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Iatrogenic Arteriovenous Fistula After Distal Transradial Coronary Angiography

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A 61-year-old woman with a history of hypertension, glucose intolerance, hyperlipidemia, and Sjögren syndrome presented at our hospital with crescendo angina. An exercise stress test with myocardial perfusion imaging revealed a severe, medium-sized apical defect. We made several attempts under ultrasonographic guidance to enter the right distal radial artery at the anatomic snuffbox for diagnostic coronary angiography. Access was obtained on the third attempt. A subsequent coronary angiogram revealed high-grade stenosis of the proximal left anterior descending coronary artery and diagonal branch. The patient then underwent successful percutaneous coronary intervention (PCI) with use of a 6F extra backup 3.5 guide catheter. At her follow-up visit on postoperative day 3, the patient was asymptomatic and reported no chest pain. However, physical examination revealed a thrill over the anatomic snuffbox. A duplex ultrasonogram showed an arteriovenous fistula (AVF) at the access site (Fig. 1A), which we decided to treat with simple compression. First, we modified a radial compression device (TR Band; Terumo Interventional Systems) to fit over the anatomic snuffbox by removing the device's rounded plastic support plate. We then positioned the device over the AVF, inflated it with 16 mL of air, and kept it in place for 4 hours (Fig. 2). A repeat duplex ultrasonogram confirmed resolution of the AVF (Fig. 1B). One month later, a follow-up duplex ultrasonogram showed a patent distal radial artery and no AVF.

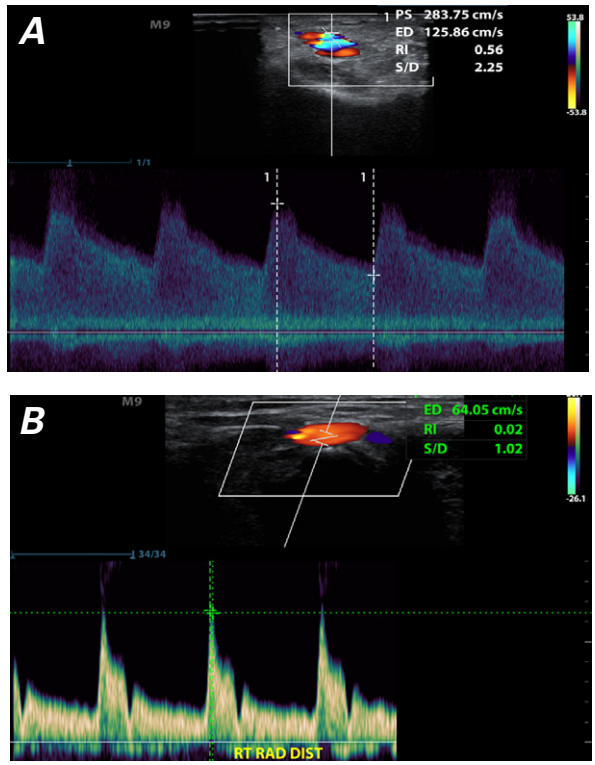

Fig. 1 *Duplex ultrasonograms of the right distal radial artery show* ***A****) an arteriovenous fistula at the anatomic snuffbox access site and* ***B****) its resolution after 4 hours of compression therapy.*

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Fig. 2 *Photograph shows treatment of the arteriovenous fistula with a modified radial compression device.*

Comment

Coronary angiography through the distal radial artery, a technique pioneered by Kiemeneij, is widely used.[1] Advantages include improved patient comfort and shorter hemostasis times.[2,3] However, we have found the learning curve to be steeper than for traditional transradial coronary angiography. Ultrasonographic guidance is very useful in the absence of a strong or palpable pulse, especially in smaller females. In rare cases, the distal radial artery approach can result in formation of an AVF at the access site because of the artery's proximity to venous structures and relatively small caliber. Detecting and treating such iatrogenic complications early is key. Simple manual compression should be considered first, although surgical correction may be necessary.[4] In this case, we successfully treated an AVF in the anatomic snuffbox with use of a modified compression device.

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