

CORRESPONDENCE

Anesthesiology
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Convulsant Blood Levels of Bupivacaine

To the Editor:—We read with interest the report of Drs. Colley and Heavner concerning blood levels of bupivacaine.¹ In their discussion, they stated “The blood levels of bupivacaine resulting in convulsant activity are not known,” and went on to compare the value of arterial and venous samples.

In 1979, we reported a case in which we were able to obtain an *arterial* blood level of bupivacaine *during* a convulsion caused by inadvertent intravascular injection during an attempted epidural block.² The arterial bupivacaine concentration during the convulsion was 5.4 µg/ml. One minute later, after the convulsion had abated, the concentration was 3.5 µg/ml.

As we stated in our conclusions, this one sample does support previous findings that arterial levels of 4.0 µg/ml or less of bupivacaine do not result in convulsions.^{3,4}

DESIRAY C. FITZGIBBONS, M.D.
Staff Anesthesiologist
Department of Anesthesiology
Group Health Hospital
2700 152nd Avenue NE
Redmond, Washington 98052

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DANIEL C. MOORE, M.D.
Senior Consultant
Department of Anesthesiology
The Mason Clinic
1100 Ninth Avenue
Seattle, Washington 98111

ROBERT I. BALFOUR, M.D.
Staff Anesthesiologist
Department of Anesthesiology
Overlake Memorial Hospital
1035 116th NE
Bellevue, Washington 98004

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Use of Fiberoptic Bronchoscope to Change Endotracheal Tube Endorsed

To the Editor:—I was interested to see the case report of Rosenbaum, *et al.*¹ relating an experience with the bronchoscopic tube change technique in critically ill patients. Our group in the intensive care unit of the Naval Medical Center, Bethesda, had a similar experience and examined this technique in a prospective manner.* Our indications for use of this technique when tube change is necessary include respiratory failure requiring high PEEP, hemodynamic instability and increased sensitivity to sedatives or relaxants, grossly abnormal anatomy, history of difficult intubation, and unstable cervical frac-

tures or facial fractures. Advantages of the technique include a minimal requirement for sedative, anesthetic, or relaxant drugs, a shortened time for tube change *vs.* other methods, a reduced risk of aspiration, minimal hemodynamic insult, and the opportunity to precisely locate the endotracheal tube position during intubation. Problems which we encountered relate to the limitation in laryngeal capacity for the preexistent endotracheal tube and the bronchoscope in children and small patients, the inability to perform the procedures when the hypopharynx is obscured by bleeding, and the fact that it requires some skill with the fiberoptic instrument.

In the series of 15 adult patients which we reported, we were unable to change the tubes of three without resorting to a direct visualization method. One of these

* Watson C, Balestieri F, Prough D: Bronchoscopic tube change in critically ill patients. Abstracts of the Society of the Critical Care Medicine annual meeting, 1980

patients aspirated during endotracheal tube change with sedation and paralysis under direct vision and a second became hypotensive during the procedure. Only one of the bronchoscopic tube change patients became hypotensive.

The availability of smaller diameter bronchoscopes like the Olympus BF-4B2® (4.8 mm, OD) and the BF-3C4® (3.5 mm, OD) has allowed the use of this technique for patients with smaller laryngeal dimensions via smaller internal diameter endotracheal tubes. There is no reason why any skilled endoscopist cannot perform this procedure; however, I should like to emphasize my concern that the technique should only be attempted with the back-up of proven alternatives like direct laryngoscopy and intubation or emergency tracheostomy by skilled individuals in the event of unexpected difficulty.

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Use of Cold Nasogastric Tubes Corrects Problems Due to Pliability

To the Editor:—The recent Clinical Report by Rosenbaum *et al.*¹ cites excessive pliability of nasogastric tubes as the major reason for difficulties in changing endotracheal tubes. The authors note that the flexible fiberoptic bronchoscope provides a more rigid stent over which to pass the endotracheal tube.

We have not encountered the authors' difficulties using nasogastric tubes for endotracheal tube change, perhaps because we have, on occasion, used a Levin tube made more rigid by exposure to cold. Our procedure consists of placing a nasogastric tube, still sterile inside its wrapper, in a container of ice for 20 min. This makes the Levin tube less pliable to guide the new endotracheal tube into the trachea. The nasogastric tube and new endotracheal tube are lubricated to facilitate easier passage.

Admittedly, use of the flexible fiberoptic bronchoscope provides the greatest number of options for changing endotracheal tubes since a nasal tube can be changed from one nostril to the other or converted to an oral tube. (Use of a nasogastric tube, on the other hand, for the most part requires that the existing route be used for the new endotracheal tube.) However, in a situation where a fiberoptic bronchoscope, or personnel trained in its use are not available, or when the endotracheal tube is too

In conclusion, I should like to endorse the technique described and agree that it may be safer and more certain than other methods commonly used.

CHARLES B. WATSON, M.D.
*Assistant Professor of
Anesthesiology/Critical
Care Medicine
North Carolina Memorial Hospital
University of North Carolina
Chapel Hill, North Carolina 27514*

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small to allow passage of the fiberoptic bronchoscope, a cold-hardened Levin tube may provide a successful solution to the clinical problem. Finally, if difficulties should occur during the endotracheal tube changeover, the lumen of Levin tube may be used to administer oxygen until successful passage of the new endotracheal tube can be accomplished.

EDWARD TEEPLE, M.D.
Anesthesiology Fellow

EDWIN A. BOWE, M.D.
*Assistant Professor of
Anesthesiology and Pediatrics*

*Department of Anesthesiology
The University of North
Carolina at Chapel Hill
North Carolina Memorial Hospital
Chapel Hill, North Carolina 27514*

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