A TECHNIC AND A NEW LARYNGOSCOPE FOR INTUBATION IN ENDO TRACHEAL ANESTHESIA

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A growing specialty can often increase its resources by adaptation of technical practices from a neighboring or collateral field. I have thought, for many years, that the anesthetist and the bronchoscopist have one problem in common, that is, intubation of the trachea. Their objectives differ and their approach to the subject occurs under circumstances which are entirely dissimilar. It may be possible, however, to combine advantageously some of the accumulated experience of both specialties.

In modern operating room teamwork, the surgeon, especially the one who requires endotracheal anesthesia, must divide generously with the anesthetist the credit for his success. Easy and rapid intubation, the avoidance of trauma and smooth administration mean escape from postoperative care and complications.

This article, admittedly written through the eyes of a bronchoscopist, offers methods which have been tried and proved in one field for technical application in the other. The details are related as they have been observed and found valuable by the writer. Emphasis is placed on local anesthesia, since this standard method of bronchoscopy is finding increasing favor with many anesthetists.

Exposure of the Larynx.—Whether the tube is rigid or flexible, the facility with which it may be inserted depends upon exposure.

The cardinal factors in visualization of the larynx are position and anesthesia.

Exposure of the larynx is facilitated by elevation of the head and extension of the chin (Jackson position, figs. 1 and 2).

Exposure of the larynx is impeded by lowering the head and flexion of the chin (Rose position).

Local anesthesia inhibits cough and prevents laryngospasm and vagovagal reflexes.

These ends cannot be obtained by the use of general anesthesia within desirable limits.

* The instrument described was designed with the technical assistance of the American Cystoscope Makers, Inc., New York.
It is possible, mechanically, to bring the entire larynx into view, without trauma, in any patient who can open his mouth and bend his neck.

Local Anesthesia—Agent and Administration.—Cocaine is a dangerous drug, but there is no available agent which is a satisfactory substitute.

Apart from idiosyncrasy, good anesthesia of the larynx and the entire tracheobronchial tree can be obtained by the use of cocaine within the limits of safety.

![Fig. 1. Silhouette of the patient's head and shoulders in correct position for laryngoscopy. Note that a. The shoulders are on the table. b. The head is elevated. c. The chin is extended. Arrows indicate direction of "lift" to obtain exposure. (After Chevalier Jackson.)](image)

Safety in the use of cocaine is attained by applying the anesthetic where needed and nowhere else. The anesthetic is applied where the instruments will be used.

Technic.—The only way to use cocaine economically is to instill it directly into the larynx. The larynx is the target and methods by which absorbing surfaces, such as the tongue, cheeks and pharynx are included in the target area commit the operator to unnecessary risk.

Sprays, atomizers, nebulizers, swabs and applicators are, therefore, not to be used.

The following procedure (progressive dilution method) is safe and the results are superior to those obtained with other methods (1):
(a) Draw into a standard laryngeal syringe 60 minims (4 cc.) of 5 per cent cocaine solution.
(b) Using a laryngeal mirror, direct from 3 to 5 minims into the larynx or onto the posterior surface of the epiglottis.
(c) Repeat until the immediate response of cough disappears (approximately 20 minims).
(d) Refill the syringe with plain water to the 4 cc. mark and continue injection and dilution until cough response is delayed by 2 to 3 seconds.
(e) Complete anesthesia by washing the reagent downward with plain water.

Fig. 2. Technic for introduction of instrument into patient's mouth. The right hand holds the spatula in the same manner as a pen for writing. The thumb can then be used to displace the upper lip upward and the index finger to displace the lower lip downward. The second finger protects the upper teeth from contact with the instrument. The left hand is in position to elevate the epiglottis in the direction of the arrows shown in figure 1.

The use of this method requires and presupposes requisite skill in indirect (mirror) laryngoscopy. When adequate skill has been acquired, the amount of anesthetic may be reduced by increasing the dilution more rapidly. At any rate, the quantity can be kept within the prescribed limits, which is safe.

A New Laryngoscope for Anesthesia.—This instrument is designed to be used with the special technic already described and with the left hand.
Fig. 3. The Laryngoscope (see description in text).

Fig. 4. Lateral x-ray view of the neck taken while a bronchoscope is being passed through a standard laryngoscope into the trachea. The correct alignment of the bronchoscope with the lumen of the trachea is clearly shown.
It is of the standard "U" shape. Illumination is provided by two batteries of two dry cells each, built into the handle. Wired in parallel series, they last longer. The larynx is viewed through an eye piece and lens, giving approximately two times magnification. The anterior end of the speculum is opened on the right side and the floor is brought downward in the form of a curved ramp directed slightly upward and forward (fig. 3).

**How to Use the Instrument.**—

1. Elevate the patient's head (at least 10 cm. above the table) and extend the chin (fig. 4).
2. With the instrument in the sagittal plane, insert the speculum into the mouth to the right of the tongue and displace the tongue to the left. (If the mouth is small, it may be easier to insert and withdraw, holding the instrument in the lateral plane.)
3. Pick up the epiglottis on the tip of the blade.
4. Load the endotracheal catheter (lubricated) into the ramp (fig. 5).
5. Expose the larynx and push the tube through the glottic chink to the desired depth.

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![Image](http://anesthesiology.pubs.asahq.org/pdfaccess.ashx?url=/data/journals/jasa/931710/)  
*Fig. 5. Intubation. The larynx is exposed. The intratracheal catheter (without stilet) is loaded into the inclined ramp and ready for insertion.*

**Advantages of the Instrument and Technic.**—The advantages are: (1) a full view of the larynx is obtained without trauma; (2) throughout the procedure, uninterrupted visualization is maintained of both the glottis and the catheter; (3) the face and eyes of the operator are protected against cough and (4) the small size of the instrument helps to avoid pressure against the upper teeth.
For those who prefer intubation under general anesthesia, a modification of this instrument is being prepared. The modified laryngoscope will incorporate an atomizer for local anesthesia. This will make immediately available to the anesthetist the advantages of local anesthesia in case of impending laryngospasm.

As far as general anesthesia and its effect upon the physiologic properties of the respiratory mucosa are concerned, I have nothing to offer.

In this article, only cocaine is mentioned as a medium for local anesthesia. Naturally, however, the operator should use the agent of his preference.

SUMMARY

A new laryngoscope for intubation of the trachea, together with a technic for its use, is presented.

It is believed that the use of this instrument according to the technic described will facilitate intubation and avoid trauma and postoperative complications.

REFERENCES