

The proper application of the principles of trans-laryngeal cannula ventilation can provide adequate oxygenation and ventilation, and represents a valuable alternative in emergency settings. The use of cannulae of 14 gauge or larger, connected to O₂ sources of 50 psi or greater, will maintain adequate oxygenation and ventilation. The equipment needed is not expensive nor difficult to obtain. It has been previously shown that each operating room can be easily outfitted with the proper materials,^{7,11} and nothing short of this should be acceptable. We should be prepared for all emergency situations and be satisfied only when the best possible methods are used in all patients. If we depend on ingenuity in the time of crisis instead of planned alternatives, we may fail our patient.

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On Gildar's Transtracheal Ventilation System

To the Editor:—The device described by Reich and Schwartz¹ using readily available equipment for emergency transtracheal ventilation has been previously described by Gildar.² The simplicity of this technique, consisting of the barrel of a 10–15-cc syringe attached to the transtracheal catheter with a cuffed endotracheal tube inserted into the barrel, has much to recommend it, and the credit should go to Dr. Gildar.

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In Reply:—We appreciate the obvious interest and experimental work of Drs. Yealy and Stewart in the area of transtracheal ventilation. However, there are several points that must be clarified. Firstly, the endotracheal tube-syringe barrel device that Gildar described¹ is strictly for transtracheal oxygenation, *not* for transtra-

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cheal ventilation. Frumin, Epstein, and Cohen demonstrated in 1959 that apneic oxygenation can be maintained for periods of 18–55 min.² Although hypercarbia and acidosis resulted, the lowest arterial oxygen saturation obtained was 98%.

Drs. Yealy and Stewart suggest that cannulae with

side-holes lessen the risk of tracheal wall or mucosal damage. However, they base this recommendation on a single study of 48 patients, one of whom developed severe mediastinal and subcutaneous emphysema.³ The side-holes may actually increase the risk of mediastinal emphysema, since the cannula is introduced blindly, and the positioning is confirmed by aspiration of air. The tip of the cannula may be in the tracheal lumen, while one or both side-holes are in the subcutaneous tissue.

Furthermore, in the case of total supraglottic airway obstruction, transtracheal ventilation is impossible. A transtracheal cannula allows only limited exhalation at safe levels of intrathoracic pressure.

Anyone who has had to manage the difficult airway on most hospital wards realizes that high-pressure oxygen sources, and proper devices for high-pressure oxygen delivery, are frequently not available. However, endotracheal tubes, syringe barrels, intravenous cannulae, and the resuscitation bags are readily available.

Using the technique originally described by Gildar,¹ life-preserving oxygenation can be provided while definitive measures are taken to secure the airway. A formal tracheostomy or difficult intubation may take several minutes, during which hypoxia must be prevented.

Finally, it is inevitable that crises will arise, in locations where ideal equipment is not present. Ingenuity in time of crisis is the anesthesiologist's trademark. The rapid establishment of transtracheal oxygenation is one

situation that demands such ingenuity. We will not fail our patient so long as we prevent hypoxia, and ventilation is not a prerequisite to adequate short-term oxygenation.

We appreciate Dr. Sosis' letter identifying Dr. Jack S. Gildar, who originally described the endotracheal tube-syringe barrel-transtracheal cannula device in 1983.¹ We regret that our computer-directed literature search was incomplete. The Gildar device is simple, convenient, and adequate for transtracheal oxygenation, although some degree of hypercarbia is likely. It should be included in the A. H. A. Advanced Cardiac Life Support Textbook and other publications.

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A Problem with a Transtracheal Oxygenation System

To the Editor:—Reich and Schwartz recently reported a system whereby transtracheal oxygen could be delivered through a large-bore intravenous cannula connected to a syringe barrel.¹ A cuffed endotracheal tube is inserted into the barrel and the cuff inflated to obtain a seal.

We recently had occasion to use the system. After a failed orotracheal intubation in a rapidly deteriorating patient, the system was assembled using the endotracheal tube and syringe at hand. The O₂ flush control valve was used to pressurize the circuit. This maneuver resulted in immediate expulsion of the endotracheal tube from the syringe barrel.

Injection of 5 ml of air into a Mallinckrodt 8.0 mm endotracheal tube cuff inserted into a Becton-Dickinson 10 ml syringe barrel produces an intracuff pressure of about 220 mmHg. This cuff high pressure provides enough friction to secure the cuff-barrel assembly together if they are *clean and new*. Since our cuff was

contaminated (lubricated) with pharyngeal secretions, the assembly separated.

This problem can be avoided by thoroughly drying the cuff before assembly. Hopefully, awareness of the problem will prevent its recurrence.

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