ENDOTRACHEAL ANESTHESIA USING A MODIFIED WIS-FOREGGER LARYNGOSCOPE BLADE

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ENDOTRACHEAL intubation is widely employed during general anesthesia. This technic provides definite advantages to the patient, the surgeon, and the anesthetist. However, skillful use of the laryngoscope is essential to avoid injury to the patient's teeth and pharynx during intubation. Although such injuries are accepted hazards of the procedure, they may be avoided by the use of a laryngoscope with a modified blade.

Technic of Laryngoscopy

Laryngoscopy for intubation must be done with gentleness and precision. While the standard laryngoscopic procedure is modified and individualized by each anesthetist, the fundamental principles of the technic remain unchanged. The patient's head is held in progression by elevating it from the pillow. Such manipulation relaxes the anterior muscles of the neck, and straightens the normal anatomic curves of the pharynx. The blade of the laryngoscope is lifted upward and forward[1] to carry forward the epiglottis and the base of the tongue to expose the larynx and the vocal cords. The endotracheal tube then can be easily inserted into the trachea under direct vision.[2] Should the laryngoscope be used as a lever, with the upper incisor teeth acting as the fulcrum, there is risk of damaging the teeth and of traumatizing the epiglottis.[3]

Difficult Intubations

Anatomic variations of the mouth and the pharynx occur frequently. Many of them are the cause of difficulty in exposing the larynx and in intubating the trachea. The problem is exemplified in patients who have any of the following features: a small mouth, a short thick neck, an anteriorly placed trachea, a short thick epiglottis, a recessed mandible, a "frozen" temporomandibular joint, protruding upper incisor teeth. In these patients, difficult intubation is common, and the unfortunate traumatizing of the pharynx or damaging of the teeth is apt to occur. The anesthetist should be forewarned that disfigurement from damaged teeth may well provoke litigation against him by the patient.

Modification of the Wis-Foregger Blade

The regular blade of the Wis-Foregger laryngoscope* (infant, child, adult, long sized blades) is detachable, and forms a right angle with the Foregger handle. *Figures 1* and *2* illustrate the differences between the regular and the modified Wis-

**Manufactured by The Foregger Company, Inc., 55 West 42 Street, New York, New York.*

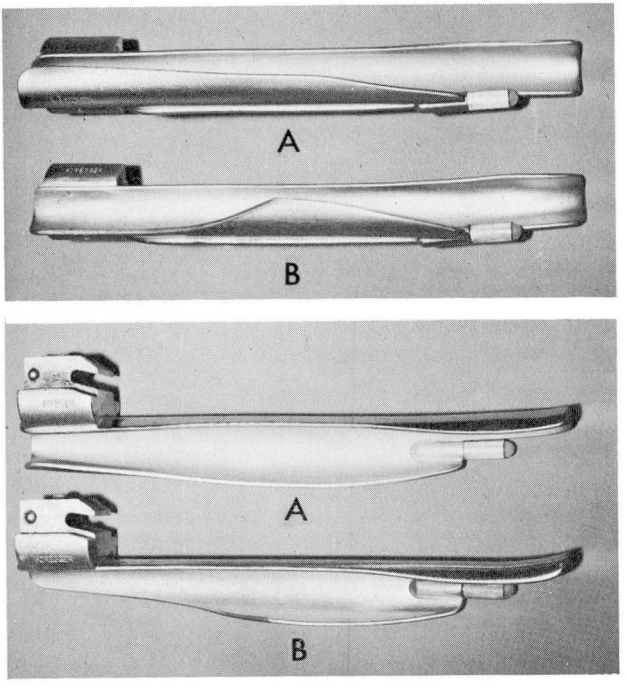

Fig. 1. Photographs of A, the regular, and B, the modified Wis-Foregger laryngoscope blades (top and side views).

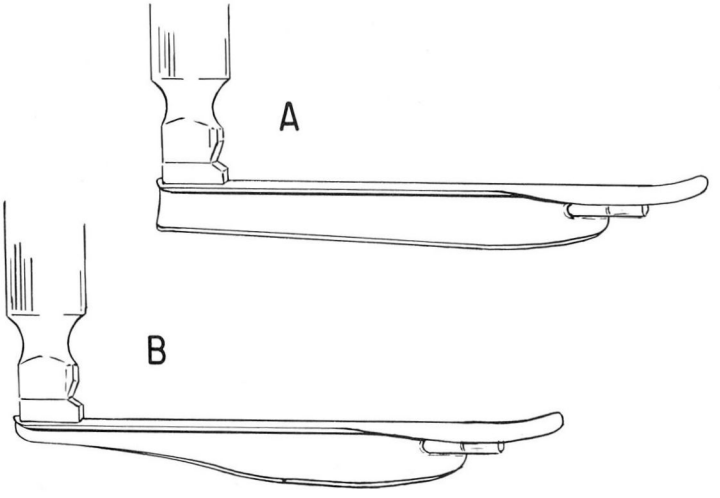

Fig. 2. Sketches of A, the regular Wis-Foregger laryngoscope blade, and B, the modified blade with tapered contour (side view).

consin blades. In the modified blade, the inferior surface of the blade has been cut away to a distance of 7 cm. while maintaining a gradual taper. Removal of that portion of the blade does not jeopardize the strength of the instrument.

The clinical advantages of the modified blade are apparent. For visualization of the larynx, the blade requires an upward and forward lifting force; therefore, the handle of the laryngoscope does not become a lever nor do the teeth act as the fulcrum for the blade in exposing the larynx. Should the blade be permitted to rest on the teeth, visualization immediately becomes impossible *(Fig. 3)*.

Fig. 3. Sketches showing technics using A, the regular Wis-Foregger laryngoscope blade, and B, the modified blade.

Trauma to the undersurface (posterior) of the epiglottis is minimized by applying the proper lifting force. Moreover, the alteration in design of the blade reduces

the amount of bulk put into the mouth of the patient, thus providing better visibility.

Legal Aspects of Injury to the Teeth

As mentioned previously, injury to the teeth during laryngoscopy for endotracheal intubation is not uncommon. Frequently, a difficult intubation cannot be anticipated; permanent dentures may complicate the technic. The anesthetist should do everything possible to avoid such injury, and the modification of his equipment is a simple but effective step in this direction.

As a general rule, it may be stated that the law recognizes the possibility of complications, and places the risk of their occurrence upon the patient, so long as there is no negligence on the part of the anesthetist. By such a premise, the anesthetist does not have license to extract teeth needlessly during intubation. Despite this legal immunity, it behooves the anesthetist to protect the patient's teeth during intubation. This may be accomplished with the rubber tooth protector,[4] and by modifying the potentially dangerous parts of existing equipment. These precautions constitute the exercise of reasonable care.[5]

Conclusions

The modification of the blade of the Wis-Foregger laryngoscope facilitates intubation by averting trauma to the patient's teeth, the dental prostheses, and the epiglottis. When used incorrectly—as a lever, with the teeth as the fulcrum—the modified laryngoscope blade obscures the anesthetist's view of the larynx, and intubation under direct vision becomes impossible. Therefore, the only manner in which the instrument can possibly be used to intubate a patient is the correct, nonnegligent way.

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