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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Anesthesiology
65:118–119, 1986

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 obstruction[4] 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.

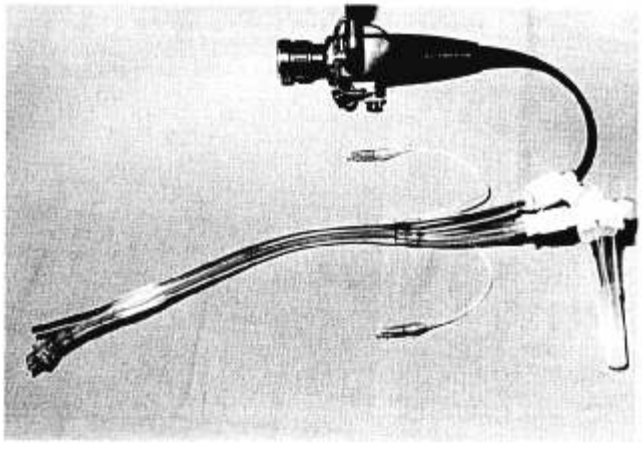

FIG. 1. Fiberoptic bronchoscope inserted through swivel adapter on tracheal lumen of left-sided, double-lumen tube.

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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65:119, 1986

Neurotoxicity of Local Anesthetics

To the Editor:—The altered perineural permeability, edema, and nerve fiber injury after local anesthetics as described by Myers *et al.*[1] provide interesting reading. It is unfortunate that the two local anesthetics incriminated in causing some degree of nerve damage were not plain local-anesthetic solutions. The 3% 2-chloroprocaine HCl used contained 0.2% sodium sulfite and the 1% tetracaine HCl contained 0.2% sodium bisulfite. The amide local anesthetics used contained no antioxidants.

As there already exists the question of possible neurotoxicity from the antioxidants rather than the local anesthetic,[2,3] perhaps it would be more relevant if the control group in the article by Myers *et al.*[1] had been the antioxidant with sodium chloride. If the results were unchanged, then their conclusion, that the two ester local anesthetics are less safe than the two amide local anesthetics, is given more credence.

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65:119–120, 1986

In reply:—Our investigations into the neurotoxicity of local anesthetics were stimulated by the clinical reports and debate concerning the neurotoxicity of Nesacaine-CE® following inadvertent injection into the subarachnoid space. As noted by Dr. Cartwright, Wang *et al.*[1] have developed a rabbit model to mimic the clinical problem and have shown that sodium bisulfite is neurotoxic when evaluated with clinical measurements of function. Many of the initial investigations by other laboratories appeared to be inconsistent, variably reporting that neurotoxicity might be the result of the Nesacaine-CE® vehicle,[1] the local anesthetic 2-chloroprocaine,[2] or any local anesthetic.[3] These results appeared to be resolved by the observations of Gissen *et al.*,* who attributed nerve injury to sodium bisulfite at low *p*H. Unfortunately, their model does not explain cases in which nerve injury was observed with other local anesthetics (*e.g.*, reference 3) or in which neurotoxicity was not differentially produced by the bisulfite-containing 2-chloroprocaine solution when compared with other local anesthetics.[4]

In the discussion we stated that, "On the basis of these findings, we would not agree that local anesthetics of the ester type are relatively more safe than the amide type. Dose–response studies are necessary, however, to further test this hypothesis." We have subsequently found no evidence for distinguishing between the toxicity of ester- and amide-linked local anesthetics in this model.[5]† Commercial preparations of four amide-linked and three ester-

* Gissen AJ, Datta S, Lambert D: The chloroprocaine controversy. II. Is chloroprocaine neurotoxic? Regional Anesthesia 9:135–145, 1984.

† Kalichman MW, Powell HC, Myers RR: Pathology of local anesthetic–induced nerve injury. (submitted for publication).

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