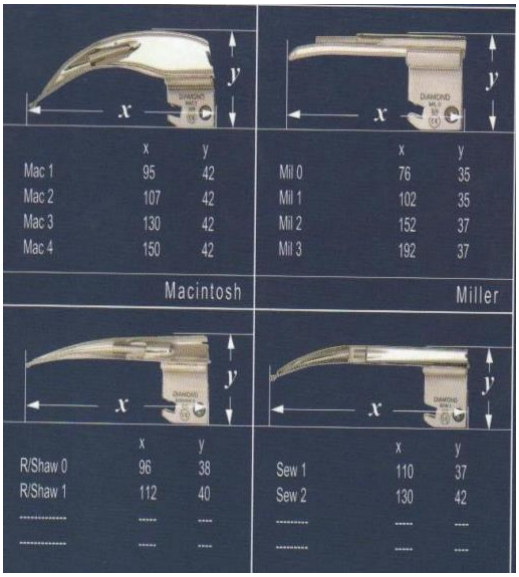
Laryngoscopes

These devices are used to perform direct laryngoscopy and to aid in tracheal intubation.



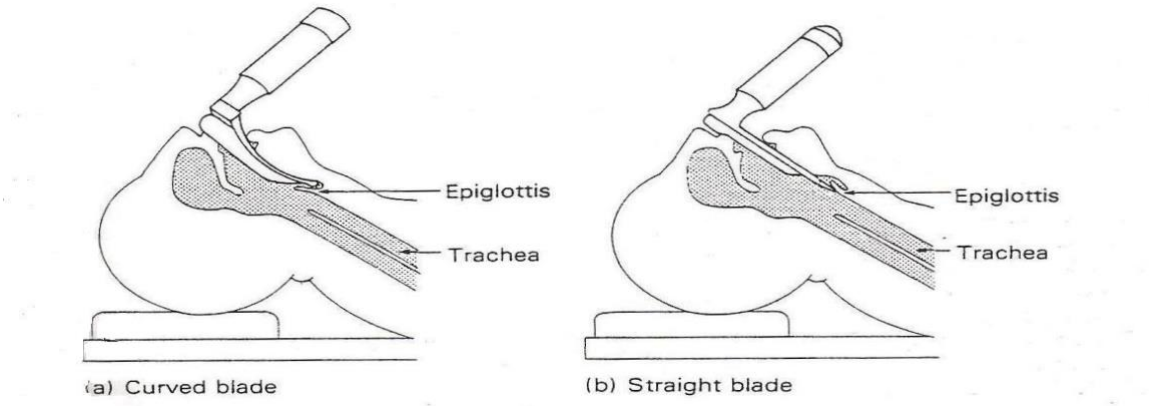
Components:

1. The handle houses the power source (batteries) and is designed in different sizes.

2. The blade is fitted to the handle and can be either curved or straight. There is a wide range of designs for both curved and straight blades.

Mechanism of action:

1. Usually the straight blade is used for intubating neonates and infants. The blade is advanced over the posterior border of the relatively large, floppy V-shaped epiglottis which is then lifted directly in order to view the larynx. There are larger size straight blades that can be used in adults.



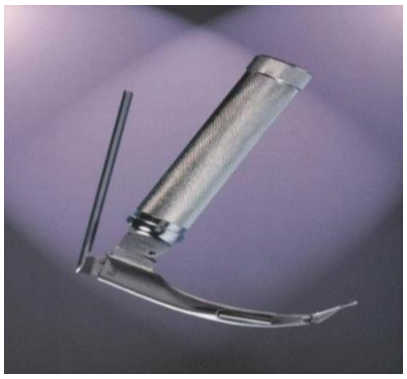
2. The curved blade (Macintosh blade) is designed to fit into the oral and oropharyngeal cavity. It is inserted through the right angle of the mouth and advanced gradually, pushing the tongue to the left and away from the view until the tip

of the blade reaches the vallecula. The blade has a small bulbous tip to help lift the larynx. The laryngoscope is lifted upwards elevating the larynx and allowing the vocal cords to be seen. The Macintosh blade is made in four sizes.

3. The light source is a bulb screwed on to the blade and an electrical connection is made when the blade is opened ready for use. Some designs place the bulb in the handle and light is transmitted to the blade by means of fibreoptics.

Direction of forces applied for direct laryngoscopy

4. A left-sided Macintosh blade is available. It is used in patients with right-sided facial deformities making the use of the right blade difficult.
5. The new McCoy laryngoscope is based on the standard Macintosh blade. It has a hinged tip which is operated by the lever mechanism present on the handle. It is suited for both routine use and cases of difficult intubation.

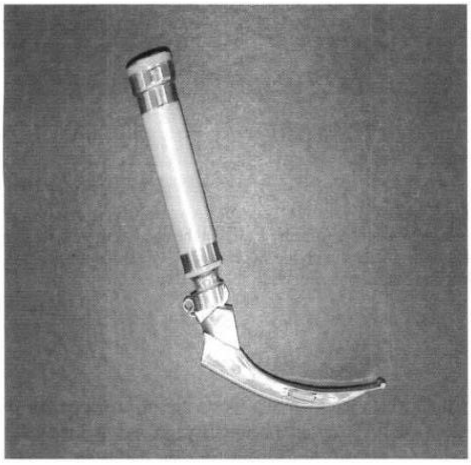


6. When the view during direct laryngoscopy is poor, it may be improved with the aid of an assistant, who lifts the head with the right hand, increasing the degree of cervical spine flexion, while applying external laryngeal pressure with the left hand, as shown.

Problems in practice and safety features:

1. The risk of trauma and bruising to the different structures (e.g. epiglottis) is higher with the straight blade.
2. It is vital importance to check the function of the laryngoscope before anaesthesia is commenced. Reduction in power or total failure due o electrical contact point is possible.
3. Patients with large amounts of breast tissue present difficulty during intubation. Insertion of the blade into the mouth is

restricted by the breast tissue impinging on the handle. To overcome this problem, specially designed blades are used such as the polio blade. The polio blade is at about 120^{o} to the handle allowing laryngoscopy without restriction. The polio blade was first designed to intubate patients ventilated in the iron lung during the poliomyelitis epidemic In the 1950s. A Macintosh laryngoscope blade attached to a short handle can also be useful in this situation.



Types of the blade:-

1. Miller blade (large, adult, infant, premature).
2. Macintosh blade (large, adult, child, baby).
3. Macintosh polio blade.
4. Soper blade (adult, child, baby).
5. Left-handed Macintosh blade.
6. Wisconsin blade (large, adult, child, baby)
7. Robertshaw's blade (infant, neonatal).
8. Seward blade (child, baby).
9. Oxfored infant blade.

10. Phillips blade.
11. Bizzari-Giuffrida blade.
12. Choi (double angle) blade.
13. Siker blade.
14. Bellscope blade.
15. McCoy blade.

Selected Retraction Blades

Blade	Characteristics	Uses/Advantages
Miller	**Straight with curved tip**	**Normal airway, long epiglottis, "deep" glottis, prominent upper incisors**
Phillips, Wisconsin	**Straight blades with higher vertical profiles**	**More room for ETT placement than Miller blade**
MacIntosh	**Curved blade**	**Normal airway**
Bizzarri-Giuffrida	**Curved blade with no vertical flange**	**For small mouth or protruding or fragile teeth**
Siker	**Incorporates mirror into blade**	**For anterior-situated larynx**

Choi	**Has double-angle shape**	**Better exposure of anterior larynx**
Belscope	**Angulated, with optional prism attachment**	**For normal airway, or anterior larynx**
McCoy	**Version of MacIntosh blade with articulated tip**	**Facilitates lifting of epiglottis**
Improved-View	**Concavity in long axis of spatula**	**Provides better view of anterior larynx**
MacIntosh		

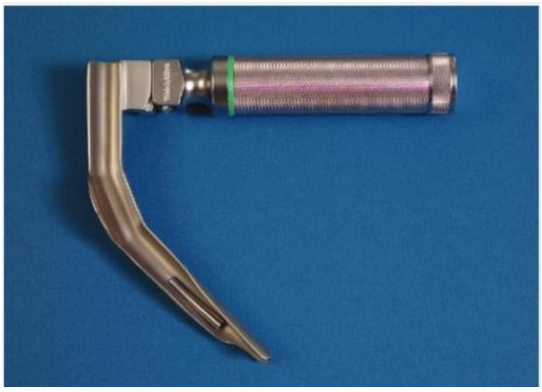
From left to right, Wisconsin, Phillips, and Miller straight blades.


Miller and Phillips blades.


MacIntosh blade


Bizzari-Giuffrida laryngoscope blade: no vertical flange is present, to allow insertion into small oral cavity or those patients who cannot open the mouth well.

Choi (double angle) blade



The Siker blade

Prism for 3 MacIntosh blade, mounted

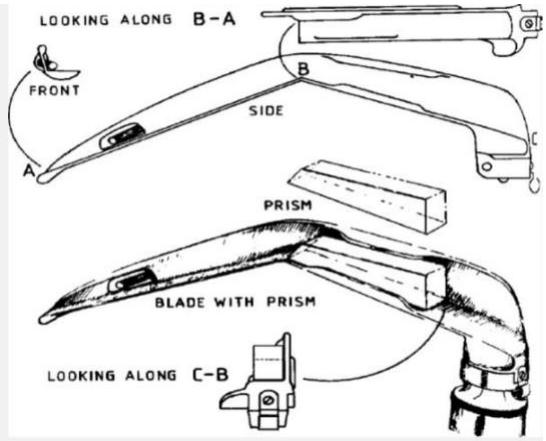


Diagram of Bellscope blade with prism in place

Fibreoptic intubating laryngoscope:

These devices have revolutionized the airway management in anaesthesia and intensive care. They are used to perform oral or nasal tracheal intubation, to evaluate the airway in trauma, tumour, to confirm tube placement (tracheal, endobronchial, double lumen or tracheostomy tube) and to perform tracheobronchial toilet.

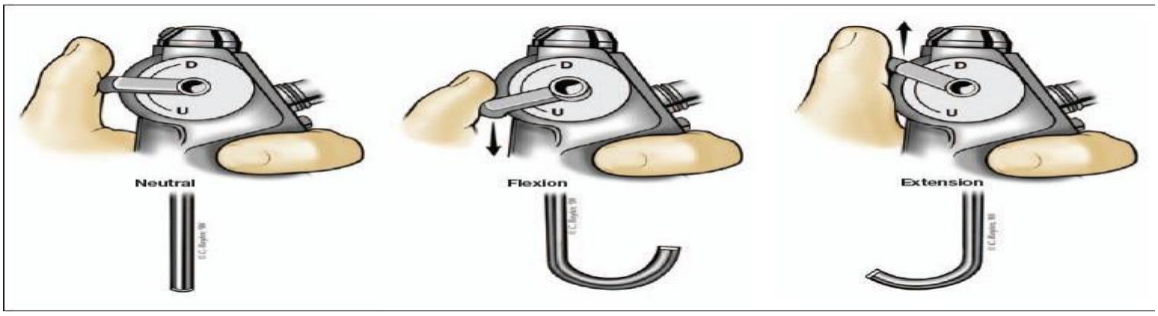
Flexible Fiberoptic and Video Devices

Flexible fiberoptic or video-based bronchoscopes have been the mainstay of difficult airway management in the OR. Most awake intubations are performed with flexible fiberoptic bronchoscopes in this setting, although many of the other techniques and devices described in this and other chapters (including direct laryngoscopy) can also be used on the awake patient. Unfortunately, flexible fiberoptic or videobronchoscopes are expensive to attain and maintain, and skills acquisition is also an issue, resulting in these instruments rarely being used for intubation by nonanesthesia clinicians. Having said this, flexible fiberoptic scopes can be used in various capacities, including nasopharyngoscopic upper airway assessment, or flexible fiberoptic guided intubation through the LMA

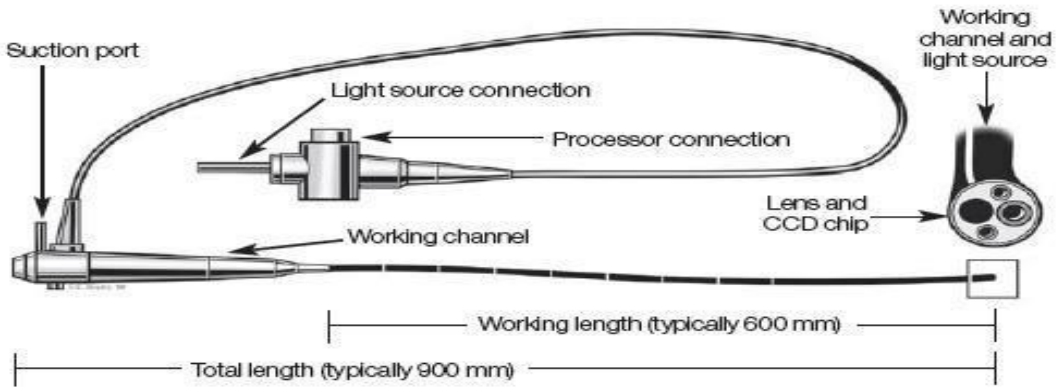
Fastrach or AirQ extraglottic devices. With time, flexible fiberoptic intubation may become a more commonly used technique for awake intubation of the difficult airway patient in out-of-OR locations, by nonanesthesia personnel. For more details on the technique, the reader is referred to reviews in other publications.

Components:

1. Control unit which consists of the following:
   a. Tip deflection control knob (the bending angle range is from 60-180^{o} in the vertical plane).



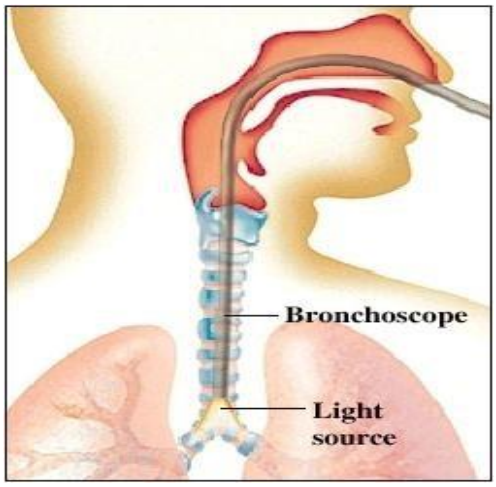
   b. Eye piece.
   c. Diopter adjustment ring (focusing).
   d. Suction channel which can also be used to insufflate oxygen and administer local anaesthetic solutions.



2. The flexible insertion cord consists of bundles of glass fibres. Each bundle consists of 10000-15000 fibres nearly identical in diameter and optical characteristics.
3. Light transmitting cable to transmit light from an external source.
4. Other equipment may be needed, e.g. endoscopic face mask, oral airway, bite block, defogging agent.

Mechanism of action

1. The fibreoptic laryngoscope uses light transmitted through glass fibres. The fibres used have diameters of 5-20 µm, making them capable of transmitting light and being flexible at the same time.
2. The fibres are coated with a thin external layer of glass (of lower refractive index) thus providing optical insulation of each fibre in the bundle.



3. Light enters the fibre at a specific angle of incidence. It travels down the fibre, repeatedly striking and being reflected from the external layer of glass at a similar angle of incidence until it emerges from the opposite end.
4. The insertion cords vary in length and diameter. The latter determines the size of the tracheal tube that can be used. Smaller scopes are available for intubating children. The outer diameter ranges from 1.8 to 6.4 mm allowing the use of tracheal tubes of 3.0 to 7.0 mm internal diameter.

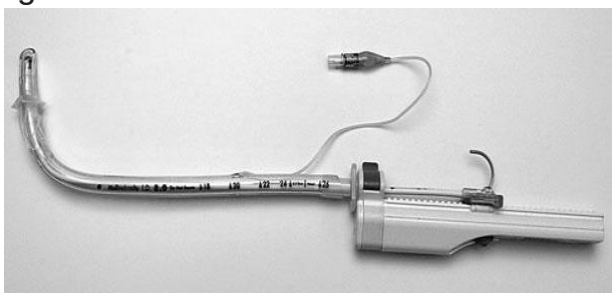
Problems in practice and safety features

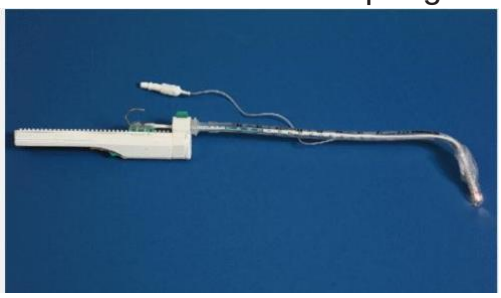
1. The intubating fibreoptic laryngoscope is a delicate instrument that can be easily damaged by careless handling. Damage to the fibre bundles results in loss of the image and light in individual fibres which can not be repaired.
2. It should be cleaned and dried thoroughly as soon as possible after use.

THE LIGHTWAND (E.G., TRACHLIGHT)

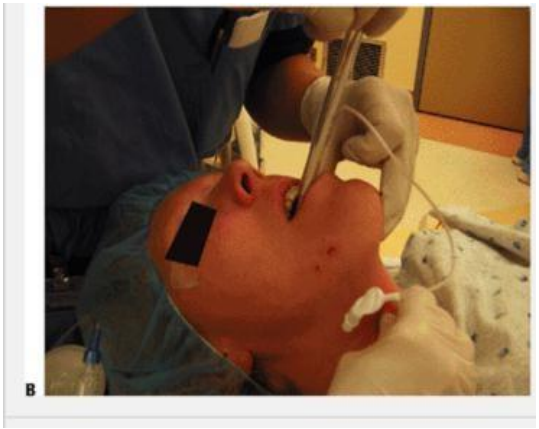
Trachlight Description

Lightwand use takes advantage of soft tissue transillumination in the neck, together with the anterior location of the trachea relative to the esophagus.



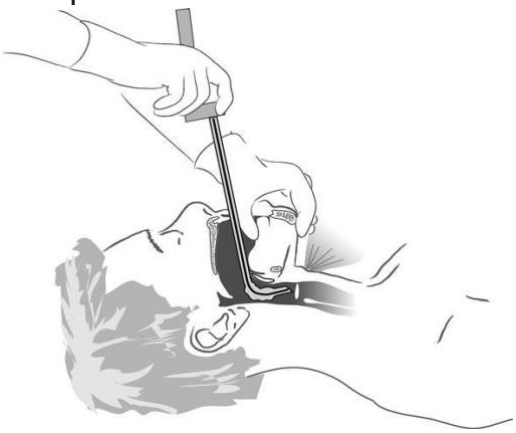


Placed at or through the glottis opening based on an initial "educated guess" as to its position, the operator will see a well-defined, circumscribed, transilluminated glow just below the thyroid cartilage as the endotracheal tube-bearing lighted stylet emerges through the cords and below the cartilage. In contrast, if the lighted stylet has been placed in the esophagus, a diffuse, minimal, or no glow will be seen. While lightwands have existed for many decades, the Trachlight version of the lightwand represents a considerable improvement over earlier versions. It consists of a reusable, battery-powered handle and a separate flexible wand. The wand, with a distal light and retractable internal wire stylet for rigidity, attaches to longitudinal grooves on the handle, via a connector on its proximal end. This connector can be moved up or down the handle to accommodate tubes of different lengths.



A locking clamp on the handle secures a standard endotracheal tube connector. The internal stylet, housed within the wand, allows initially for sufficient stiffness to shape the wand to the needed 90° bend, but can be withdrawn once the trachea is accessed, rendering the tube pliable for easy advancement. The lightwand requires minimal mouth opening and is actually ideally used with the head and neck in the neutral position. Its successful use is not limited by blood and secretions in the airway. However, as with the LMA Fastrach, it should be appreciated that as a blind technique, the

presence of pathologic abnormalities in the airway represents a relative .Contraindication to its use. Examples of such abnormalities include laryngeal infectious or inflammatory disorders such as epiglottitis; laryngeal or tracheal abnormalities such as polyps or tumors; or foreign body in the airway. The Trachlight is available in adult, pediatric, and neonatal sizes. The handle is a multiple-use item, while each wand can be resterilized and used up to 10 times.

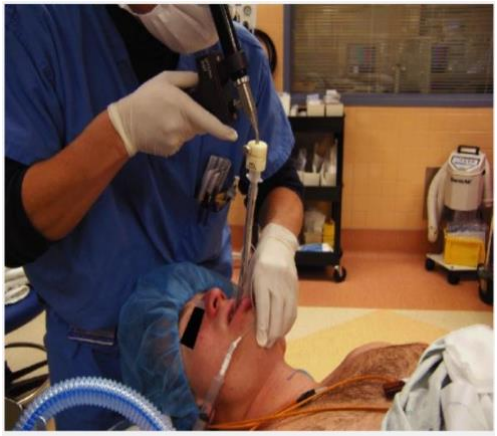


With correct initial positioning of the Trachlight, a well-defined, circumscribed transilluminated glow is seen in the anterior neck.

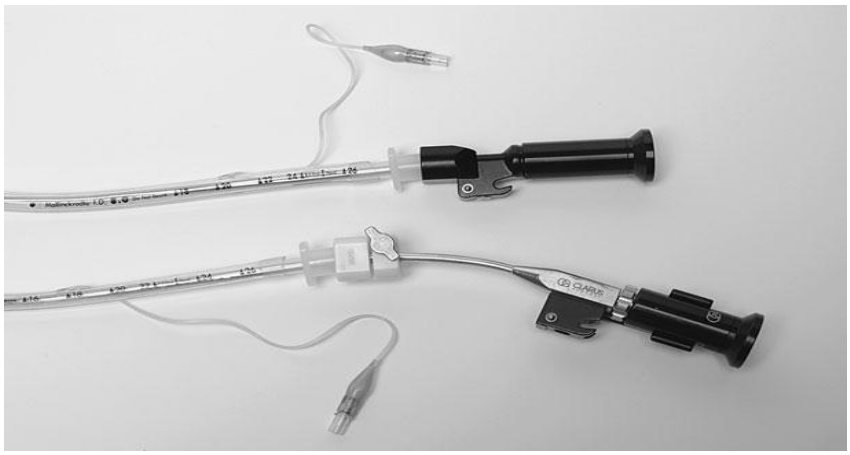
FIBEROPTIC STYLETS

Designed for use from within an ensleeved endotracheal tube, fiberoptic stylets allow indirect visualization through a proximal eyepiece, via a fiberoptic bundle. These devices can be used on their own as true ‘‘alternative intubation’’ instruments, or can be used as adjuncts to direct laryngoscopy. Compared to flexible fiberoptic devices, fiberoptic stylets are relatively easy to use, portable, more robust, and significantly less expensive. Published literature on the use of these tools is limited, but growing as user experience increases. Fiberoptic Stylet Description Two examples of fiberoptic stylet are the **Shikani Optical Stylet** (SOS) and **Levitan FPS Scope**. The SOS is a semirigid stylet containing fiberoptic illumination and viewing bundles, which connects to a handle containing a halogen light source. An adapter is also available enabling its use with a regular laryngoscope handle. Attached to the stylet is a sliding ‘‘tubestop’’ connector which accepts the proximal end of an endotracheal tube. This connector also has a removable attachment which allows connection to oxygen tubing. The SOS is available in one adult and one pediatric size. Manufactured by the same company as the SOS, the Levitan FPS (‘‘First Pass Success’’) scope features a similar semimalleable optical stylet and fixed-focus eyepiece. As a shorter and simpler version of the SOS, it was

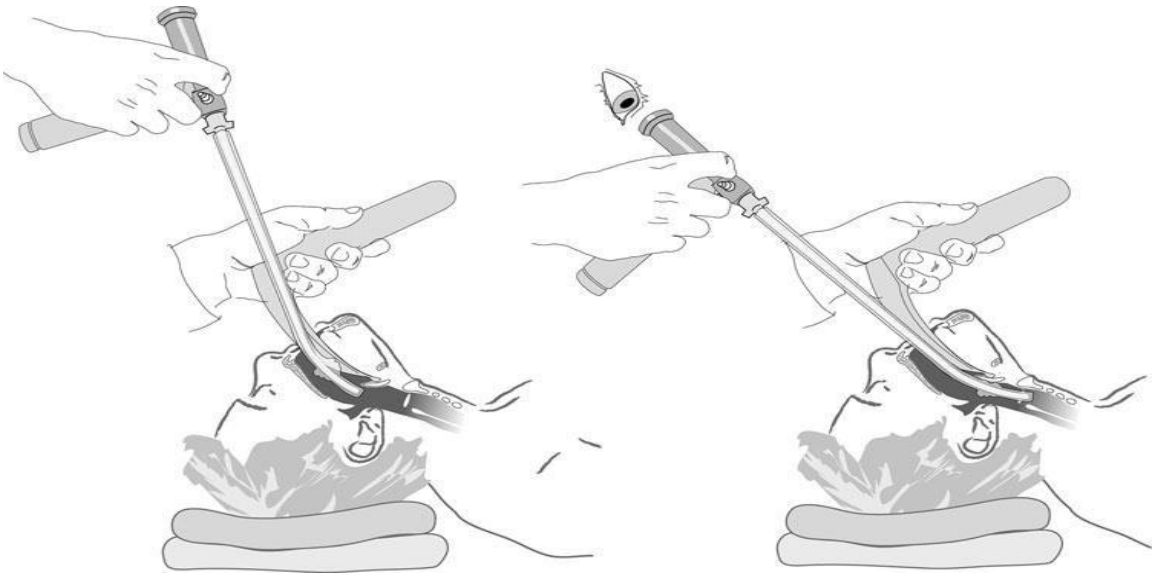
designed primarily to serve as an adjunct to direct laryngoscopy. A precut tube is loaded on the stylet and seated proximally in a fixed fitting that accepts the ETT's 15-mm connector. A small hole in the side of this fitting allows for the application of (low-flow) oxygen down the ETT via a removable connector. The factory shape of the stylet includes a distal 35° bend to facilitate its use as an adjunct to direct laryngoscopy (DL). Power is supplied from any "Greenline" compatible handle or a separate lightemitting diode light source. Cleaning is similar to that required for a laryngoscope blade. The reduced number of fiberoptic bundles in the Levitan FPS scope has helped lower manufacturing costs, while not compromising image quality. Other examples of fiberoptic optical stylets exist. The **Bonfils Retromolar Intubation Endoscope** is available in adult and pediatric sizes, and features a fixed 40° anterior distal curvature.



It is supplied in a battery-powered portable version as well as with an integrated coupling for video-based use via a dedicated Airway Management Trolley. Also, the **Brambrinck Intubation Endoscope** is designed specifically for pediatric use. The **StyletScope** has a lever adjacent to its proximal handle, activation of which results in variable anterior flexion of the distal stylet (with its ensleeved tube), to angles of up to 75° . The **Foley Airway Stylet** is a flexible optical stylet, compatible with the SOS handle, designed specifically to visually aid LMA Fastrach intubation.



Proximal tube stops for Shikani SOS (above) and Levitan FPS (below).



The Levitan FPS is placed under direct vision with aid of a laryngoscope. Once the scope's distal tip is positioned under the tip of the epiglottis (A), visualization of the glottis inlet is sought through the eyepiece and the instrument then advanced through the cords (B).

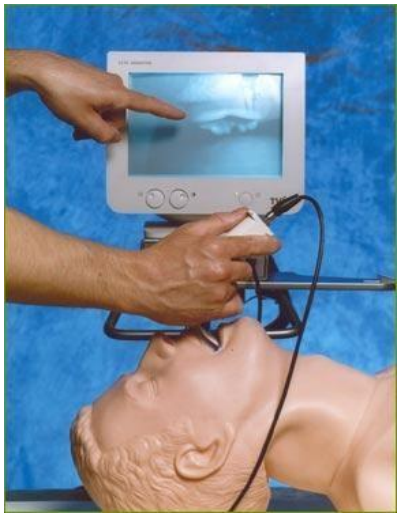
VIDEOLARYNGOSCOPY

The Glidescope

Commercially introduced in 2002, the Glidescope (GVL) is a video laryngoscope which has become increasingly available in and out of the OR (OPERATING ROOM), as an alternative intubation device. The onepiece blade and handle is made of a durable medical-grade plastic. The blade has a vertical profile of 14.5 mm, a 60° bend midblade, and distally, houses a miniature video camera and light-emitting diode (LED) light source. The image obtained by the camera is projected by cable to a liquid-crystal display (LCD) color monitor. A heating element covering the camera provides

effective antifogg device has been turned on for 10–30 seconds. The reusable blades are available in large (patients 30 kg and up), midsize (10 kg and up), and small (1.5 kg and up) sizes, and can be sterilized. More recently introduced versions of the GVL include the **GVL Ranger**, which is a compact, battery-based unit, and the **GVL Cobalt**, which features a reusable internal video baton for placement within large or small-sized disposable blades. The GVL is inserted orally in the midline. As the scope is advanced, the uvula, base of tongue and then epiglottis will be visualized on the screen, helping to retain orientation to the midline. Although the blade is designed to be placed above the epiglottis in the vallecula, in contrast to direct laryngoscopy, the blade tip need not be advanced completely into the glossoepiglottic fold: a more proximal tip location allows a wider field of view and more room for ETT manipulation. A styletted ETT is inserted immediately on the right side of the blade and is navigated to the laryngeal inlet under indirect visualization on the LCD screen. An accompanying nonmalleable, reusable stylet has been made available by the manufacturer to facilitate tube passage, or a regular malleable stylet can be used, angled at about 60□just proximal to the cuff. Once the tip of the ETT has been passed through the cords, the stylet should be withdrawn 2 inches (4 cm), whereupon the tube can be further advanced off the stylet down the trachea. There is a growing literature on the use of this device, primarily in the OR setting. It is clear that the GVL does provide good and often superior views of the glottic opening when compared with conventional laryngoscopy, including a high rate of conversion of Cormack Grade 3 (epiglottis only) views to Grade 2 or better. However, somewhat longer intubation times have been reported with the GVL compared to DL, even in the setting of Grade 1 views by DL, possibly related to user inexperience with tube delivery. The GVL has been successfully used for awake intubations in adults. C-spine motion during GVL use has been compared, using fluoroscopy, to that incurred with Macintosh blade DL. Motion with GVL use was less than that incurred by Macintosh laryngoscopy at only one (C2-5) of 4 neck levels studied. There are some recent reports of upper airway trauma during GVL use. This suggests that especially in the patient with a smaller oral cavity, awareness of the ETT tip location must be maintained as it is advanced, ideally by direct vision of the ETT until it has passed thepalatoglossal arch. Thereafter, the clinician’s vision can be transferred to the screen and indirect, videoscopic ETT navigation can occur to and through the cords. Alternatively, some clinicians prefer to place the ETT into the patient’s pharynx prior to insertion of the GVL blade.

Glidescope video system use.



Dedicated rigid stylet (below) for use with the Glidescope.

The Berci-Kaplan DCI Video Laryngoscope

The Berci-Kaplan DCI video laryngoscope is a hybrid of fiberoptic and video technology: an image-light bundle in a laryngoscope blade delivers an image to a video camera located in the handle of what otherwise looks like a regular direct laryngoscope. A cable attaches the device to a cartbased camera-control unit, and also delivers light from the remote light source. The image obtained is displayed on a video monitor. Macintosh # 3, Mac 4, adult- and pediatric-sized Miller, and D ○ rges blades are available for use with the system. This system offers the advantage of being a familiar intubation technique and may deliver a superior view of the laryngeal inlet compared to that obtained with direct laryngoscopy.

The McGrath Video Laryngoscope

The McGrath video laryngoscope Series 5 is an additional example of a video-based device. The scope features a rubberized handle with an attached 1.7-inch video screen. The screen tilts and rotates on the handle to optimize the viewing angle for the clinician. The blade is somewhat adjustable in length for different patients, and is designed for use with a single-use disposable plastic sleeve. The entire unit is portable, and operates using a single AA battery. As with the Glidescope, once the laryngeal inlet has been indirectly visualized, the clinician guides a styletted tube toward and through the cords. Early experience suggests easy McGrath blade insertion and a good view of the larynx, even in patients with predictors of difficult direct laryngoscopy. As with the Glidescope, tube passage to and through the larynx can be challenging until the learning curve is ascended. A similar intubation technique to that described above for the Glidescope should be successful.

The McGrath Video laryngoscope Series 5.

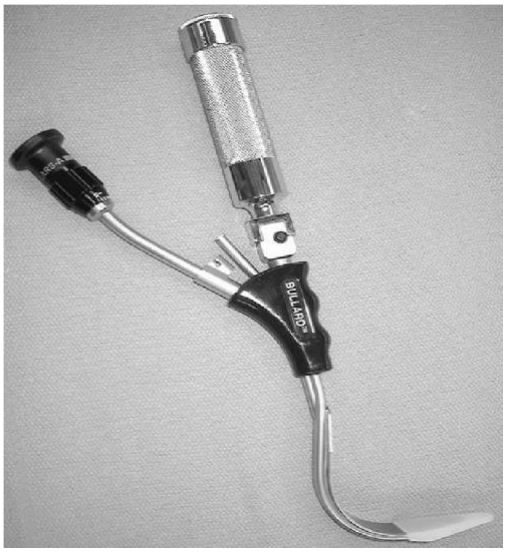
OTHER RIGID AND FLEXIBLE FIBEROPTIC AND OPTICAL INSTRUMENTS

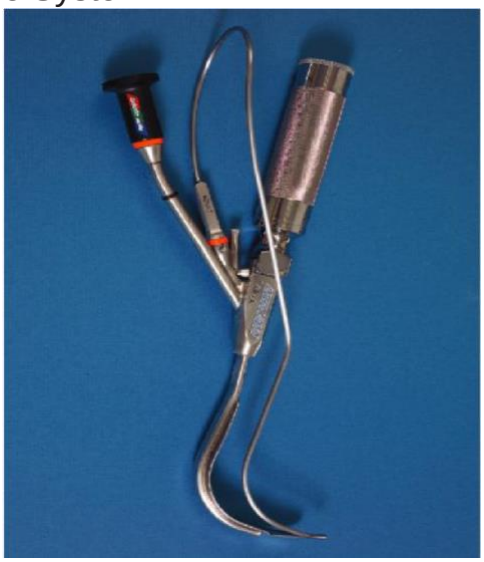
Rigid Fiberoptic Devices

Other rigid fiberoptic scopes exist. Some have attained a small but loyal following, mainly in the OR setting, however due to expense or unfavorable learning curves, as a group, they are rarely used in out-of-OR settings.

Optimizing the view of the glottis with the Bullard scope requires lifting the epiglottis with the blade

One such is the **Bullard laryngoscope**, an L-shaped rigid fiberoptic laryngoscope. The Bullard has a blade enabling good tongue control, and a choice of two dedicated attached stylets to facilitate tube passage. With or without the attached stylet, tube passage can be difficult, however, and this fact has limited its popularity over the years. The Bullard has been shown to result in less cervical spine movement than that caused by Macintosh or Miller laryngoscopy, although the clinical significance of this finding is unclear. Similar J- or L-shaped rigid fiberoptic scopes include the UpsherScope Ultra and the WuScope System.





Bullard laryngoscope.

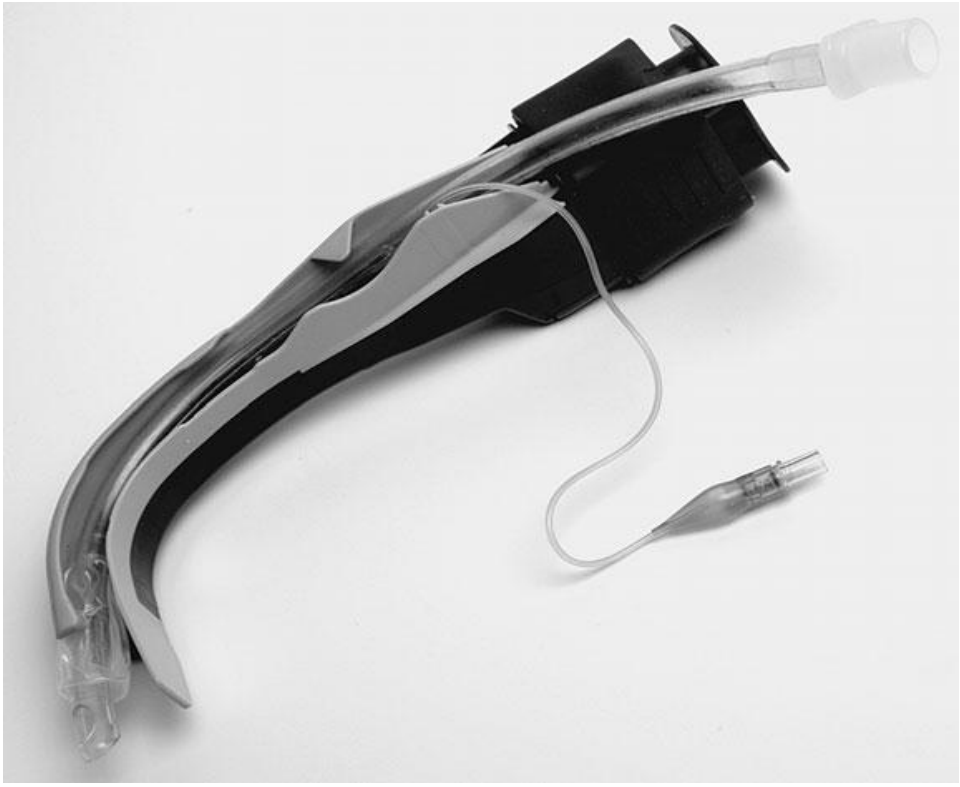
The Upsherscope The WuScope

Rigid Optical Device:

The Airtraq

The **Airtraq** optical laryngoscope is a single-use, Lshaped device which uses a series of mirrors to deliver an image of the laryngeal inlet to a proximal eyepiece. Insertion of the device begins with the handle parallel to the patient's chest. As the blade is advanced into the oropharynx, it is rotated down and around the tongue, with the clinician looking through the eyepiece to visualize airway structures. The blade tip is placed into the vallecula and the cords centered in the viewfinder, whereupon the preloaded ETT is advanced into the trachea via a built-in tube delivery channel. The ETT is then separated from the delivery channel to the side, and while holding the tube in place, the scope is rotated back out of the patient. At the time of writing, the Airtraq was available in two sizes: "Regular," accommodating tube sizes 7.0–8.5 mm ID, and "Small Adult", appropriate for use with ETTs of size 6.0–7.5 mm ID. Early manikin studies comparing the Airtraq to Macintosh direct laryngoscopy have shown a favorable learning curve for novice and inexperienced clinicians. With "difficult airway" simulator features activated, tracheal intubation has required less time and fewer attempts by experienced clinicians using the Airtraq, compared to Macintosh laryngoscopy. In elective surgical patients with no predictors of difficult laryngoscopy, performance of the Airtraq was comparable to Macintosh DL. With known difficult laryngoscopy, however, the Airtraq was successful in providing a view and enabling intubation in a series of 8 elective surgical

patients in whom a Cormack Lehane Grade 4 laryngoscopy had been encountered.

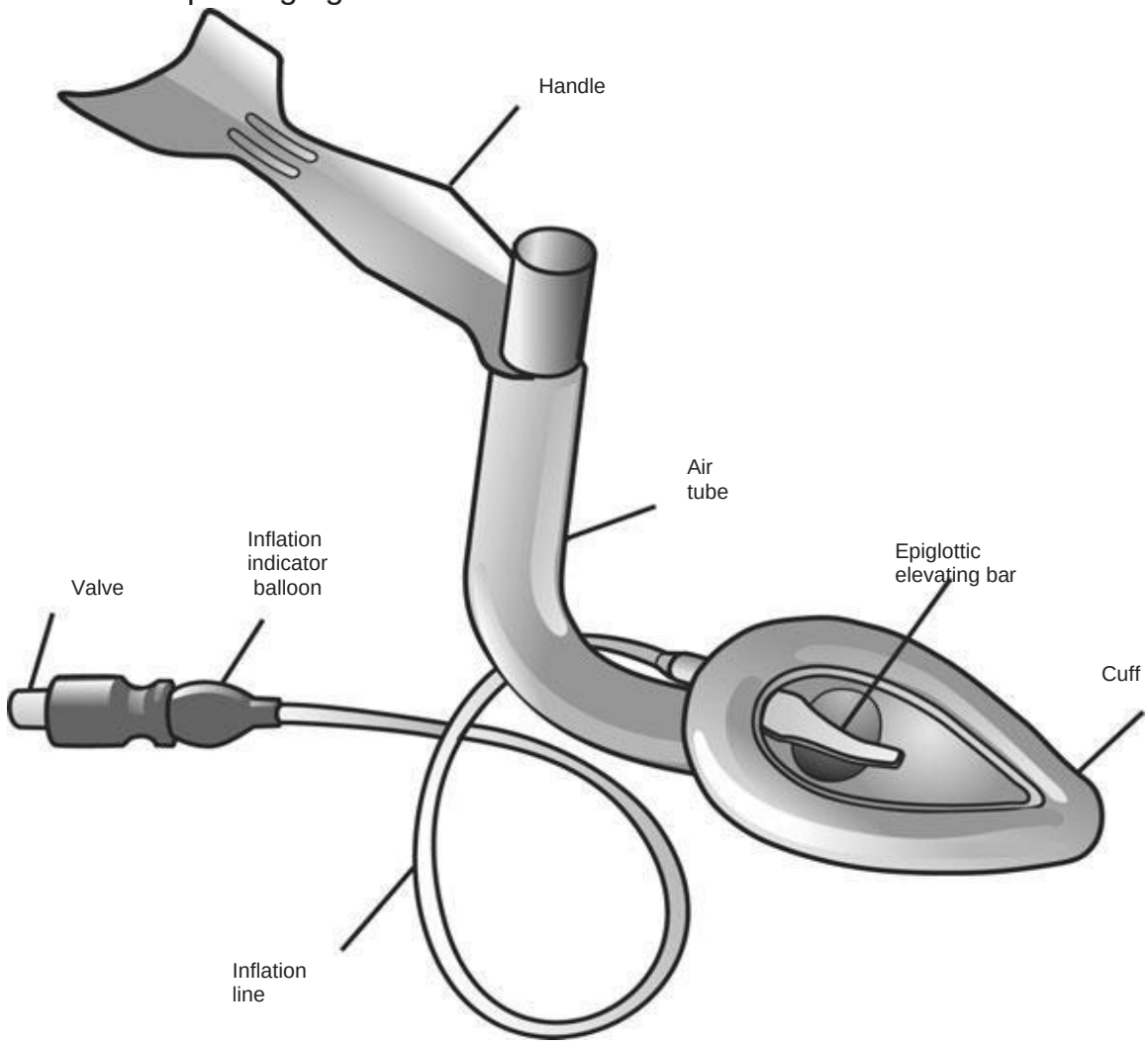


. Airtraq optical laryngoscope (single-use).

LMA Fastrach Description

The LMA Fastrach was introduced after publication of numerous case reports describing fiberoptic-aided intubation through the LMA Classic, using small endotracheal tubes (ETTs).One obvious advantage of the LMA Fastrach as an alternative intubating technique is that it can be used to oxygenate and ventilate the patient, either between intubation attempts or used as a rescue oxygenation device. Indeed, for a given volume of air in the cuff, there is evidence that it provides a better seal than the LMA Classic. It is similar to the original LMA Classic in the appearance of the distal cuff, however differs in having a shorter, wider, L-shaped rigid stainless steel barrel. The barrel attaches to a guiding handle, allowing for device insertion without placement of the clinician's fingers into the patient's mouth. A prominence at the junction of the mask and barrel is designed to direct the ETT centrally. The LMA Fastrach also has a stiff bar lying across the mask aperture, designed to elevate the epiglottis up and away from the path of the advancing ETT. At present, the LMA Fastrach is available only in large child to adult sizes, equivalent to LMA Classic sizes 3–5. Single-use versions are

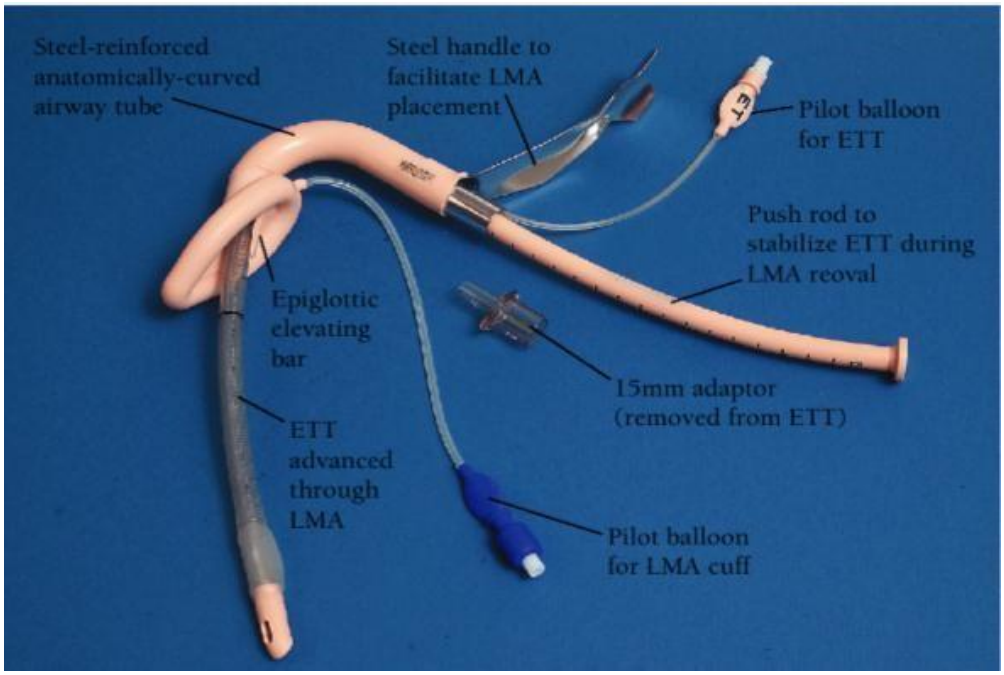
also available. Sizing is generally inscribed on the LMA Fastrach itself, and listed on the packaging.



LMA Fastrach

Alternatively, a manufacturer’s reference card can be used for sizing and cuff inflation volumes. The size 3 LMA-Fastrach is designed for use in patients of 30–50 kg; size 4, patients of 50–70 kg, while the size 5 is used for patients above 70 kg. Dedicated reusable, silicon-based, wire reinforced endotracheal tubes are supplied by the manufacturer for use with the LMA Fastrach. The flexibility of these tubes helps negotiate curves of two opposing directions during passage through the LMA Fastrach barrel and into the patient. They also feature a bevel extending to the midline, to discourage tube hang-up during advancement. Although LMA Fastrach intubation has also been described using well-lubricated standard

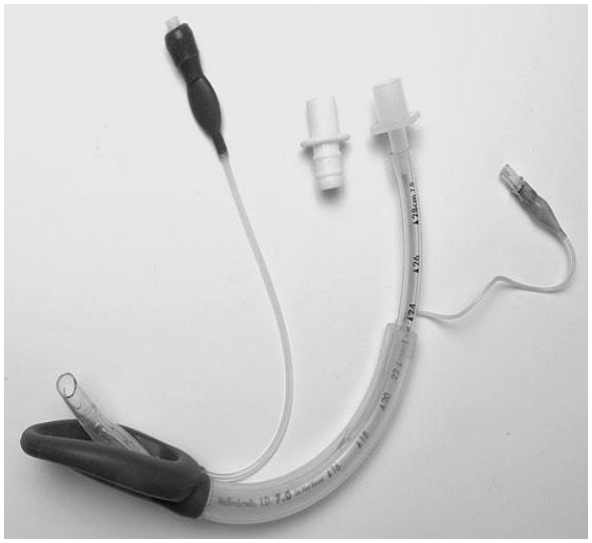
ETTs (up to size 8.0) advanced in a reverse curve direction, their use is not recommended by the manufacturer, out of concern of possible laryngeal trauma.



THE AIRQ AND AIRQ REUSABLE

A second extraglottic device which can be used for both ventilation and intubation is the AirQ. The AirQ is available in disposable (AirQ) and reusable (AirQ Reusable, formerly known as the Cookgas Intubating Laryngeal Airway [ILA]) formats. The AirQ is available in sizes for use in patients weighing 10 kg and up. The reusable version is autoclavable, can

be used up to 40 times, and is designed for use with regular ETTs of size5.0–8.5 mm ID. To date the manufacturer's instructions advise tracheal intubation through the AirQ with adjunctive use of a flexible or semirigid fiberscope, tracheal tube introducer, airway exchange catheter, or lighted stylet. A dedicated removal stylet is available to help stabilize the ETT in the patient as the mask is removed following intubation. The disposable AirQ is available in four color-coded sizes.

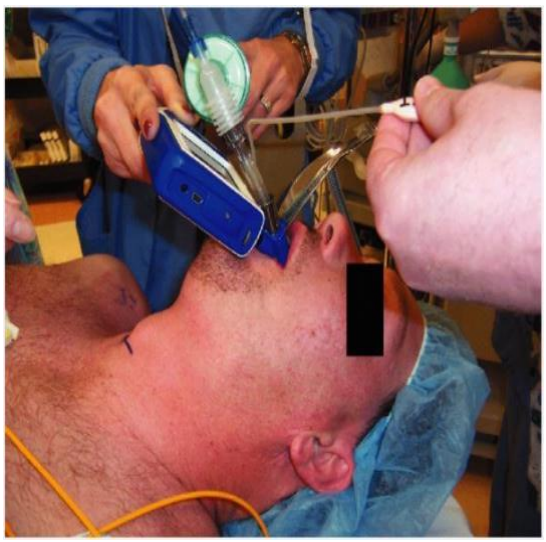


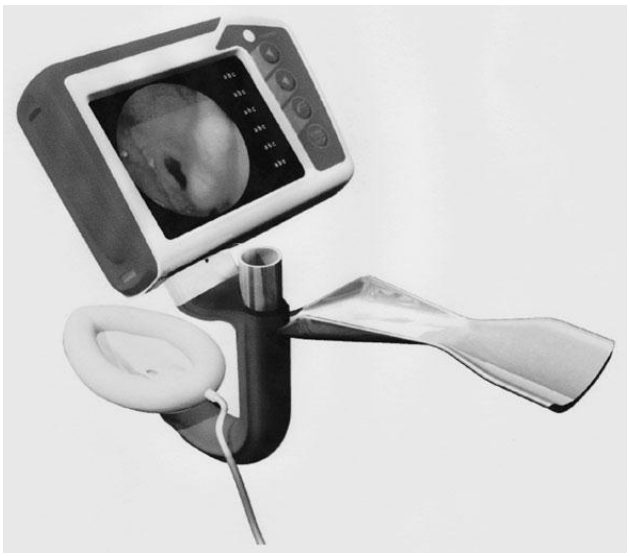
The AirQ Reusable (formerly known as the Cookgas Intubating Laryngeal Airway)

The LMA CTrach

The LMA CTrach is a version of the previously discussed LMA Fastrach which adds video-guidance capability. Looking otherwise like the LMA Fastrach, the CTrach mask contains fiberoptic bundles for light and image transmission, emerging at the distal end of the airway barrel. In addition, a removable viewing monitor (the CTrach Viewer) attaches to the CTrach handle by way of a magnetic latch connector. The battery-powered viewer is rechargeable, and provides controls for focusing and image adjustment. For use, the CTrach Viewer is detached, and the mask is deflated, lubricated posteriorly, and antifogged with application of an appropriate solution to the fiberoptic lenses. Mask insertion is identical to the technique used for the LMA Fastrach, with the head and neck in a neutral position. Once seated, the mask is inflated and the patient ventilated. The CTrach viewer is then turned on and attached to the magnetic latch connector on the mask, while firmly holding the CTrach handle. The mask is then manipulated as needed to attain a clear image of the glottic opening. For intubation, while lifting vertically on the CTrach handle (i.e., the Chandy maneuver, as described for LMA Fastrach intubation), the dedicated silicone- based ETT is advanced through the cords under indirect vision. The ETT cuff is inflated, and tube

position confirmed. The viewer is then detached, whereupon the CTrach mask can be removed in identical fashion to the Fastrach, leaving the ETT in situ. At the time of writing, early published clinical experience with the CTrach suggests a high rate of successful mask insertion and patient ventilation, as with the LMAFastrach. Although a view of the cords is not always easily attained, even after manipulation. A number of corrective maneuvers will help to attain or improve the view of the laryngeal inlet. As with the LMA Fastrach, the "updown" (withdrawing the inflated mask 6 cm, then readvancing it) will often help release a downfolded epiglottis. If only the posterior cartilages are visualized, withdrawing the mask 1-cm and lifting will improve the view. The need for medial-lateral corrections of the mask can also be visualized on the screen. Once a good view is attained, intubation usually succeeds, and even with poor visualization, successful intubation follows in some cases. In published series, CTrach use has permitted visualization of the larynx and successful intubation in most patients presenting Grade 3 or worse views at direct laryngoscopy. Other case reports and series have detailed successful CTrach intubation in very difficult situations, even when the LMA Fastrach had failed.





The LMA CTrach.

Anti infecting technique:

It is so useful way for protect the patients from the infection by use the disposable cover for the blade or by use the crystal blade.

Crystal™ - Macintosh Blade *(Box of 20)*
Size 2 Cat No. 50552
Size 3 Cat No. 50553
Size 4 Cat No. 50554

Crystal™ - Miller Blade *(Box of 20)*
Size 0 Cat No. 50550
Size 1 Cat No. 50551

Magill forceps:

These forceps are designed for ease of use with the mouth and oropharynx. Magill forceps come in small or large sizes. During tracheal intubation, they can be used to direct the tracheal tube towards the larynx and vocal cords.

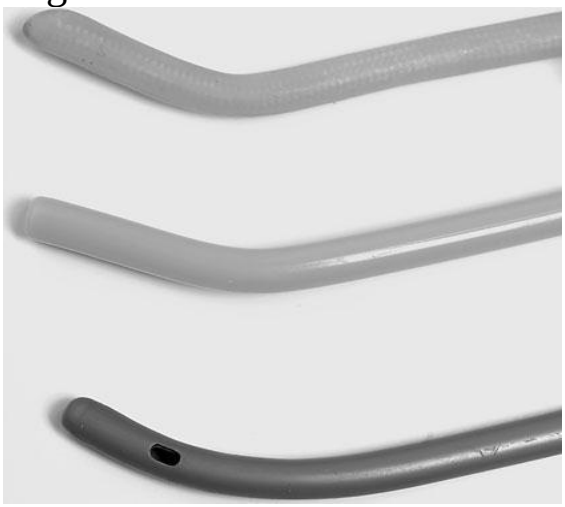
Care should be taken to protect the tracheal tube cuff from being damaged by the forceps.

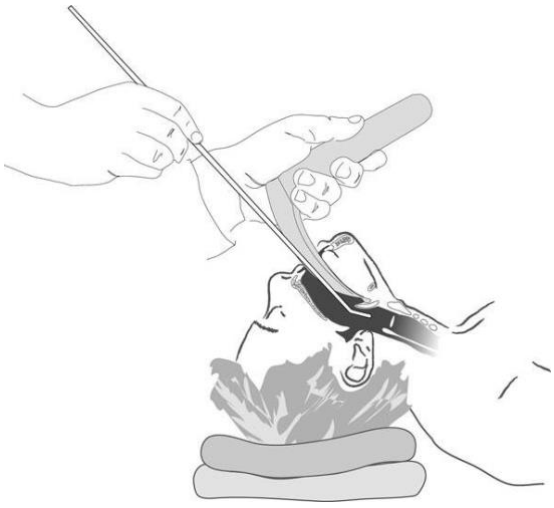
Other uses include the insertion and removal of throat packs and removal of foreign bodies in the oropharynx and larynx.

BOUGIE

If the larynx cannot be seen adequately during laryngoscopy, or if the tracheal tube cannot be manoeuvred into the laryngeal inlet, a bougie may be used as an aid to tracheal intubation. The lubricated bougie is inserted into the trachea to act as a guide for the tracheal tube. The tube should be rotated so that the bevel does not become lodged against the aryepiglottic fold. In a difficult intubation scenario, the correct type of bougie should be used. The bougie with a curved tip at the end is designed to assist in this situation whereas the straight-ended bougie is intended for endotracheal tube exchange only. Disposable bougies are now available but their efficacy over the re-usable ones is yet to be demonstrated. The Eschmann multiple-use bougie has the highest success rate, least likelihood of causing trauma and has reliable and clinically tested

signs of confirmation of tracheal placement when compared with either the Frova, single-use intubation introducer or the Portex single-use introducer.





The tip of the bougie is placed blindly beneath the epiglottis, keeping its tip midline and anterior.


Placing ETT over bougie Sliding ETT into larynx over bougie