A MIRROR LARYNGOSCOPE

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Anatomical variations, such as recession of the mandible, protruding upper incisors, or increased size of the tongue, may make direct laryngoscopy and endotracheal intubation difficult. The purpose of this report is to describe a new laryngoscope blade and the technique of its operation and give its possible advantages.

The incorporation of a mirror makes the blade different from the classical Guedel and the more recently described Macintosh blades (fig. 1). The portion of the blade distal to the mirror is 3 inches long and makes an angle of 135 degrees with the 2½ inch portion proximal to the mirror. A conventional light source and Foregger battery case are utilized. The stainless steel mirror is attached to the blade by a copper jacket which facilitates conduction of the patient’s endogenous heat, thereby minimizing fogging during expiration.

Technique

Since the mirror inverts the reflected image, it is essential for the operator to condition himself to both viewing and working with the structures in an inverted position. One method of accomplishing this is to look through the mirror laryngoscope at a piece of paper while guiding a pencil in various directions.

When the patient is sufficiently anesthetized for direct laryngoscopy, the blade is inserted into the oral cavity in the usual manner with the operator viewing the structures at the distal end of the blade by looking into the mirror from the proximal end, just as soon as the oropharyngeal curve is reached. After passing the oropharyngeal curve, the epiglottis will appear in the lower portion of the image as though it were stemming from the posterior pharyngeal wall. Following this, as in conventional laryngoscopy, the epiglottis is elevated with the tip of the laryngoscope blade. This maneuver might seem awkward until sufficient experience is obtained. With the laryngoscope in the midline and the tongue on its “blind” or left side, the endotracheal tube is introduced. Because of the curve of the laryngoscope blade, the use of a curved stylet within the endotracheal tube is unavoidable. The curved tube is directed toward the tip of the laryngoscope until its image can be seen in the mirror approaching the cords. As the tube enters the larynx, it will appear to move in a posterocaudad direction.

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As soon as the tip of the tube passes the cords, the tube is fixed with the right hand, the laryngoscope removed and the intubation completed by threading the endotracheal tube into the trachea while the stylet is cautiously withdrawn.

**Material**

The mirror laryngoscope has been used in 100 unselected cases for endotracheal intubation. Laryngoscopy could not be performed with the instrument described in one patient. This failure was attributed to the size of the laryngoscope blade, since the tip of the blade had passed the larynx before the mirror had entered the oral cavity. Laryngoscopy could have probably been achieved with a smaller blade of this type.

In three other cases in which laryngoscopy could not be performed with either the classical or Macintosh type of blade by two trained anesthesiologists, laryngoscopy and intubation were easily accomplished with the mirror laryngoscope.

Roentgenograms were taken during intubation in two patients in whom difficult laryngoscopy was anticipated. The patient in figure 2 had a large tongue and protuberant upper incisors. Laryngoscopy was performed with a straight blade (*top*), and with the mirror laryngoscope (*bottom*). Although the change in the mandibular angle (A) was
Fig. 2. Top: Straight blade laryngoscope. Bottom: Mirror laryngoscope. A. Mandibular angle. B. Cervical curve. C. Distance between occiput and shoulder.
Fig. 3. Top: Macintosh blade. Bottom: Mirror laryngoscope. A. Mandibular angle. B. Cervical curve. C. Distance between occiput and shoulder.
not great, the difference in the cervical curve (B), and the distance between the x-ray shadows of the occiput and the shoulders at (C) suggest that much less hyperextension is required with the mirror laryngoscope than with the conventional blade.

The patient in figure 3 had markedly restricted motion of the temporomandibular joints. Laryngoscopy was performed with a Macintosh laryngoscope (top), and the mirror laryngoscope (bottom). The difference at (A), (B) and (C) are here very apparent. In using the straight blade in the first patient and the Macintosh blade in the second, the least amount of cervical hyperextension necessary for visualization of the cords was utilized.

**Comment**

The disadvantage of the instrument described is that facility in its use requires practice even on the part of experienced anesthesiologists. On the other hand, it is felt that the mirror laryngoscope will facilitate atraumatic intubation in patients with normal anatomical relationships of the upper respiratory passages and especially in patients with anatomical variations that make endotracheal intubation with presently available laryngoscopes difficult or impossible.

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*The mirror laryngoscope described in this article may be obtained from the Foregger Company in New York.*