

# RUTGERS

New Jersey Medical School



## Anesthetic challenges when elective case becomes emergent

Shridevi Pandya Shah MD

Asst Professor

Dept of Anesthesiology

Rutgers-NJMS



Conflicts of interest: none

# Case

**8-week-old girl born at 36 weeks gestation with birth weight of 4 lbs and 3 oz, found at 4 weeks of age to have left eye discharge without other significant findings**

**At 5 weeks mother noted bleeding from medial corner of left eye with some swelling on lateral aspect of eye**

**At 6 weeks progressive protruding friable mass with inconclusive needle aspiration performed at the referring center that led to more bleeding**



## Preoperative anesthesia evaluation

- Preoperative interview: low birth weight, NICU stay for poor feeding but otherwise non contributory
- no formal pediatric clearance , most recent H&P in chart
- baby did have ECHO at birth - **no congenital cardiac issues, genetic tests pending in view of low birth weight, failure to thrive, low set ears and slight micrognathia**
- some runny nose, afebrile and chest clear
- Preoperative IV
- Hemoglobin,
- type and cross





**Hemodynamic instability**

**Airway**

**Oxygenation and ventilation**

**Postoperative management**

# Challenges in operating room

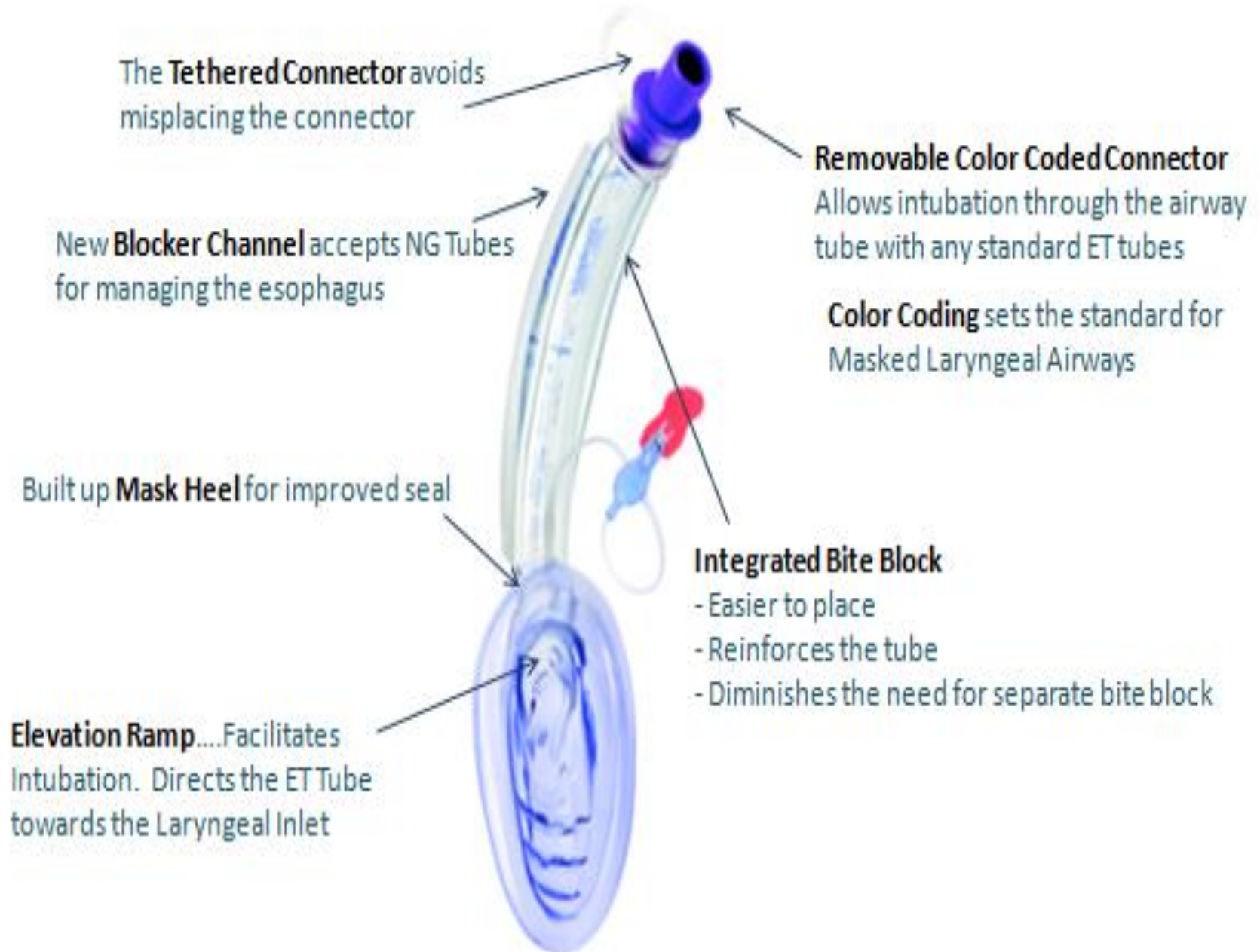
- Labile vital signs
- mask ventilation
- Direct laryngoscopy revealing grade III Cormack Lehane view of glottis
- Rapid desaturation limiting time to laryngoscopy

## Unable to CONFIRM placement of Endotracheal tube with Glide Scope

- Unable to detect ETCO<sub>2</sub>
- Decision to abort laryngoscopy
- Air Q LMA insertion
- successful blind intubation thru LMA











# Our Patient



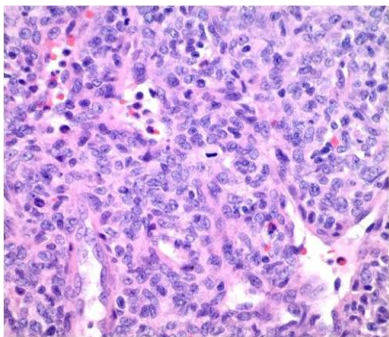
**Histopathologic exam of the specimen revealed Hemangiopericytoma of the orbit, She was found to have Trisomy 15**

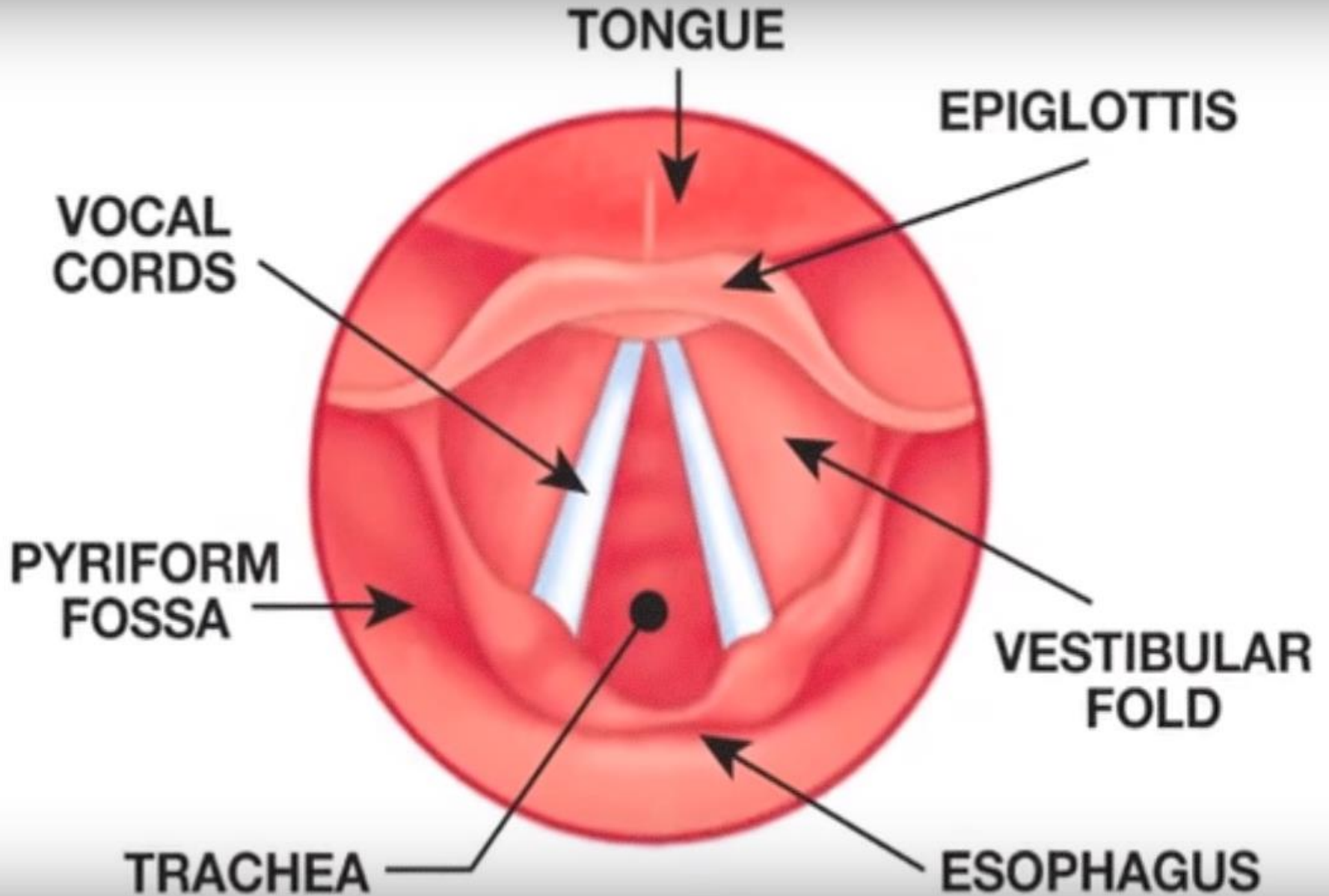


# Hemangiopericytoma Facts



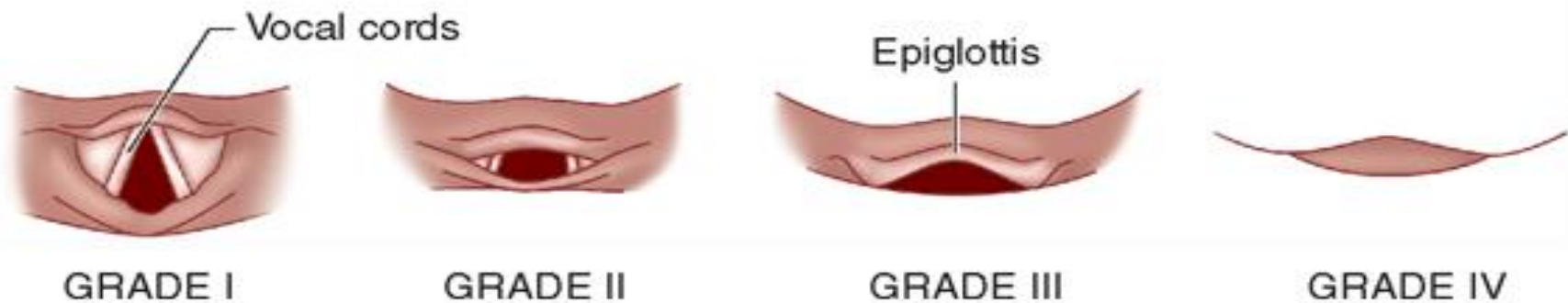
- **Encapsulated hypercellular , hypervascular lesions derived from pericytes and present as solitary, deep, soft tissue masses with insidious growth**
- **HPC is a rare m in adults and extremely rare in children**
- **The majority of cases follow a benign clinical course**
- **Recurrent lesions have a more malignant course and can metastasize**
- **There is no correlation between mitotic rate and the clinical behavior**







## Cormack Lehane view

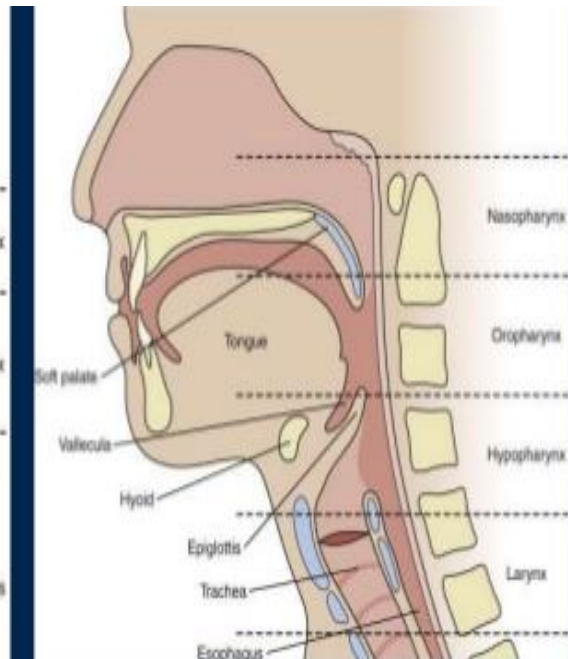
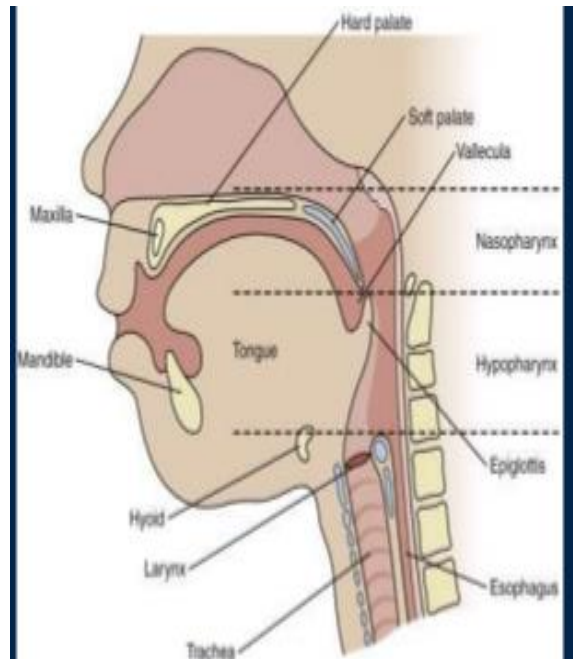
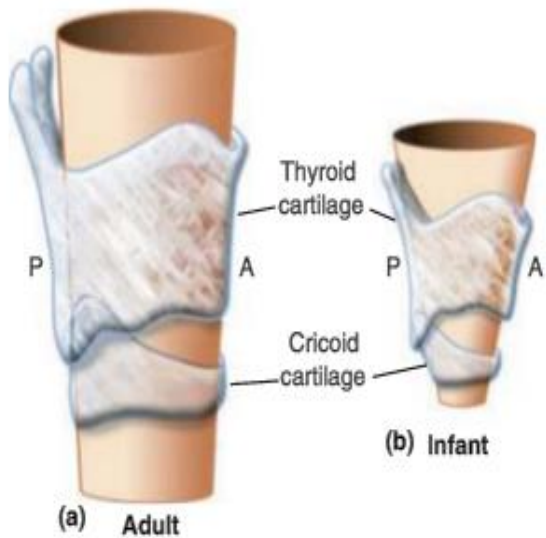






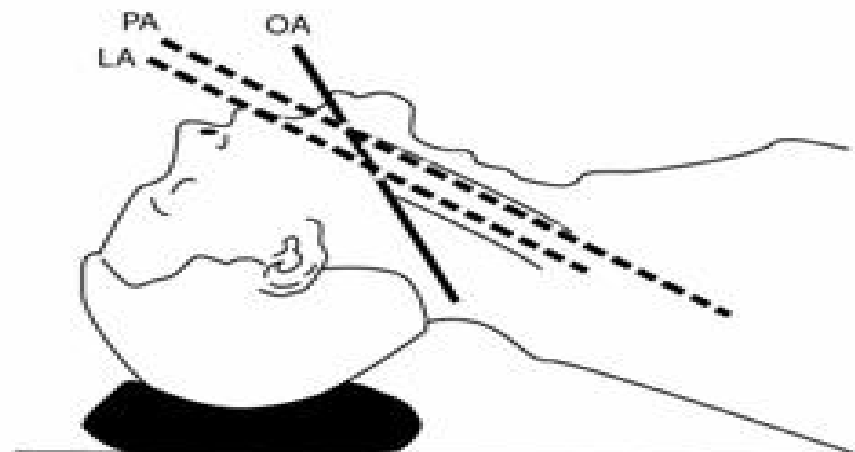
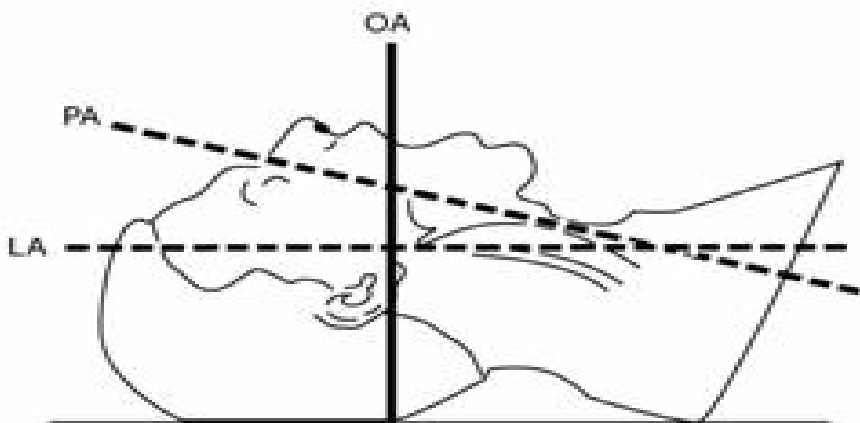
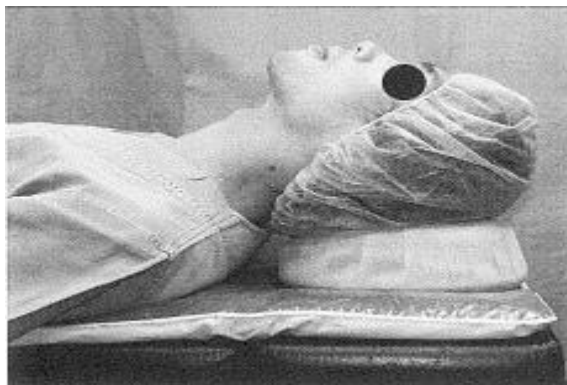
Glottic and supraglottic structures in infant - epiglottis, vallecula, pyriform fossa, larynx and hypopharynx.





2009

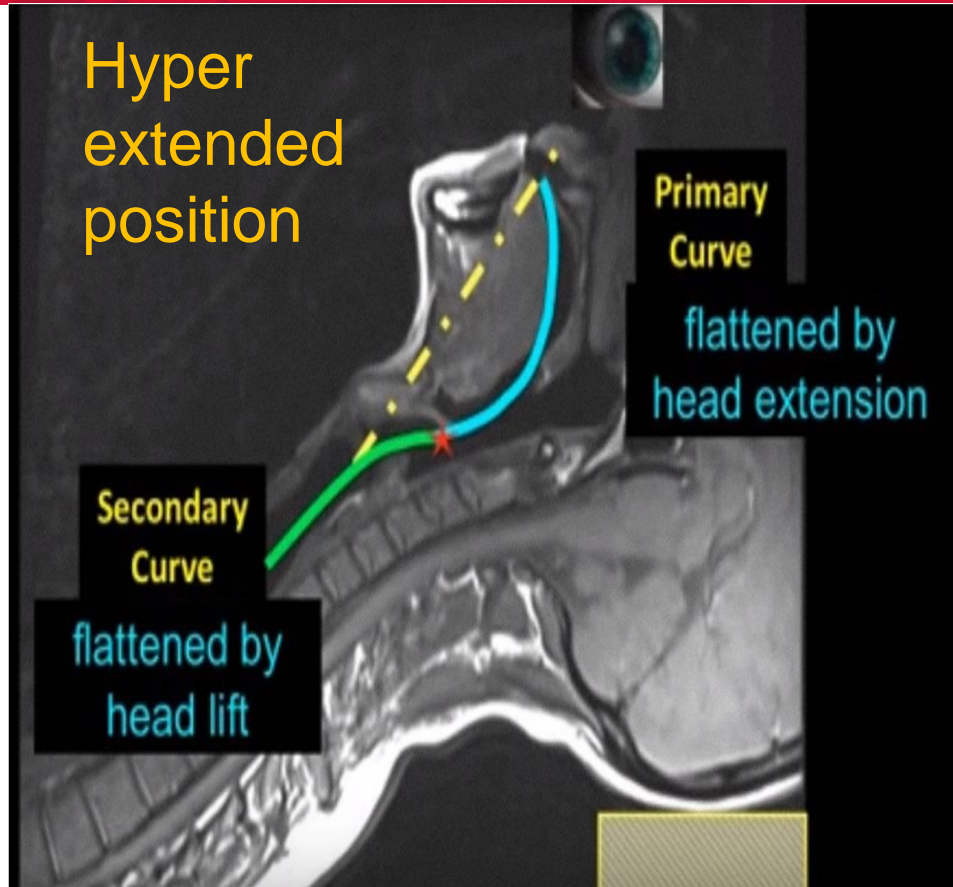
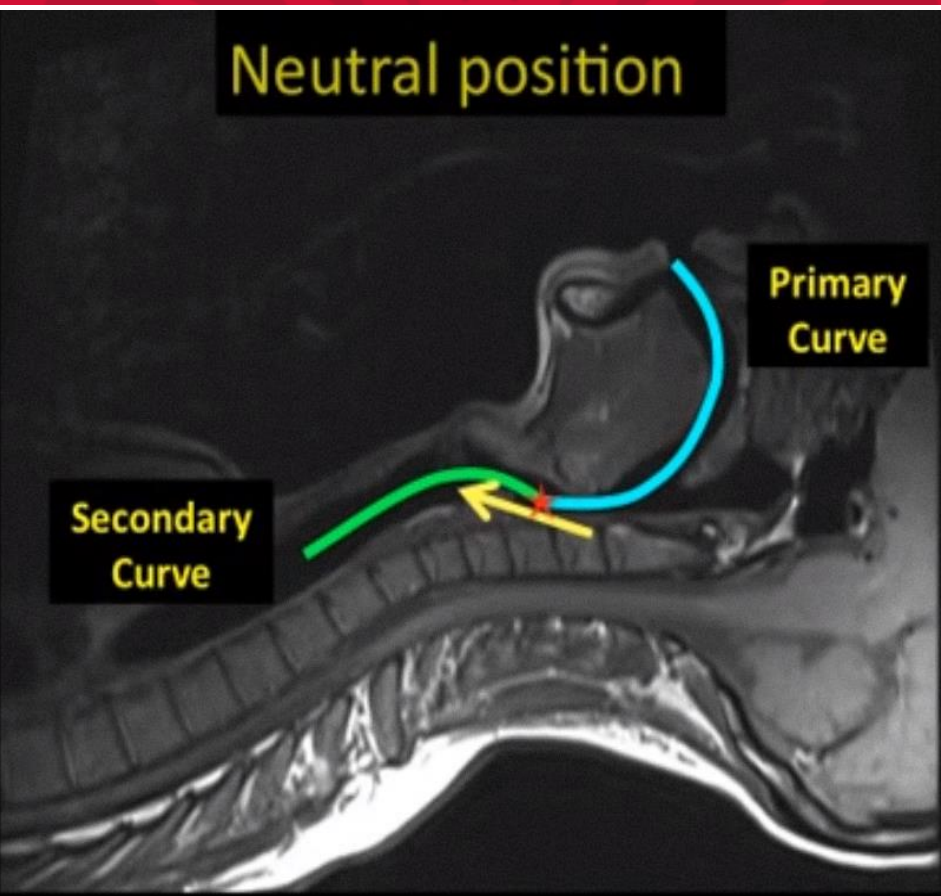
Anatomy and assessment of pediatric airway:  
 Review article by **Lola ADEWALE**  
 ,Pediatric anesthesia



Comparison of the rate of successful endotracheal intubation between the “sniffing” and “ramped” positions in patients with an expected difficult intubation – a prospective

randomized study **Ju-Hwan Lee**, Hoe-Chang Jung, Ji-Hoon Shim, and Cheol Lee  
 Department of Anesthesiology and Pain Medicine, Wonkwang University School of Medicine, Iksan, Korea

2015



2010

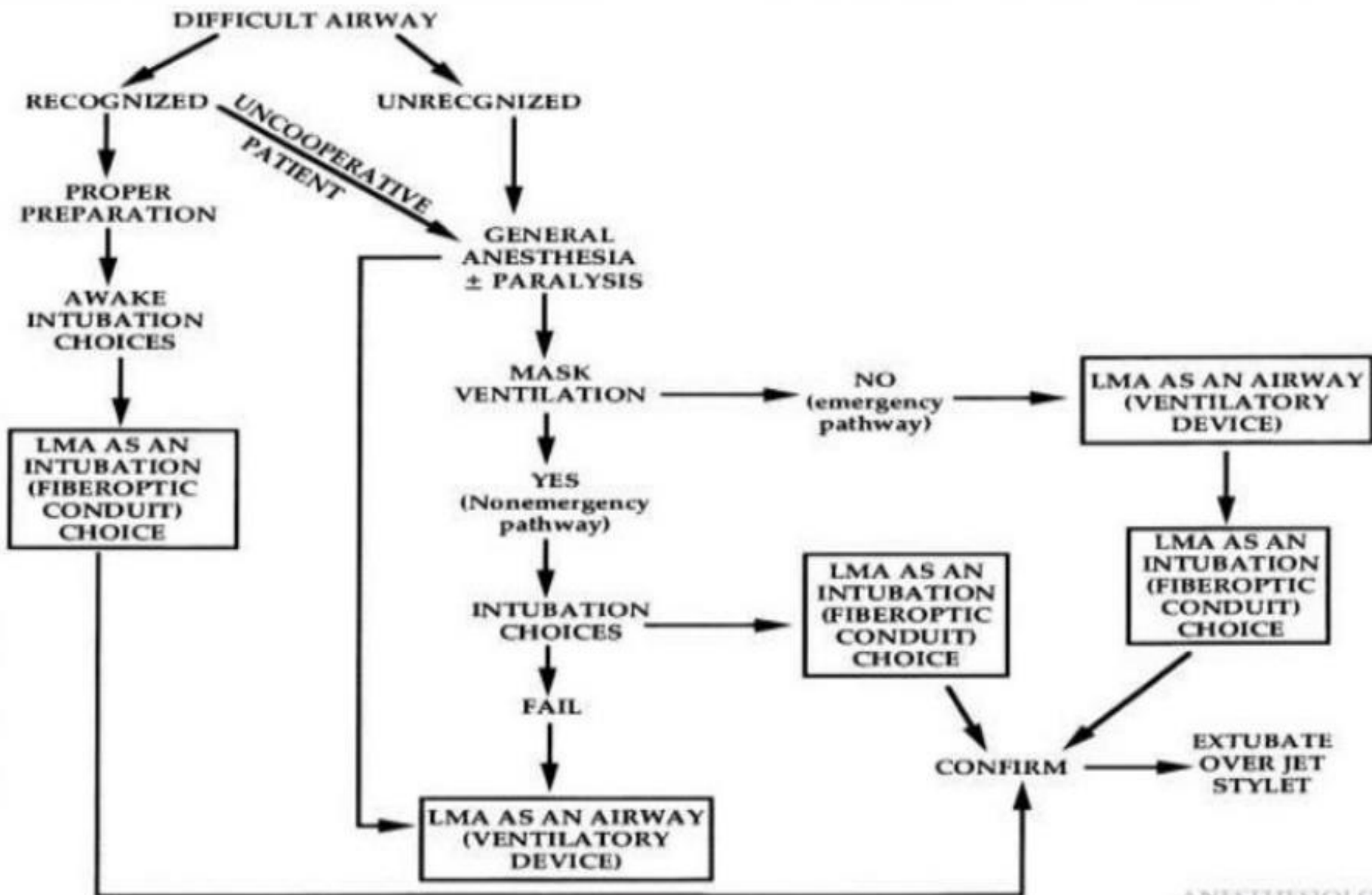
Changes in airway configuration with different head and neck Positions using magnetic resonance imaging of normal airways:

A new concept with possible clinical applications

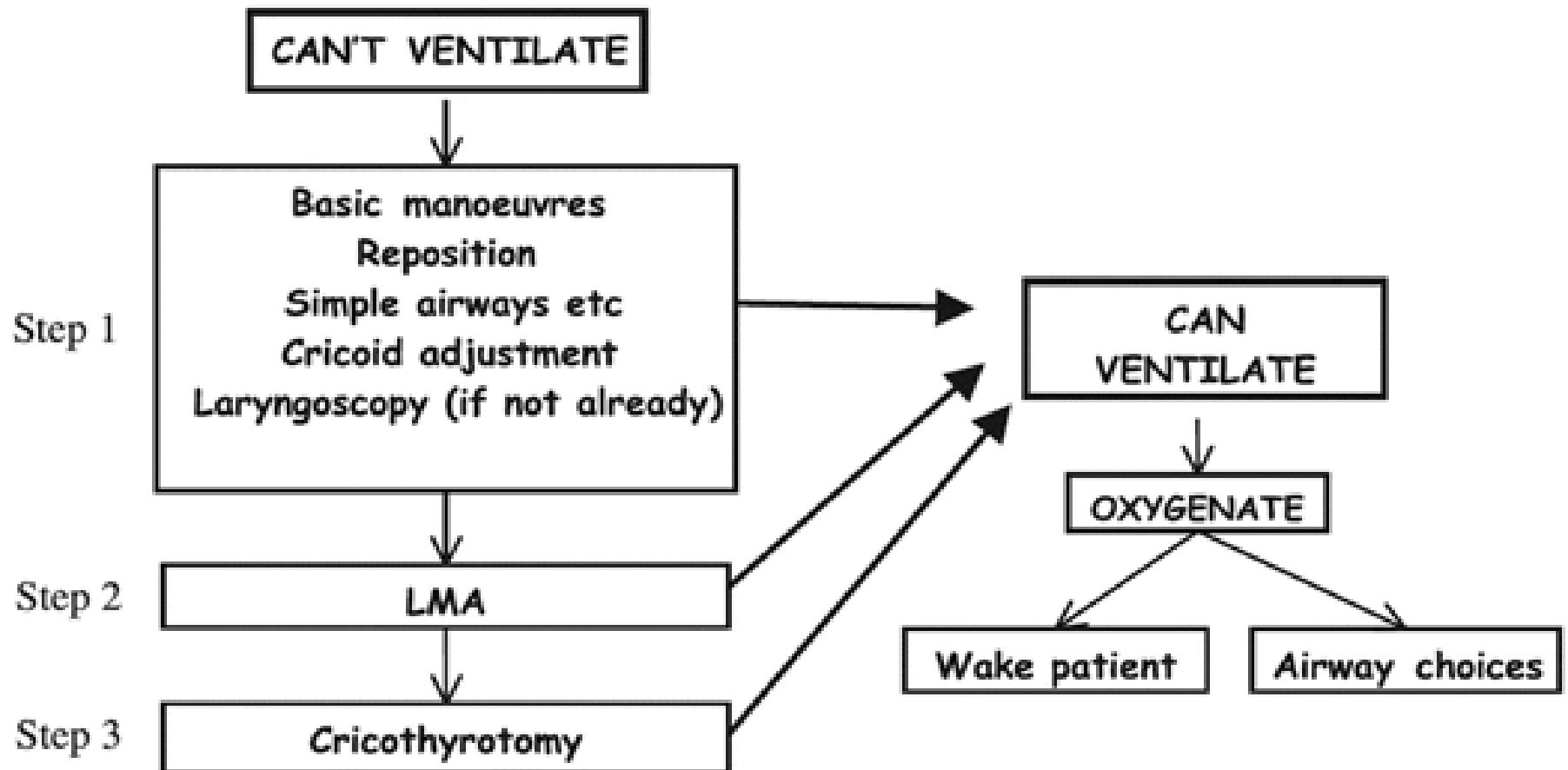
Greenland et al ,British journal of anesthesia



# Laryngeal Mask Airway and the ASA Difficult Airway Algorithm



# DAM-IT: 'Can't ventilate' Algorithm



Attempt oxygenation with face mask / airway before moving on to next step  
 CALL FOR HELP EARLY



AMBU Aura-i



LMA Supreme



I gel LMA



LMA ProSeal



LMA flexible



Air Q LMA



Ambu aura once

# History

In 1988, Dr. ARCHIE BRAIN introduced the first supraglottic airway device – the LMA. He took the idea from Goldman dental nose piece.





# Laryngeal mask airway History

**LMAs- 1<sup>st</sup> Generation-** airway tube only

**2<sup>nd</sup> generation-**gastric channel, improved pharyngeal seal and integral bite block

1788-first reference to tracheal intubation in humans

1878- first administration of anesthetic using endotracheal tube

1882-birth of extraglottic airway management

1908-Hewitt airway

1933- Guedel airway

1934-1<sup>st</sup> cuffed oropharyngeal airway

1940-Berman airway

1968-1<sup>st</sup> esophageal obturator

1981-1<sup>st</sup> human use of laryngeal mask

2000-1<sup>st</sup> reusable second generation SAD

2003-2010 single use second generation LMA

## LMA Classic AND LMA Unique



LMA Classic is first generation, versatile, reusable airway with aperture bars used extensively



LMA Unique is single use airway packaged sterile and ready for use, suited for areas where a reusable device is not practical, economical or desirable



## An update on newer pediatric supraglottic airways with recommendations for clinical use

Narasimhan Jagannathan, Melissa A. Ramsey, Michelle C. White, Lisa Sohn

2014

Supraglottic airways are an established part of routine and emergency pediatric airway management, including use in difficult airways and neonatal resuscitation. With the introduction of newer supraglottic airways in children, efficacy can only be determined by comparing these devices with those that are already well established (laryngeal mask airway Classic and laryngeal mask airway ProSeal). This narrative review aims to present the current literature on these newer supraglottic airways and give recommendations for their use in various clinical scenarios based on the existing evidence.

## Supraglottic Airways For Pediatric Patients: An Overview

2013



**NARASIMHAN SIM JAGANNATHAN, MD**  
 Department of Pediatric Anesthesia  
 Ann & Robert H. Lurie Children's Hospital of Chicago  
 Director of Anesthesia Research  
 Associate Professor of Anesthesiology  
 Northwestern University's Feinberg School of Medicine  
 Chicago, Illinois

**JOHN EDEM FIADJOE, MD**  
 Assistant Professor of Anesthesiology and Critical Care  
 Perelman School of Medicine at the University of Pennsylvania  
 and The Children's Hospital of Philadelphia  
 Philadelphia, Pennsylvania

The authors report no relevant financial conflicts of interest.

## I gel LMA



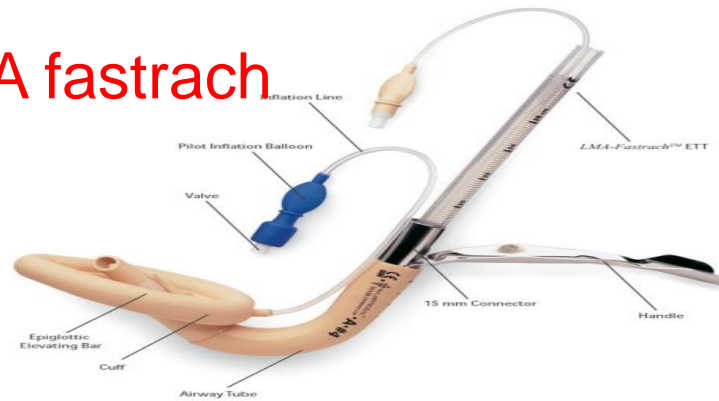
## Intubating LMAs Ambu aura once



## Air Q LMA



## LMA fastrach





i gel, LMA fastrach and air Q permit direct passage of endotracheal tube

Used as a rescue device for ventilation after induction of anesthesia

Conduit for fiberoptic intubation

Use of Aintree intubation catheter where difficulty encountered passing endotracheal tube through LMA

2015

Evaluation of glottic view through Air-Q Intubating Laryngeal Airway in the supine and lateral position

And assessing it as a conduit for blind endotracheal intubation in children in the supine position

Pandey RK et al, Pediatric anesthesia

2013

To assess the efficacy of i-gel for ventilation, blind tracheal intubation and nasogastric tube insertion

Geeta Bhandari, Anesthesia Essays and researches

## Key Features of the

# LMA CTrach™

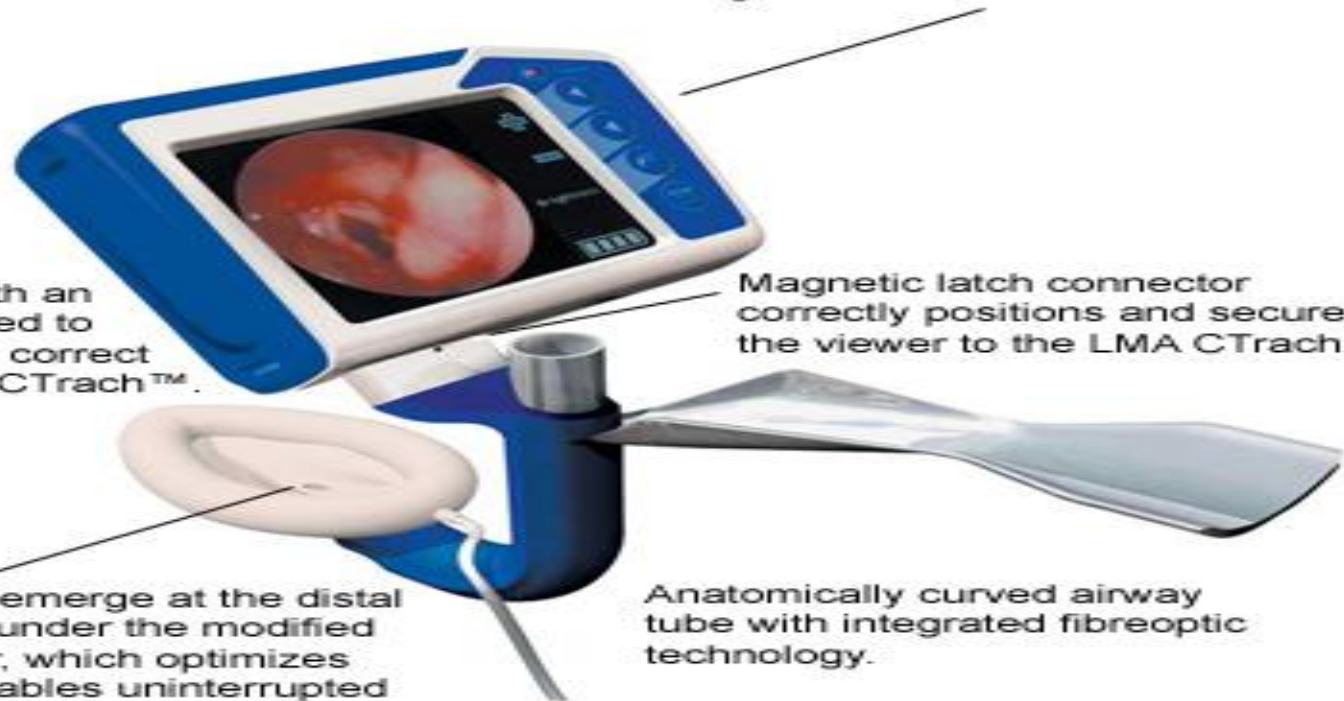
The LMA CTrach™ viewer weighs less than eight ounces and is totally wireless and portable. The viewer provides controls for focusing and image adjustment. The battery provides 30 minutes of uninterrupted viewing and is rechargeable in a dedicated cradle.

A dedicated ET tube with an atraumatic tip is designed to enter the trachea at the correct angle through the LMA CTrach™.

Magnetic latch connector correctly positions and secures the viewer to the LMA CTrach™.

Two fibreoptic bundles emerge at the distal end of the airway tube under the modified Epiglottic Elevating Bar, which optimizes the light source and enables uninterrupted image transmission to the viewer while protecting the airway tube from obstruction and lifting the epiglottis out of the way, facilitating the passage of an ET tube.

Anatomically curved airway tube with integrated fibreoptic technology.



The LMA CTrach™, a new laryngeal mask airway for endotracheal intubation under vision : evaluation in 100 patients

E.H.C. Liu, British Journal of Anesthesia

2006



## Air traq

- Has a built in channel for the tracheal tube
- Available in all pediatric sizes
- Used successfully in children with difficult airways
- May be more difficult to use in small infants
- Directs the tube leftward, requires manipulation of the device as a unit to help guide the tube in the trachea.
- May be used with a bougie or in combination with the fiberoptic bronchoscope





## GlideScope



## McGrath Video



A comparison of the Glide Scope to the McGrath videolaryngoscope in patients

Woo Jae kyong Hun Kim et al, Korean society of Anesthesiologists



Better view of glottis than McIntosh blade with GlideScope and Storz CMAC

Views are comparable among GlideScope and Storz CMAC

Devices like bougie may be needed for assistance since better glottic view don't directly translate into ease of intubation

2013

A comparison of the GlideScope video laryngoscope to the C-MAC video laryngoscope for intubation in the emergency department

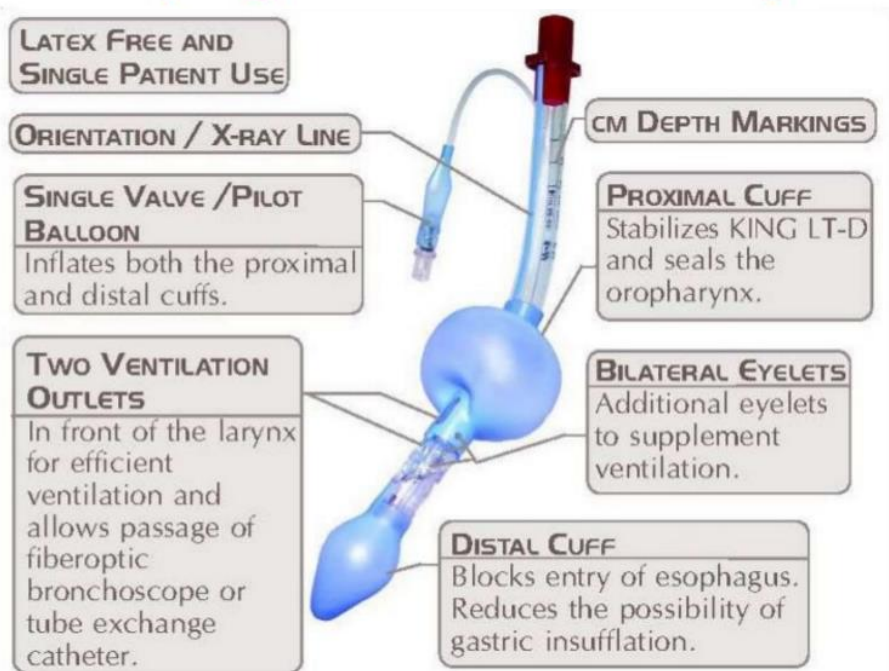
[Mosier J et al](#), ANN Emerg med

2012

Comparison of the GlideScope, CMAC, storz DCI with the McIntosh laryngoscope during simulated difficult laryngoscopy: a manikin study

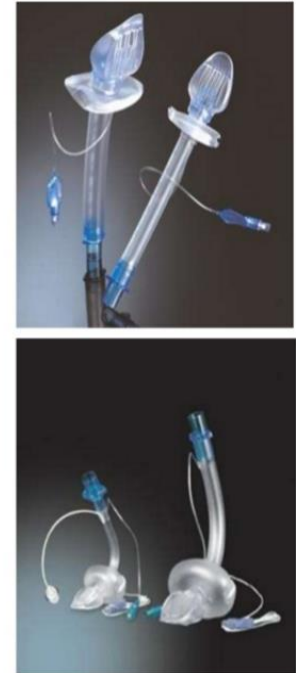
[David W Healy et al](#), BMC anesthesiology

# Laryngeal tube airway



# COBRA TUBE

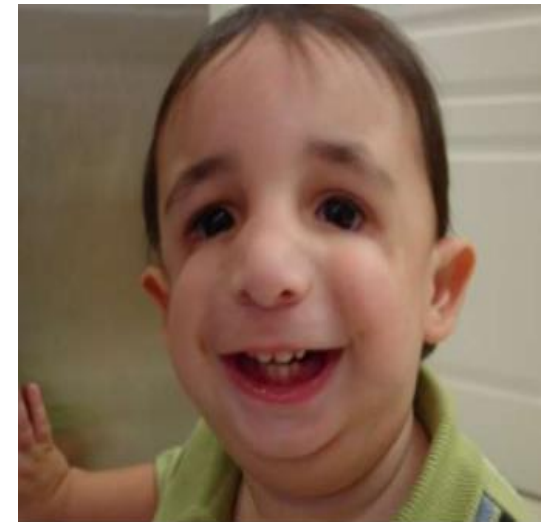
- Single use, plastic device
- Distal end has softened openings
- Used for both spontaneous and controlled ventilation
- Serves as a rescue airway



A randomized comparison between Cobra PLA and classic laryngeal mask airway and laryngeal tube during Mechanical ventilation for general anesthesia  
**2013** Ratajczyk P et al , Anesth intensive her

The cobra PLA versus LMA unique in children  
**2008** Ron M Walls, Anesth and analgesia





# Esophageal intubation is not a sin !





Thank you

