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Images in Cardiovascular Medicine

Radial Arteriovenous Fistula After Coronary Catheterizations

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Case Description

A 57-year-old man with a history of 2 percutaneous coronary interventions through the right radial artery (6 months and 5 months prior) reported a right radial bruit with a palpable thrill. Doppler ultrasound imaging revealed a radial arteriovenous fistula (AVF). Transbrachial angiogram showed blood flow between the radial artery and venous system (Fig. 1). The patient's condition was managed conservatively because it was a case of AVF without pain or heart failure symptoms. Two years later, the patient presented with progressive development of the bruit and new wrist pain. Physical examination revealed local swelling of the right distal forearm (Fig. 2). A worsened AVF with dilated superficial veins was confirmed on Doppler ultrasound imaging (Fig. 3). Consequently, the patient underwent surgical ligation under local anesthesia (Fig. 4). The swelling, thrill, and pain resolved. The patient underwent follow-ups every 3 months for 2 years, and no vascular events occurred during that time.

Fig. 1 Angiogram shows blood flow between the radial artery and venous system.

Supplemental motion image is available for Figure 1.

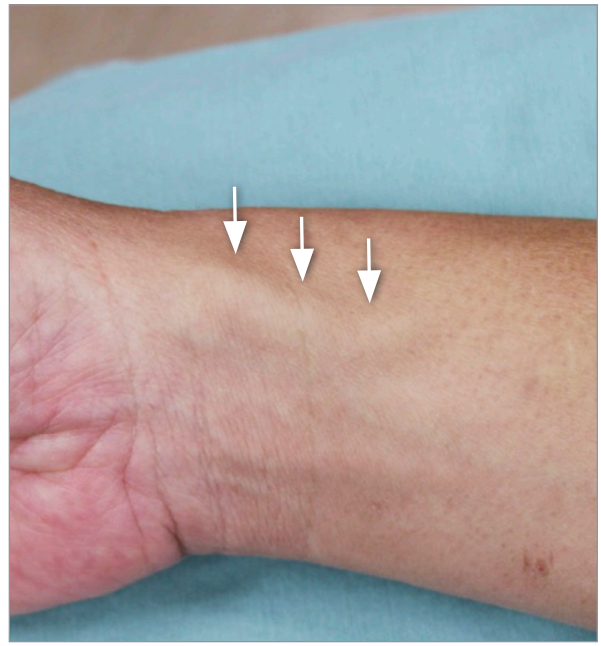

Fig. 2 Physical examination reveals local swelling of the right distal forearm.

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Comment

Arteriovenous fistula as a complication of catheterization generally occurs at brachial and femoral arteries/veins. Radial AVF is extremely rare, with an incidence of approximately 0.05% in the transradial approach, according to the SPIRIT of ARTEMIS study.[1] Other complications of the transradial approach include radial artery occlusion, perforation, and pseudoaneurysm.[1] Radial AVF, which can be generally described as a delayed-onset vascular complication, can cause wrist pain and heart failure symptoms because of left-to-right shunt. The management of radial AVF, which can include surgery, percutaneous intervention, or conservative management, varies according to individual cases, as reported previously.[2-4] Conservative management occasionally fails, as noted in this case. Percutaneous intervention is less invasive, but there is a possibility of stent restenosis and stent fracture resulting from excessive wrist and forearm movement. Surgical ligation would enable a repeat transradial approach in coronary reinterventions. In this era of radial access catheterizations, cardiac interventionists should be knowledgeable about appropriate evaluation and management of radial AVF.

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Abbreviations and Acronyms

AVF	arteriovenous fistula

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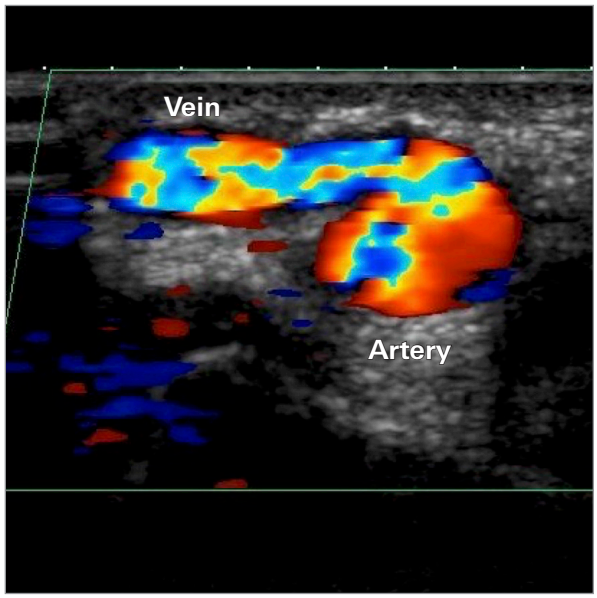

Fig. 3 Doppler ultrasound imaging shows an arteriovenous fistula.

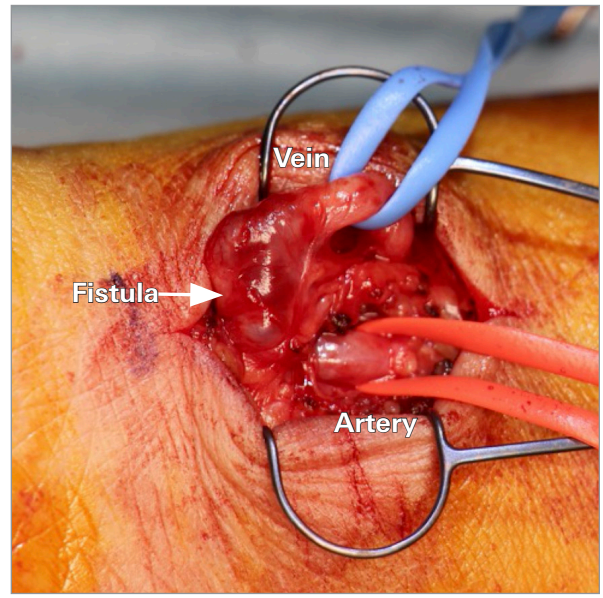

Fig. 4 Intraoperative image. The dilated arteriovenous fistula was ligated and obliterated.

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