

problems may occur with the integrity of the tube. In this case the integrity of the cuff-pilot balloon system was verified twice, the lack of cuff herniation was also visually confirmed. The ease with which a seal was obtained with the second tube rules out the possibility of tracheomalacia. To our knowledge this is the first time this type of problem with a tracheal tube has been encountered. Certainly when an unexplained leak is present, the integrity of the tracheal tube must be questioned. The tube should be changed and closely examined for any defects in the wall.

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#### REFERENCE

- 1 Parris WCV, Johnson AC. Tracheomegaly. *Anesthesiology* 1982; 56: 141-3.

## Avoiding unintentional arterial cannulation

To the Editor:

Anaesthetists should be able to access the central circulation consistently and rapidly. The incidence of carotid artery puncture during internal jugular cannulation is approximately four per cent. Diagnosis may be difficult in the patient with hypovolaemia, hypoxaemia or impaired left ventricular function. Residual local anaesthetic in the finder needle syringe may give aspirated blood a bright red colour, further confusing the picture. Avoidance of arterial cannulation is crucial for patients with coagulopathies, planned heparinization or anatomical difficulty in applying direct pressure (i.e., subclavian artery). We describe a rapid, simple technique to verify venous catheter insertion.

A sterile Novex "K53" stopcock/tubing extension (Pharmaseal®) is attached to the 18 SWG needle or catheter prior to inserting the J-wire and introducer sheath. If the vein is cannulated, the tubing will fill and empty by gravity when lowered and raised (Figure). Although we have not found it necessary, the system can be transduced as recommended by Jobs *et al.*<sup>1</sup> We have used this technique without complications for cannulation of the internal jugular, subclavian and femoral veins in

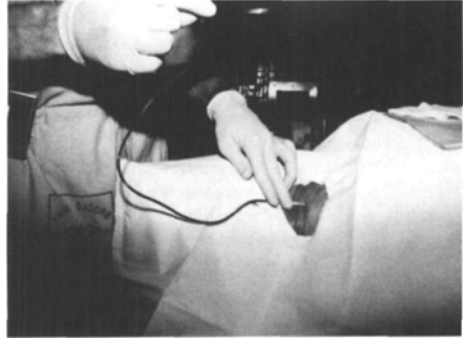


FIGURE "K53" attached to 18 SWG catheter. The venous blood fills and empties by gravity when lowered and raised.

both adult and paediatric patients. It is an integral training tool in our residency program.

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*The opinions or assertions contained herein are the private views of the authors and are not to be construed as reflecting the views of the Department of the Army or the Department of Defense.*

#### REFERENCE

- 1 Jobs DR *et al.* Safer jugular vein cannulation: recognition of arterial puncture and preferential use of the external jugular route. *Anesthesiology* 1983; 59: 353-5.

## Different mechanisms may mediate anaesthesia and analgesia

To the Editor:

Cohen in his recent paper has shown that whilst anaesthesia produced by nitrous oxide can be reversed by compression this is not the case for analgesia caused by the gas.<sup>1</sup> He has concluded from this work that his data

support the multi-site expansion hypothesis whereby "general anaesthesia results from the expansion of differing sites which vary in their physical properties."<sup>1</sup> There is, however, another explanation for these data which seems to have been overlooked, namely that anaesthesia and analgesia are different phenomena.<sup>2,3</sup> For this reason these two entirely different conditions could be mediated by dissimilar means.<sup>3,4</sup> It is therefore conceivable that whilst the underlying mechanism for anaesthesia is a non-specific membrane effect, that for analgesia involves stereo-specific occupation of receptors by specific pharmacological agents.<sup>4</sup>

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- 1 *Cohen PJ*. Hyperbaric pressure does not effect the analgesia produced by nitrous oxide in mice. *Can J Anaesth* 1989; 36: 40-3.
- 2 *Gillman MA, Footerman D*. The need for a clearer distinction between anaesthesia and analgesia in relation to the opiate system. *Anesthesiology* 1981; 54: 524.
- 3 *Gillman MA*. Analgesic (subanesthetic) nitrous oxide interacts with the endogenous opioid system: a review of the evidence. *Life Sci* 1986; 39: 1209-21.
- 4 *Gillman MA*. Further evidence that analgesia and anaesthesia are mediated by differing mechanisms. *Anesth Analg* 1989; 68: 186.

## REPLY

*In his thoughtful letter, Dr. Gillman has proposed "another explanation" for the data presented in my recent article.<sup>1</sup> I believe his remarks are most appropriate; however, his hypothesis should be considered complementary to, and not inconsistent with, my conclusions. I postulated that "multiple effects of general anaesthetics may be mediated at different loci," possibly through the mechanism suggested by the multi-site expansion hypothesis.<sup>2</sup> This approach suggests that "general anaesthesia can be produced by the expansion of more than one molecular site with different physical properties." This is not incompatible with the idea that different mechanisms also may be involved. Indeed, Halsey and co-workers<sup>2</sup> have stated that their data provide evidence that effects of different agents "are unlikely to involve common molecular interaction."*

*In conclusion, my data suggest only "that analgesia may result from anaesthetic action at a site different from that responsible for altered consciousness." This certainly does not preclude the possibility that the mechanisms responsible for the production of analgesia and narcosis also differ. Since I made no attempt to study any specific mechanisms, I have not made firm proposals regarding the physical or chemical factors responsible for these differences.*

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- 1 *Cohen PJ*. Hyperbaric pressure does not affect the analgesia produced by nitrous oxide in the mouse. *Can J Anaesth* 1989; 36: 40-3.
- 2 *Halsey MJ, Wardley-Smith B, Green CJ*. Pressure reversal of general anaesthesia: a multi-site expansion hypothesis. *Br J Anaesth* 1978; 50: 1091-7.