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Bupivacaine Cardiotoxicity—Concentration or Dose?

To the Editor:—In August 1983, a "dear-doctor" letter was sent by the three manufacturers of bupivacaine to all anesthesiologists in the United States advising that "the 0.75% concentration of bupivacaine is no longer recommended for obstetrical use." This has led many of our colleagues to assume that lower concentrations of the drug are less hazardous. However, I have information from the Food and Drug Administration (FDA) and other sources concerning severe adverse reactions in previously healthy parturients following the use of both the 0.5% and the 0.25% concentrations of bupivacaine. Four cardiac deaths occurred after the administration of 75 mg (3 gravidae) to over 110 mg (1 gravida) of 0.5% bupivacaine for lumbar epidural analgesia. Two cardiac deaths resulted from the single-dose injection of 60 and 75 mg of 0.25% bupivacaine into the caudal canal. In three of these six cases, the use of a test dose was not recorded.

It is thus evident that the patient's peak plasma level of bupivacaine depends not on the concentration used, but on the actual dose injected. Strict adherence to the recommended safeguards (*i.e.*, appropriate test dosing, fractionation of the therapeutic dose, *etc.*) is imperative for all concentrations of bupivacaine if further tragedies are to be avoided.

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Another Use for the Suction Port on the Pediatric Flexible Bronchoscope

To the Editor:—In the management of children with difficult airways, we commonly use an Olympus BF® (type 3C4) bronchoscope to perform endotracheal intubation. This instrument has an external diameter of approximately 3.5 mm and a correspondingly small suction port, which readily becomes ineffectual when viscous secretions are aspirated. The usefulness of this instrument also diminishes markedly when tissue obscures the visual field. We have found that a flow of oxygen through the suction port alleviates both of these problems—*i.e.*, it keeps secretions away from the lens and expands tissues that may collapse around the bronchoscope. The flow of oxygen from the port may also aid in oxygenation of the patient.

The apparatus is assembled by attaching an oxygen tubing from an oxygen E cylinder to the suction port on the bronchoscope. A 5–6 l/min flow maintains a clear lens. The flow of oxygen through the bronchoscope can be increased by occluding the suction port external valve. This increased flow can separate collapsed structures that obscure the view from the lens. An independent oxygen source maintains the anesthesia circuit intact for immediate use. This modification can assist the fiberoptic operator to visualize airway anatomy and enhance fiberoptic intubation skills.

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Topicalization, Oxygenation, and Suction *via* a Single-channel Fiberoptic Bronchoscope

To the Editor:—Fiberoptic bronchoscopic intubation of the trachea is an established technique in the anesthetic management of the patient with a difficult airway.

The bronchoscope in use at this medical center (Pentax® FB 15 H) incorporates within its length a single working channel. At the control handle, this channel can

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 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.

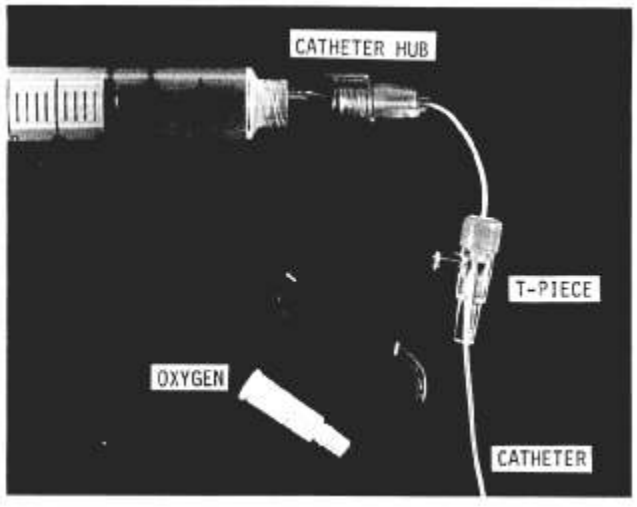

FIG. 1. Illustration of Step 1.

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