Laryngoscopes and Tracheal intubation Equipment

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April -2023

Laryngoscopes

These devices are used to :

-Directly visualize the laryngeal inlet.

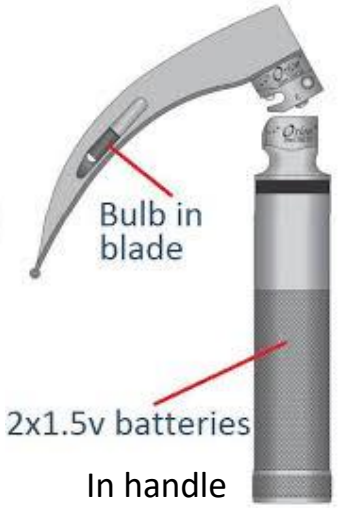
-Aid in tracheal intubation.

Components

1- Handle:

-Designed in different sizes.

-Houses power source (batteries).



2- Blade:

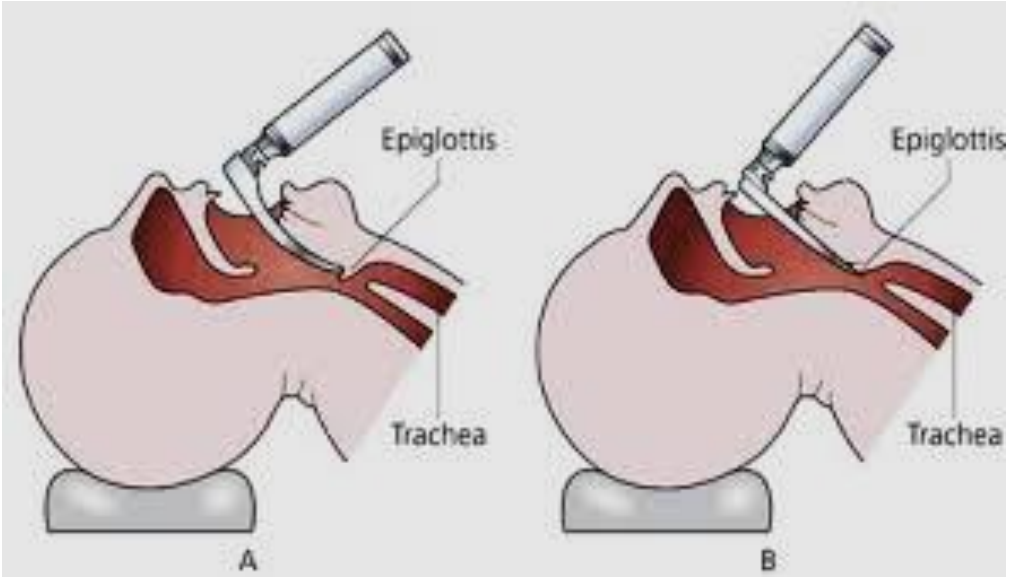
-Curved or straight.

-Fitted to the handle.

-Wide range of designs for both.

Mechanism of action

*1- Usually the **straight blade** for **neonates**.*
*Neonate **epiglottis is lifted** (relatively large, floppy and V- shaped) Larger sizes **can be** used for **adults**.*
*2-The **curved blade** (Macintosh) blade*
*-Reaches **vallecula** .*
-Four different sizes.
*-Inserted via the **Rt. Angle** of the mouth.*



Mechanism of action

3- Standard design:

-Light source =a bulb

screwed to the blade.

More recent design:

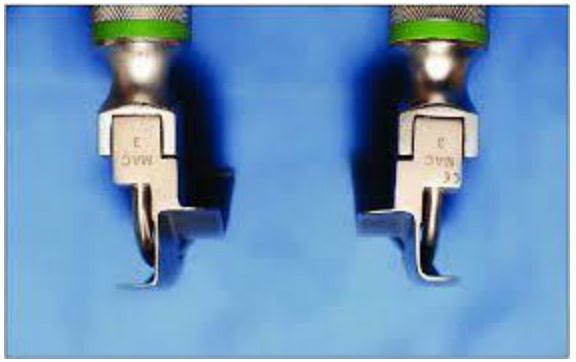
-The bulb is on the handle and light is transmitted via fibreoptics.

-Both reusable and disposable versions are available.


HEINE
GERMANY
F.O. SLIM


LARYNGOSCOPE MAC BLADE
#2

Mechanism of action



4- Lt-sided Macintosh blade is available for Rt.-sided facial deformities.

5-McCoy laryngoscope -derived from Macintosh blade.

-Has a hinged tip ,operated by a lever available :

- as straight and curved McCoy are available now:

- in traditional bulb and fibreoptics.

-for routine and difficult intubation.

Mechanism of action

6- A more recent design is Flexiblade :

-The whole distal half is maneuverable.

-The lever is on the front of the handle.

Mechanism of action

7-The blades are interchangeable between different manufacturers:

-(Green & Red) systems.

-The green system is the most commonly used fitting standard.

Problems in practice and safety features

1. *The risk of trauma & bruising of epiglottis is more with straight blade.*

2. *Of vital importance to check the function of laryngoscopes before commencement of anesthesia. Reduction of power or total failure may be due to corrosion at points of electrical contact , battery failure or bulb failure.*

Problems in practice and safety features

3-large breasts restrict the insertion of the blade into the mouth, the short handle (and/or) Polio-blade are used to overcome this problem.

Problems in practice and safety features

4. *To prevent cross-infection: one of the following methods are used:*

a) ***Disposable blade*** *is used.*

b) ***PVC sheath*** *is used to cover the blade.*

c) ***Decontamination*** *of The reusable blade and handle between patients.*

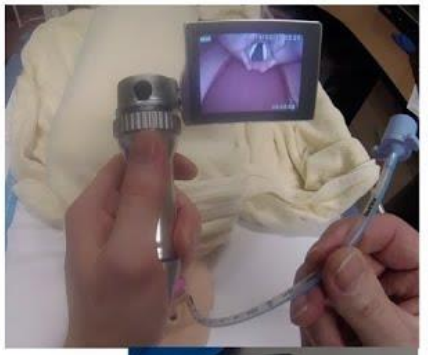
Video-laryngoscopes

- *Are a new generation of crossover devices , offering indirect laryngoscopy. Using miniature high resolution cameras and fibreoptic technology.*
- *Combine features of both standard rigid laryngoscopes and flexible fibreoptic scopes.*
- *Light & images are transmitted using fibreoptics or lenses & prisms .*
- *Cameras are wide angle (see corners) ,some direct viewing via an eye piece or an attached or remote screen.*
- *They may supersede the traditional laryngoscopes.*

Advantages of video-laryngoscopes

- ***Better visualizing the glottis.***
- ***Minimal neck movement (as in fractured cervical spines).***
- ***More successful & faster tracheal intubation in expert hands.***
- ***Less traumatic.***

Examples of video laryngoscopes



VIDEO LARYNGOSCOPE COMPARISON

Dr Christopher Flannigan

Examples of video laryngoscopes

MCL
Macintosh

GVL
Glidescope

CM
C-MAC

CMD
C-MAC D-blade

MG
McGrath

AWS
Airwayscope

ATQ
Airtraq

KV
King Vision

Bronchoscopes

- ***These devices are either :***

1. ***Rigid :mainly used for foreign body extraction from the tracheobronchial tree.***

or

2. ***Flexible fibreoptic:***

Fibreoptic intubating laryngoscope or bronchoscope

- *These devices revolutionized airway management in anesthesia & ICU.*
- *Used for:*

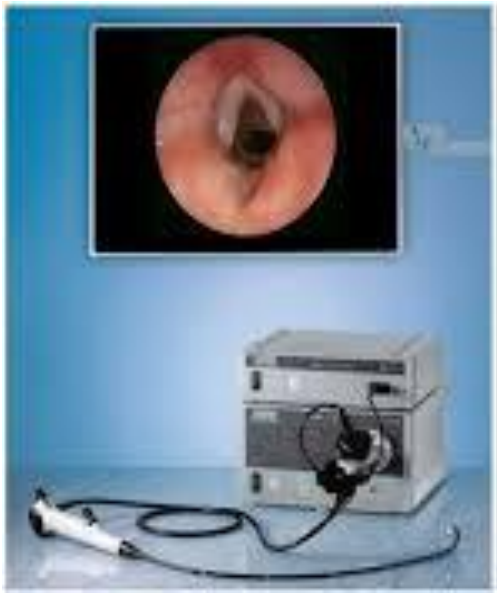
a) *Oral or nasal Tracheal intubation.*

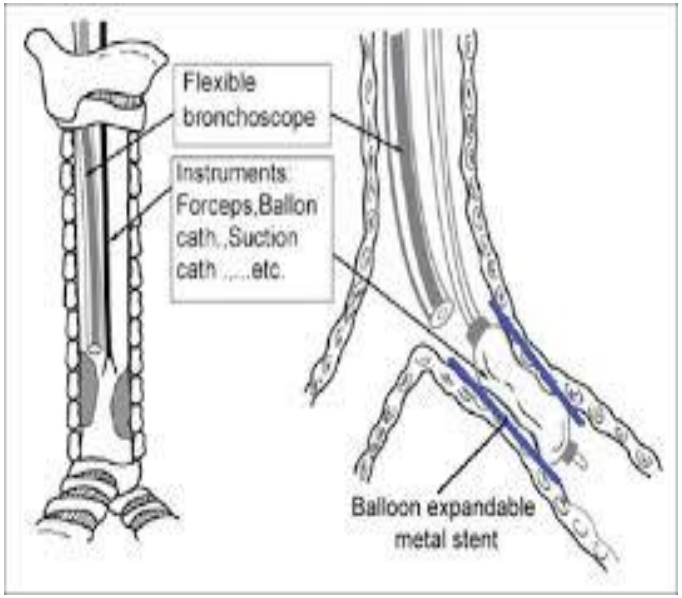
b) *Evaluation of airways in trauma , tumor , infection & inhalational injuries.*

c) *Confirm endobronchial ,double lumen or trachiostomy tubes correct positioning.*

d) *Perform trachiobronchial toilet.*

Fibreoptic intubating laryngoscope or bronchoscope





Components

1- Control unit:

a) Eye piece.

b) Focusing ring.

c) Suction channel.

d) Tip deflection lever (60-180).

2. Flexible insertion cord (10000-150000) optic fibers.

3. Light transmitting cable .

4. Accessories(oral airway ,bite block, antifogging agent.

5. Light source unit.

6. Monitor display.

Old and New bronchoscopes

Old bronchoscope
Power and light sources and display monitor are separate and bulky

Robotic bronchoscope

New bronchoscope
Power and light source and display are compacted in a single unit.

Problems in practice and safety features

1. *Delicate expensive instruments , liable for permanent damage and loss of image by careless handling.*
2. *Should be cleaned ,dried and sterilized soon after use ,otherwise transmit infections.*

Accessory equipments used in tracheal intubation

1- Local anesthetic spray

usually Xylocaine 2%.

2- A bite guards to protect upper incisor teeth during laryngoscopy.

3- A ring-pull-on used to bow & adjust the tracheal tube curvature.

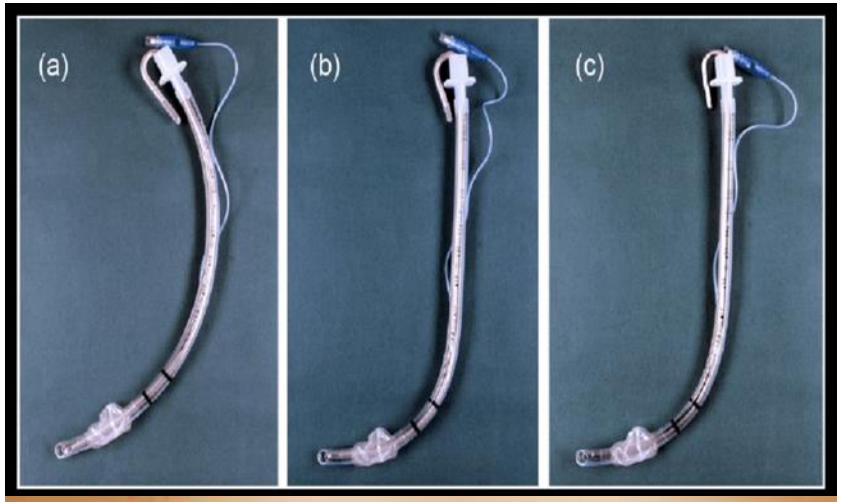
Accessory equipments used in tracheal intubation

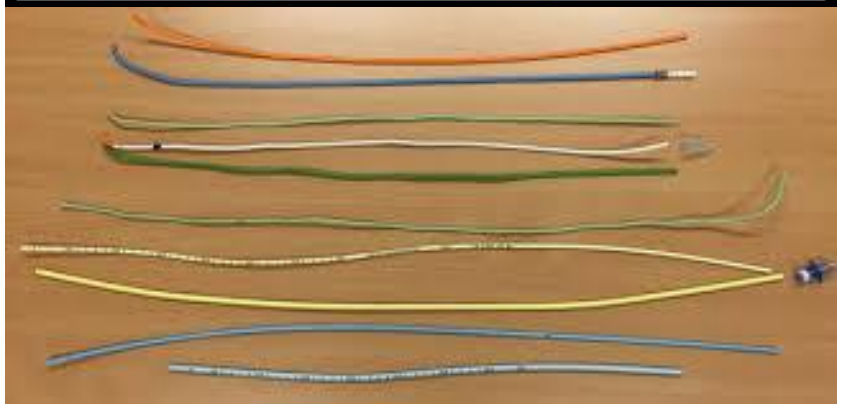
4- Thee Nosworthy airway

Which is a modification of oropharyngeal airway , it allows connection of a catheter mount & breathing system .

Accessory equipments used in tracheal intubation

5- Tracheal tube Introducer or a stylet to adjust tube curvature according to the need.





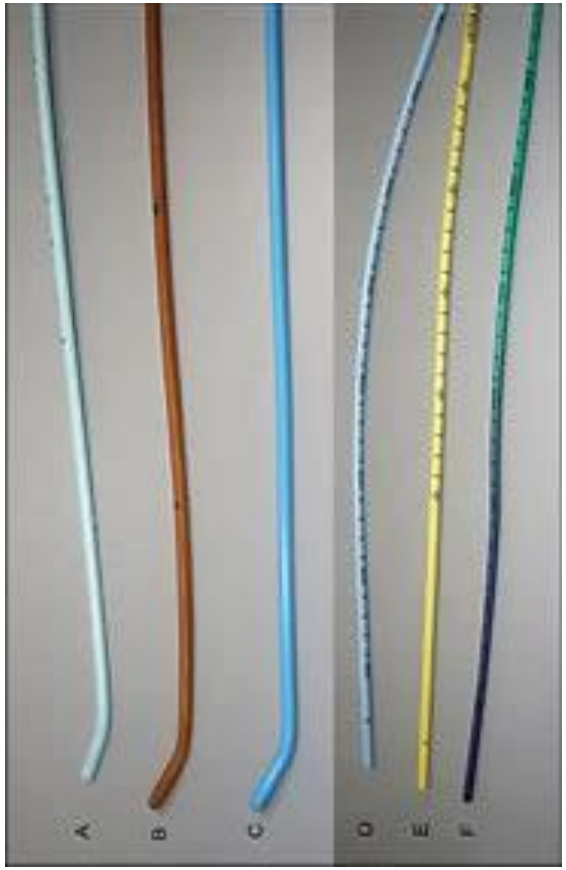
Accessory equipments used in tracheal intubation

6- Gum elastic bouggie:

-It is used in difficult intubation ,when laryngeal Inlet can not be visualized.

-It is inserted 1st then the tube

-The tube is railroaded over it.



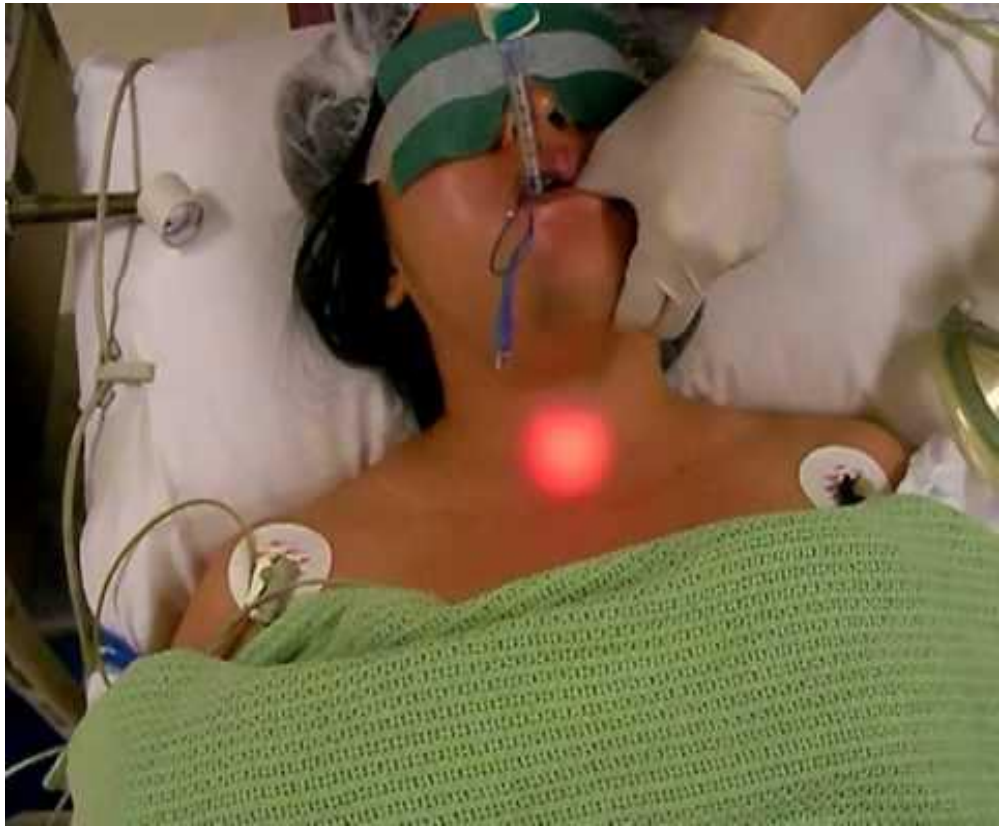
Accessory equipments used in tracheal intubation

7- Tube exchanger catheter.

- ***It's a long hollow tube.***
- ***Specially designed detachable 15 mm male taper fit & Leur-lock connectors can be used fo temporary oxygenation.***

Accessory equipments used in tracheal intubation

8- Lighted stylet (light wand , trachealight or Trachlite).



Accessory equipments used in tracheal intubation

9-The Aintree intubation catheter .

-Its used with:

Fiberscope being passed through LMA or other supra-glottic airway devices.

-It allows any appropriate size of tracheal tube that may be limited by the supraglottic airway.

Accessory equipments used in tracheal intubation

10-Magill forceps :

-Designed for ease of use within the oropharynx.

-They come in small & large sizes.

-Used to :

1. ***Direct the tip of tracheal tube towards the larynx.***
2. ***Insert & remove throat pack.***

Care is needed to avoid Tube cuff damage or tissue injury by the forceps.

Accessory equipments used in tracheal intubation

10-Retrograde intubation set.

-used in cases of difficult intubation.

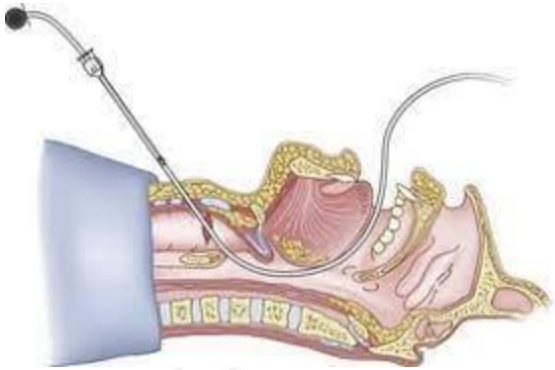
Components:

1- An introducer needle (18G ,5cm length)

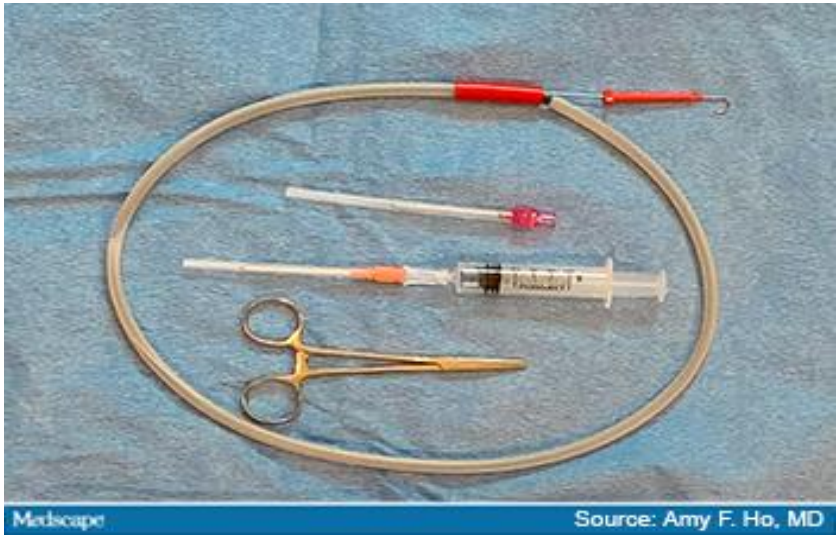
2- A guide wire with J-shaped end.

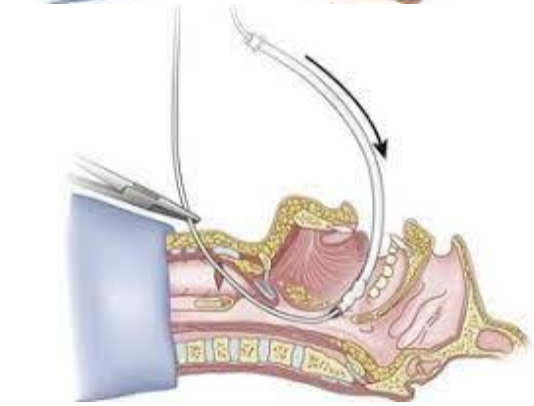
3- A 14G 70cm hollow catheter with distal side pores & proximal end has a 15mm connector.

Retrograde intubation set

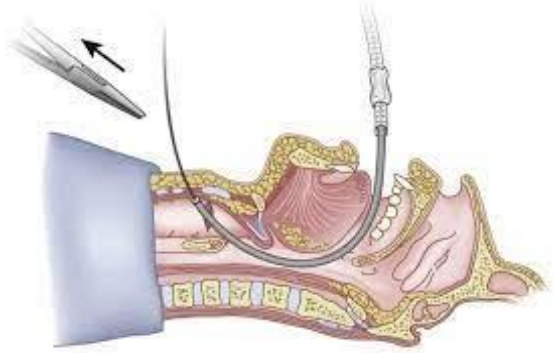


Catheter insertion





Tube rail-roading



Catheter pulling

Problems in practice
&
safety features

1-Pneumothorax.

2-Haemorrhage.

3-Failure.