Intrapeural Infusion of Local Anesthetic: A Word of Caution

To the Editor.—The clinical report by Rosenberg et al. evaluating the use of a continuous intrapeural infusion of bupivacaine for analgesia after thoracic surgery suggests that intrapeural bupivacaine, either as a bolus injection of 0.5% (15–20 ml) or as a continuous infusion of 0.25% (5–10 ml/h), was unsatisfactory in the management of postoperative pain after thoracic surgery. This report contradicts the initial reports of excellent analgesia achieved with the intrapeural administration of bupivacaine and lidocaine after abdominal and thoracic surgery.

We were interested in evaluating the use of continuous intrapeural lidocaine infusion for pain relief after thoracic surgery. We designed a study to compare the effects of intrapeural analgesia to our routine method of continuous epidural analgesia. A pilot study was conducted and three patients received continuous intrapeural infusions of lidocaine 2% with epinephrine 1:200,000 at 15–20 ml/h. Intrapeural lidocaine produced unfavorable results, and the study was terminated because of the following problems:

1. Pain relief after thoracic surgery was inadequate. Two patients complained of severe pain (analogue pain score between 8 and 10) and one patient complained of moderate pain (pain score between 6 and 8). Pain relief was achieved in these patients by the additional use of large doses of systemic narcotics (morphine iv at 34–48 mg/24 h).

2. The dose of lidocaine (300–400 mg/h) caused systemic side effects in all patients. Somnolence, disorientation, and muscle twitches were frequent. Somnolence impaired nursing care and the patients' communications with their families. Serum lidocaine after 12–16 h was between 2.4 and 4.7 µg/ml; none of the patients had seizures. Seltzer et al. reported a 9% incidence of convulsions during their evaluation of intrapeural bupivacaine.

3. Tachycardia and hypertension occurred in all patients. Epinephrine is added to intrapeural local anesthetics to slow the absorption, prolong the effect on the intercostal nerves, and reduce the systemic side effects of local anesthetics. The large dose of epinephrine infused (75–100 µg/h) in our patients was the probable cause of postoperative hypertension. High blood pressure was adequately controlled with iv narcotics in two patients and was treated with a sodium nitroprusside infusion in one patient. The side effects of intrapeural infusion of epinephrine are not desirable in patients with history of hypertension and coronary artery disease.

4. This method is technically difficult. Insertion of the epidural needle into the pleural space and threading the catheter was easily achieved at the end of surgery. However, confirmation of catheter position by withdrawal of air through the small catheter was difficult to achieve, despite air bubbling through the chest tubes. The position of the catheter in the intrapeural space was confirmed in two patients by injection of radio opaque dye (amipaque) through the catheter during an
anterior and a lateral chest radiograph. This problem was
realized by Rosenberg et al., and the catheter was
inserted into the pleural cavity by the surgeon while the
chest was open.1

5. Intrathoracic insertion of a catheter in non-thoracic surgical patients introduces the risk of tension pneumothorax. Proper equipment and personnel should be available at hand for rapid insertion of a chest tube.

The results of our pilot study are in agreement with those reported by Rosenberg et al.,1 and were reason enough to terminate our evaluation of intrathoracic analgesia. We would like to voice a word of caution regarding the high incidence of systemic side effects associated with intrathoracic infusion of local anesthetics. This method does not provide effective intercostal analgesia and is of limited value for pain relief after thoracic surgery.

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REFERENCES


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A Stylet for Difficult Intubations

To the Editor:—We report a simple, inexpensive, and easy to construct device that is useful in assisting in difficult tracheal intubations.

Intubating stylets have been reported useful in performing difficult orotracheal intubations in patients with "anterior larynxes" or other causes of inadequate glottic exposure.1–3 When the larynx is only partially visualized on laryngoscopy, it is difficult to insert an endotracheal tube directly, as the tube further obscures vision of laryngeal structures. In this situation, it is often possible to intubate the trachea with the thinner and more maneuverable intubating sytlet, and to then guide an endotracheal tube into the trachea over the stylet.

Difficulties in obtaining a suitable commercially manufactured intubating stylet led us to create our own from commercially available products. The first component of our device is marketed under the name of "Tracheal Tube Exchanger" (T.T.X., TM Sheridan Catheter Corporation, Argyle, NY) (fig. 1A). The size used is labeled "large—for sizes 7.5–10.0." The second component, a malleable wire with a plastic coating, is marketed by the same company under the name "Sherri-Slip TM Intubating Stylet" (SIS) (fig. 1B). As the T.T.X. TM is itself too flimsy to be effective as an intubating stylet, the SIS serves to provide the necessary stiffness.

Combining the SIS and the T.T.X. TM to form an intubating stylet takes about 10 min. First, using a knife, strip all but 3 cm of the plastic coating from the SIS (fig. 1C). Next, slide the exposed wire of the SIS into the lumen of the T.T.X. TM until the plastic plug at the end of the SIS abuts the orifice of the T.T.X. TM Lubricate the plastic plug with an alcohol swab and drive it into the lumen until the tips are flush (fig. 1D). The tight fit of the plug into the lumen makes dislodgement of the inner wire virtually impossible.

The intubating stylet can be gas sterilized and stored at intubating locations or carried coiled in a pocket. As