Correspondence

Dorsal continuation of the radial artery

To the Editor:

A 50-yr-old female with no special medical problems was having root canal surgery performed by an endodontist. She informed me that I would have great difficulty finding a vein. After a prolonged search I located what I thought would be a suitable vessel on the dorsum of her hand. I was more than pleased to enter this vessel on my first attempt, using a 22GA Insyte *iv* catheter. After removing the tourniquet and the metal stylet, bright red arterial blood squirted out of the catheter. Arterial cannulation was confirmed by observing the blood rise rapidly towards the connected infusion bag. I immediately removed the catheter and applied a tight pressure bandage.

On follow-up two days later, the patient had a normal radial pulse on both wrists. I was able to feel a good pulse in the "vein" on the dorsum of the hand and could detect no such pulse on the other side.

Since that episode I have spoken to numerous experienced practitioners and I have yet to find anybody who has accidentally accessed an artery in this location. However, I found in Kadir's "Atlas of Normal and Variant Angiographic Anatomy"¹ that in 1% of people there is a "dorsal continuation of the radial artery (a large branch, arising in the distal forearm, which courses to the dorsum of the hand)".

While infrequent, I felt this anatomic variation was worth mentioning. The intra-arterial injection of a number of drugs used commonly in anesthesia may have serious consequences for the patient. Awareness of such anatomical variations becomes important, specially at a time when total *iv* anesthesia and monitored anesthesia care are so popular.

T.M. Tibbetts MD
Victoria, British Columbia

Reference

- 1 Kadir S. Atlas of Normal and Variant Angiographic Anatomy. Philadelphia, PA: WB Saunders, 1991.

Problem with Ohmeda Excel 210 SE anesthetic machine

To the Editor:

The Ohmeda Excel 210 SE anesthetic machine is designed to prevent delivery of a hypoxic gas mixture when nitrous oxide is administered with oxygen. During a routine anesthetic machine check, the oxygen analyzer displayed a FiO_2 of 0.15, when nitrous oxide alone was set at $0.9 \text{ L}\cdot\text{min}^{-1}$. According to the anesthetic machine's operation manual,¹ at $0.9 \text{ L}\cdot\text{min}^{-1}$ nitrous oxide flow, the oxygen flow must be between $0.24\text{--}0.36 \text{ L}\cdot\text{min}^{-1}$. In this anesthetic machine, the oxygen flow was noticed to be much below the recommended flow. On further inspection, minimal nominal oxygen flow on this anesthetic machine was approximately $50 \text{ mL}\cdot\text{min}^{-1}$, in contrast with the recommended $175\text{--}225 \text{ mL}\cdot\text{min}^{-1}$. Minimal nominal oxygen flow is provided by a "stop" on the oxygen flow control valve.² The oxygen and nitrous oxide chain-link mechanism is first activated when the nitrous oxide flow reaches $600\text{--}700 \text{ mL}\cdot\text{min}^{-1}$. This chain-link normally ensures a minimal FiO_2 of 0.25 when oxygen and nitrous oxide are used together.² In this case, it meant that at $600\text{--}700 \text{ mL}$ nitrous oxide flow oxygen flow was only $50 \text{ mL}\cdot\text{min}^{-1}$, which could possibly result in delivery of a hypoxic mixture to the patient. This machine was one of our new machines and had been installed only three weeks before. On inspecting the remainder of the new machines (six), all had a similar problem. The Ohmeda representative confirmed that minimal nominal oxygen flow on all machines was between $175\text{--}225 \text{ mL}\cdot\text{min}^{-1}$ three weeks before. Further anesthetic machine checks by the Ohmeda service engineer revealed that the oxygen nitrous oxide chain-link mechanism was operational at an FiO_2 of 0.19. Second-stage pressure regulators and the "stop" on the oxygen flow control valve were reset by the Ohmeda service engineer, which rectified the problem. It remains unclear why this problem occurred in new machines, within weeks of installation. We can only conclude that safety features incorporated in modern anesthetic machines are not infallible and clinical vigilance remains vital in preventing adverse outcomes while using them.

Manohar Lal Sharma MD FRCA
Liverpool, UK