

Correspondence

Anesthesiology
48:448, 1978

Supraclavicular Internal-jugular-vein Catheterization—Further Caution

To the Editor:—Despite highly successful and safe use of the supraclavicular route¹ for internal-jugular-vein catheterization, there is a contraindication to this route in patients who have tetralogy of Fallot. Total correction of tetralogy of Fallot was performed on a 16-year-old 45-kg girl who had had a functioning right Blalock-Taussig shunt present since the age of 5 years. Right supraclavicular internal-jugular-vein catheterization was attempted after induction of anesthesia and endotracheal intubation. After several unsuccessful attempts and establishment of other monitoring, the operation was begun. A hematoma was found in the right supraclavicular area upon completion of the uncomplicated surgical repair. Both the initial postoperative roentgenogram of the chest, which revealed opacification of the apical region of the right upper lobe, and large postoperative fluid requirements without mediastinal chest tube drainage, suggested intrapleural bleeding secondary to the attempts at central venous catheterization. At re-exploration, a bulging blue intact right pleural membrane was entered, and approximately 1,000 ml of clotted blood were evacuated. Several bleeding sites were seen in the extensive aorto-pulmonary collateral circulation covering the apex of the right lung.

In cyanotic congenital heart disease compensatory aorto-pulmonary vascular anastomoses form to lessen the hypoxia.² Surgical creation of a systemic-pulmonary artery shunt such as the Blalock-Taussig anastomosis serves the same purpose. The possible presence of an extensive aorto-pulmonary collateral circulatory network, or prior thoracotomy and operation in the subclavicular region, contraindicate supraclavicular internal-jugular-vein catheterization.

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2. Kirklin JW, Karp RB: *The Tetralogy of Fallot*. Philadelphia, Saunders, 1970, p 22

(Accepted for publication January 13, 1978.)

Anesthesiology
48:448-449, 1978

In reply:—Various approaches for cannulation of the internal jugular vein have been reported. In the low technique that we described, cannulation of the internal jugular vein is based on the presence of a useful bony anatomic landmark to identify the course of the vein.¹ This is of particular importance in infants and children, where other landmarks (sternocleidomastoid) are deficient. It seems that certain complications may be encountered more with one technique than with others. For example, puncture of the carotid artery was more common with the high approach (three of 34) than with the low approach (none of 29).^{*} The experience of the person performing the puncture also plays a role in successful cannulation. Obviously, the presence of any anatomic alterations of the internal jugular vein may constitute

a contraindication to the catheterization using this technique. These may include kyphoscoliosis, tumors in the neck and superior mediastinum, right aortic arch, vascular rings, total anomalous venous drainage, transposition of great vessels, pre-existing aorto-pulmonary shunts, and previous operations in the supraclavicular area. Also, common sense dictates that any blind approach using anatomic landmarks not be performed where the anatomy is distorted.

* Cote CJ, Schwartz AJ, Jobs DR, et al: A prospective random study of central venous catheter placement in children using two approaches to the internal jugular vein (abstr). American Society of Anesthesiologists Annual Meeting, 1977, pp 153-154.

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(Accepted for publication January 13, 1978.)

Anesthesiology
48:449-450, 1978

Total Spinal Anesthesia during Epidural Anesthesia

To the Editor:—I am disturbed by several aspects of the case report by Woerth *et al.* of total spinal anesthesia as a late complication of epidural anesthesia.¹ While, as they point out, inadvertent dural puncture and subarachnoid injection of large doses of local anesthetic are sometimes unavoidable, there are aspects of their technique that seem to invite problems. In the first place, the practice of rotating an 18-gauge Tuohy needle 360 degrees for aspiration can create a dural puncture or severe epidural bleeding. When the needle tip is against the dura or a vessel, such a rotation could rongeur a large hole. This complication is also possible when the needle is against a nerve root, although the pain experienced by the patient would, theoretically at least, prevent severe damage. Second, most obstetrical anesthesiologists have abandoned the practice of mixing long- and short-acting local anesthetics in the same syringe. The resultant block seems to carry the negative characteristics of both agents. It is far more efficacious to initiate the block with a rapidly-acting agent such as chlorprocaine and then augment it after a short time with a longer-acting agent such as bupivacaine.

My most serious objection relates to the prophylactic injection of blood through the epidural catheter. There are no data supporting the use of a prophylactic blood patch. Since 50 to 75 per cent of patients who have 17-gauge holes in the dura will contract spinal headaches,² using blood prophylactically means that 25 to 50 per cent of patients would be treated unnecessarily. Second, injecting blood when there is still some residual block carries certain risks, primarily the medicolegal one of not being able to document whether any permanent block is the result of the anesthetic or the blood. Finally, if the authors are presuming, as they state, that their catheter is subarachnoid, then they are running the risk of aseptic meningitis and possibly adhesive arachnoiditis³ with the injection of blood, and also are unlikely to seal the dural puncture.

As to the mechanism of the total spinal anesthesia, the authors presuppose a pool of local anesthetic in the epidural space, which leaks through a hole in the dura. The traditional lack of total spinal anesthesia occurring when epidural anesthesia is performed subsequent to an inadvertent dural puncture would seem to make this idea unattractive. Additionally, it is impossible to aspirate a significant amount of local anesthetic from the epidural space immediately after injection, even when a second catheter has been placed one or two interspaces below the first.⁴ I would suggest that their catheter was subarachnoid the entire time, and inability to aspirate cerebrospinal fluid initially was due to either a flap of dura over the tip of the needle or dura or arachnoid adherent to the catheter. Since the mixture of local anesthetics that was used is nearly isobaric⁵ and the injection was made with the patient in the sitting position, the drug would initially collect in the lower area of the subarachnoid space, and then, after the patient was placed supine, gradually diffuse upward until total spinal anesthesia was obtained. Alternatively, the catheter might have been subdural. Such placement has been reported to produce a similar block.⁶

Lumbar epidural anesthesia provides about as close to ideal conditions for vaginal delivery, cesarean section, and postpartum tubal ligation as exist. However, no anesthetic is without potential complications and even mortality. Case reports such as the one cited help to serve the function of demonstrating that regional anesthesia is not to be taken lightly, and careful patient monitoring is mandatory. In this case, apparently no permanent damage was done to the patient, although that is not specifically stated. However, if the patient had not been carefully watched, the result would have been the all too familiar one of another maternal anesthetic mortality.

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