considered early, and with the laryngeal tube an established device was decided upon.

## » VBM Laryngeal Tube

The Laryngeal Tube is a supraglottic airway device for use in general anesthesia and emergency medicine. The use is possible during spontaneous or positive pressure ventilation. In an emergency it is an ideal adjunct to secure the airway during difficult airway management as an alternative technique to mask ventilation and tracheal intubation.

In recent years the Laryngeal Tube has become an established option in German out-of-hospital emergency medicine and outpatient care. In our field of operation, Frankfurt / Rhein-Main-Region, every

A sufficient ventilation and oxygenation was possible and auscultation secured both lungs were ventilated. After a further 20 min resuscitation with return of spontaneous circulation (ROSC) an ICU bed was found 25 km away in a cardiac center. During transport preparations positive airway pressures needed continuous adjusting to higher levels with SO<sub>2</sub> levels sinking. The bronchospasm could not be treated medically (epinephrine, theophylline, bronchospasmin, steroids).

With consideration to a minimum of 35 min transport it was decided to coniotomize the patient. A Quick Trach System was not an option, due to high ventilation pressures, and an endotracheal tube (5.0) was inserted. On transporting the patient to the ambulance the patient's circulation arrested once more. Immediate resuscitation and ventilation with a respirator was commenced. The patient could not be stabilized again and was pronounced dead after another 70 min of resuscitation.

## Discussion

In this case it may be necessary to scrutinize prolonged resuscitation using significant resources. Also the question of the extent of resuscitation arises. The patient was potentially viable, sick but fully functional in his own home.

Patients who cannot be intubated by an experienced anesthesiologist are rare. An alternative airway device has proved itself vital. However, these supraglottic devices do have their limits, for example high ventilating pressures and PEEP ventilation, as this case also demonstrates. The available coniotomy set was not an option due to a missing cuffed device that would not withstand high ventilating pressures.

## Conclusion

For an experienced emergency physician and anesthesiologist another question also arises: How would a paramedic have handled this situation?

ambulance, MICU (Mobile Intensive Care Unit) and all physician staffed vehicles carry them.

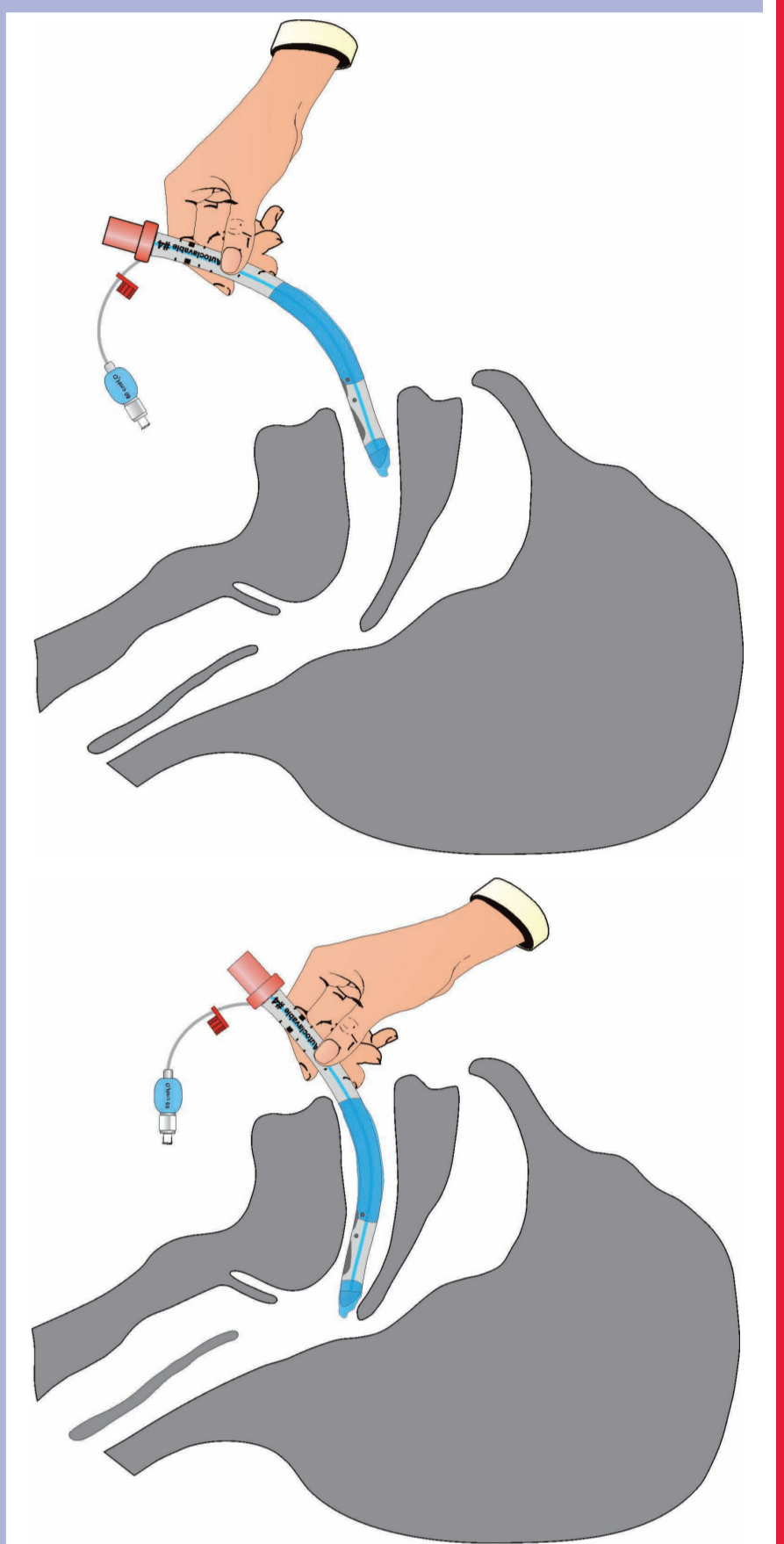
In the current European Resuscitation Council (ERC) guidelines the Laryngeal Tube has been included as an additional device for airway management in cardiopulmonary resuscitation.

This resulted in training and approval for utilization by non-physician auxiliary professions and personnel in emergency medicine in many countries. The device has many versatile usages, as this case demonstrates.

## Steps

### Step 1

- › Check the Laryngeal Tube (LT)
- › Use watersoluble lubricant
- › Hold the Laryngeal Tube like a pen in the area of the teeth marks. With your free hand, hold the mouth open and make sure that the tongue is not folded back during the downward movement of the LTS II.
- › Never use force!
- › Place the flat edge of the LT tip against the hard palate of the patient and slide it along the palate in the midline of the mouth down into the hypopharynx until the marked thick black line is level with the upper teeth. In case of insertion problems a lateral insertion may be tried.



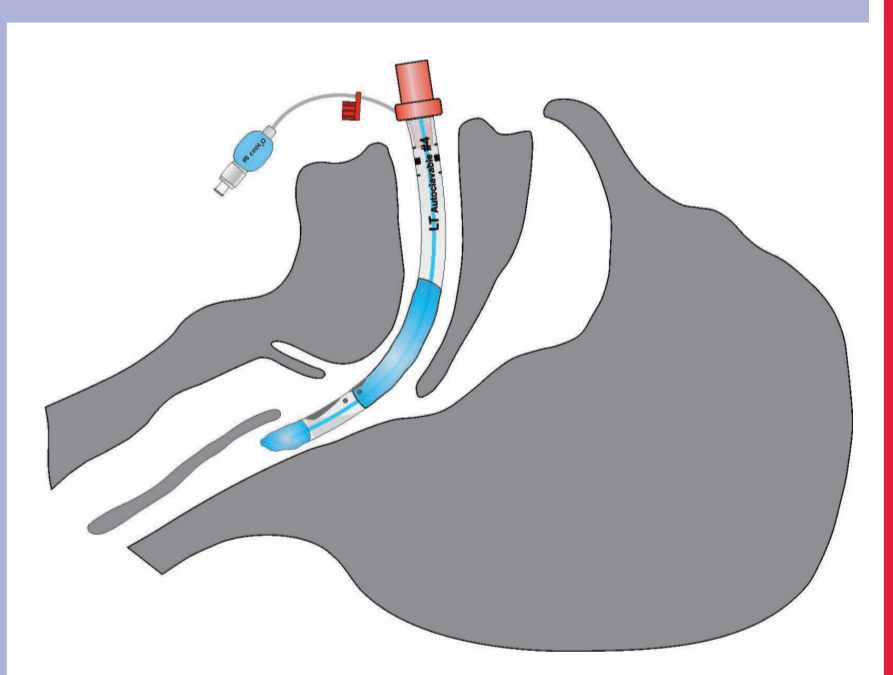
### Step 2

- › Inflate the cuffs with the appropriate volumes, which are color-indicated according to size on the syringe.
- › Both cuffs will be inflated automatically
- › In elective procedures it is recommended to use a cuff pressure lower than 60cmH<sub>2</sub>O.



### Step 3

- › The Laryngeal Tube should now be properly positioned and the patient can be ventilated.
- › Check lung ventilation by auscultation, capnography and chest movement.
- › If the ventilation is not sufficient remove the laryngeal tube (when in doubt – take it out!).
- › If necessary reposition the tube by pushing it further distal or pulling it more proximal in variance with patient size.



### Step 4

- › For removal, it is important that both cuffs are completely deflated

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