

be opened to suction by depressing the suction control button. Additional access to the common channel is obtained *via* a Luer® fitting side port. This port will accept a syringe so that topical anesthetic solution can be injected down the channel. If the suction is actuated while the syringe remains on the side port, the negative pressure can draw in the plunger of the syringe, resulting in loss of anesthetic solution.

A simple technique is described here that facilitates the combination of suction, topicalization, and the passage of oxygen *via* the single channel of the bronchoscope.

Step 1. An epidural catheter, without side openings, is passed through the diaphragm of an extension of T-piece using a 16-gauge needle. The needle is then removed so that the catheter has a firm, but sliding fit in the diaphragm. The epidural catheter hub is attached to the catheter in the usual way (fig. 1).

Step 2. The catheter is passed down the channel of the bronchoscope *via* the side port so that it protrudes 0.1 cm beyond the distal end of the bronchoscope, and the hub of the T-piece is plugged into the side port.

Step 3. Oxygen tubing, carrying oxygen at 4 l/min, is attached to the side limb of the extension T-piece. A syringe containing topical anesthetic is connected to the hub of the epidural catheter. Suction is connected to the bronchoscope in the usual manner.

Operation. The syringe is taped to the control handle such that increments of topical anesthetic can be administered by transferring the operator's thumb from the steering lever to the plunger of the syringe. The jet of oxygen from the tip of the bronchoscope serves not only to oxygenate the patient but also to dissipate the topical anesthetic when this is injected down the epidural catheter. Actuation of the suction no longer causes loss of topical anesthetic from the syringe.

Suction is impeded to some extent by the presence of the catheter within the channel. In our studies, suction of water is reduced from 0.43 l/min to 0.24 l/min by

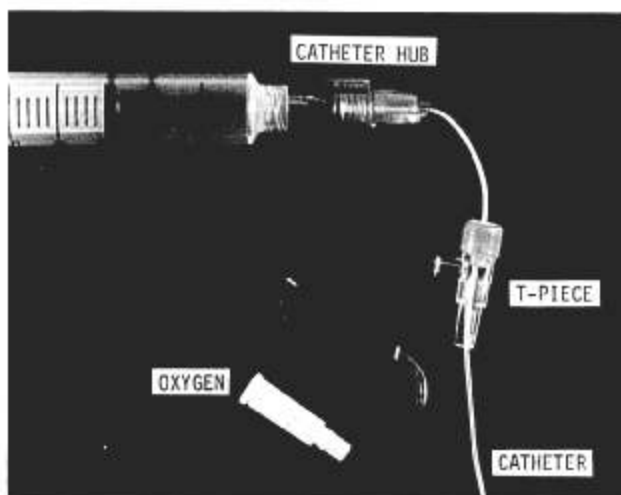


FIG. 1. Illustration of Step 1.

the presence of the catheter. However, in the majority of cases the bronchoscope is in use for guidance rather than aspiration, so the reduction in suction rate is usually not a problem.

Anesthesia of the nares or oral cavity is obtained by conventional means. The bronchoscope is then introduced and passed down toward the larynx, and topical anesthetic is injected down the catheter as required. Suction, steering, topicalization, and oxygenation are obtained without the operator removing his or her hand from the control body.

We have practiced this technique and found it to be useful.

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Fiberoptic Bronchoscopy and Double-lumen Tube Position

To the Editor:—Recent communications in ANESTHESIOLOGY^{1,2} have described blind withdrawal of a left-sided double-lumen tube when the tube was thought to be inserted too deeply into the left mainstem bronchus (as indicated by poor left lung compliance, decreased left upper lobe breath sounds, decreased arterial oxygen tension, and failure to collapse the left upper lobe while selectively

ventilating the left lower lobe). In an emergent or threatening situation, I think it reasonable initially to withdraw the double-lumen tube a documented 1 cm at a time up to a total of 2 cm. However, since blind withdrawal of the double-lumen tube may either not completely correct the problem or result in bronchial decannulation, the final, correct, and precise endpoint for double-lumen tube

withdrawal should be to observe with a fiberoptic bronchoscope the blue endobronchial cuff just below the tracheal carina in the left mainstem bronchus. By definition, this is the outermost acceptable position of a left-sided double-lumen tube, and in this position left upper lobe obstruction is not possible.³

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Placing Double-lumen Tubes with a Fiberoptic Bronchoscope

To the Editor:—Tracheal rupture following an “atraumatic” endobronchial intubation with a disposable, left-sided double-lumen tube is but one of the complications that can be avoided by placing these tubes with a fiberoptic bronchoscope rather than blindly. Trauma to the bronchial tree,^{1,2} inability to achieve adequate separation,³ and intraoperative tube malfunction or obstruction⁴ are serious potential problems which can also be avoided by using the fiberoptic bronchoscope.

By inserting the fiberoptic bronchoscope through the tracheal lumen after the tracheal cuff has been inserted beyond the vocal cords, one can inspect the trachea and carina and then advance endobronchially under direct vision. This avoids the excessive trauma of blind rotation and insertion and allows visual diagnosis of anatomic abnormalities such as intrinsic or extrinsic tumor that may prevent correct placement. This also visually guarantees insertion in the proper mainstem bronchus without herniation of the bronchial cuff or overinsertion of the tracheal lumen beyond the carina, both of which cause tube obstruction or malfunction. If one wishes to use the bronchoscope as a stylet over which to pass the tube into the desired mainstem bronchus, the scope can initially be inserted through the bronchial lumen after the bronchial cuff has been placed beyond the vocal cords.

Inserting the bronchoscope through a swivel adapter allows ventilation to continue while the bronchoscope is in place (fig. 1). The bronchoscope can be reinserted after the patient is in the lateral decubitus position to confirm proper tube placement, or any time a technical difficulty with the tube arises. To manipulate the bronchoscope easily within the lumen of the tube, the instrument's diameter should be at least 1–2 mm smaller than the inner diameter of the tube. This may preclude using the bronchoscope in tubes smaller than 39 French.

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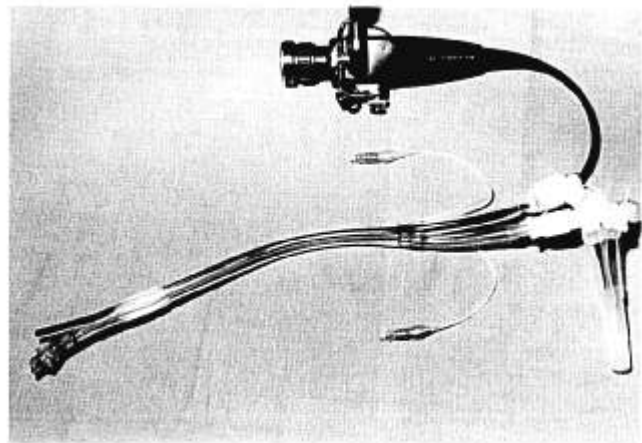


FIG. 1. Fiberoptic bronchoscope inserted through swivel adapter on tracheal lumen of left-sided, double-lumen tube.

Using the fiberoptic bronchoscope for double-lumen tube placement eliminates the guesswork in endobronchial intubation. Complications will be minimized, successful separation will be achieved more reliably, and technical problems can be more easily diagnosed and treated.

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