

ACE Question

What is the MOST likely complication associated with the placement of a radial artery catheter in an adult?

- (A) Hematoma (B) Transient arterial occlusion (C) Local infection

By some estimates, about 8 million arterial catheters are placed annually in the United States, with the radial artery being the most common site. A review published in 2002 summarized radial artery complications in 19,617 cannulations (Table). The most common complication was transient arterial occlusion (19.71%), followed by hematoma at 14.40%. Local infection has been reported in less than 1% of radial artery cannulations. Other rare complications have been reported, including radial or median nerve damage, air embolism, and compartment syndrome.

The radial artery at the wrist has an inner diameter of approximately 3.1 to 3.8 mm and is larger in diameter than the ulnar artery at the wrist in 87% of patients. In other publications, placement of an arterial catheter has been reported to lead to complete arterial occlusion in 24% - 40% of patients within eight days of decannulation. Recannulation of the artery may then take as long as 75 days (Figure). ■

References:

1. Scheer B, Perel A, Pfeiffer UJ. Clinical review: complications and risk factors of peripheral arterial catheters used for haemodynamic monitoring in anaesthesia and intensive care medicine. *Crit Care* 2002;6:199-204. doi:10.1186/cc1489
2. Brzezinski M, Luisetti T, London MJ. Radial artery cannulation: a comprehensive

Complication	Mean incidence (%)
Temporary occlusion	19.71
Hematoma	14.40
Local infection	0.72
Bleeding	0.53
Sepsis	0.13
Pseudoaneurysm	0.09
Permanent ischemic damage	0.09

Table: Incidence of complications from radial artery placement. Information from Scheer B, Perel A, Pfeiffer UJ. Clinical review: complications and risk factors of peripheral arterial catheters used for haemodynamic monitoring in anaesthesia and intensive care medicine (*Crit Care* 2002;6:199-204. doi: 10.1186/cc1489).

review of recent anatomic and physiologic investigations. *Anesth Analg* 2009;109:1763-1781. doi:10.1213/ANE.0b013e3181bbd416

3. Bedford RF, Wollman H. Complications of percutaneous radial-artery cannulation: an objective prospective study in man. *Anesthesiology* 1973;38:228-36. doi:10.1097/0000542-197303000-00006

Answer: B

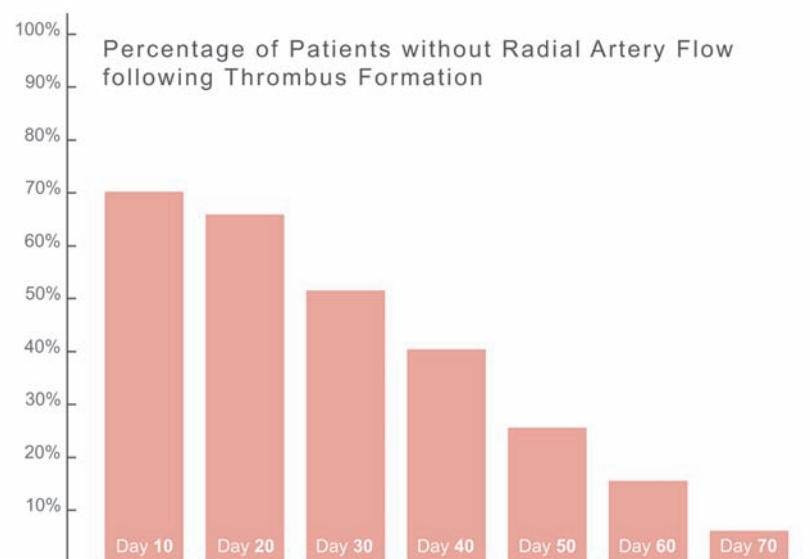


Figure: Recannulation of the radial artery after thrombosis. Time courses of recannulation in 20 patients whose arteries had become thrombosed. Used with permission, from Bedford RF, Wollman H. Complications of percutaneous radial-artery cannulation: an objective prospective study in man. *Anesthesiology* 1973;38:228-36. doi: 10.1097/0000542-197303000-00006. © 1973 American Society of Anesthesiologists. All rights reserved.

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Committee News: Navigating the Storm

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safety officers, and department leadership. Prompt reporting ensures the hospital can begin an objective review with full transparency and proper assessment under the principles of a “just culture,” which focuses on learning and improving practices rather than assigning blame (*Hosp Pharm* 2017;52:308-15).

It’s essential to document a detailed, factual, and objective account of what happened from your perspective in the patient’s medical chart. This should avoid opinions or speculation. Avoid texting or emailing colleagues, friends, or family about the

event, as these communications can be a liability risk; keep communications confined to official channels. Proper documentation is key for both administrative reviews and legal protection.

Discussions during internal reviews, such as a root cause analysis, are often protected by confidential peer-review laws, meaning they cannot be used in litigation. Anesthesiologists should participate openly with facts and avoid conjecture in peer reviews. These actions ensure a productive and protected learning process that improves patient safety. Just culture encourages learning from adverse events to improve safety for patients and physicians alike. Transparency and

objectivity help prevent similar incidents in the future, fostering a safer health care environment.

In an ideal system, adverse events are looked upon as an opportunity for growth, improvement in systems-based practice, and to advocate for ourselves. We can look to our colleagues at the American College of Obstetricians and Gynecologists, who recommend written institutional policies for the management of adverse events be in place to minimize ambiguity and doubt, and to include identification of practitioners who may become second victims (asamonitor.pub/3ZV6BRY). A culture of disclosure without fear of retaliation and that supports open discussion of adverse

events is a crucial aspect of high-quality patient care and the maintenance of trust in the patient-physician relationship. A health care system can thrive if there is a commitment to establishing purposeful resources to help patients and their health care team maneuver through the challenges of an adverse event (asamonitor.pub/3ZV6BRY). ■

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