Arteriovenous fistula: rare complication of radial artery access

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DESCRIPTION
A 74-year-old Caucasian man with a medical history of hypertension, hyperlipidaemia and type 2 diabetes mellitus presented with unstable angina and subsequently underwent coronary angiography through the right radial artery. He had significant stenosis in the mid-left anterior descending artery, which was treated with a 3.0×28 mm Xience Alpine drug-eluting stent. The next day, he complained of numbness in the wrist area and on the exam was noted to have a palpable thrill in the area of his transradial access site. There was no circulatory compromise to the hand, and Allen’s test remained normal. Upper extremity arterial duplex ultrasound revealed an arteriovenous (AV) fistula between the distal radial artery and the radial vein, as well as between the radial artery and the cephalic vein (figures 1 and 2). No pseudoaneurysm was noted. We consulted vascular surgery, which elected to follow conservatively without any intervention. Subsequent follow-up at 6 and 12 months showed resolution of the AV fistula with no complications.

The radial artery and the femoral artery are the most commonly used access vessels for cardiac catheterisation. The transradial approach has been preferred over transfemoral access due to numerous complications occurring in the latter. Complications of the femoral approach include access site haemorrhage, retroperitoneal haemorrhage, pseudoaneurysm formation and rare AV fistulas.1 The formation of an AV fistula can precipitate high-output heart failure, steal syndrome and lower extremity limb ischaemia.1 Due to the decreased risk of bleeding, early ambulation and discharge, and low procedural cost, the transradial approach is being widely favoured for both diagnostic and interventional cardiac catheterisations.2,3 Also,
due to the enhanced comfort and reduced postprocedure bed rest, patients prefer the radial approach. The common procedural complications with transradial access include radial artery occlusion, non-occlusive radial artery injury and radial artery spasm. In rare circumstances, the formation of an AV fistula can be precipitated. AV fistula incidence is reported to be 0.04%.\textsuperscript{4} Its rarity is attributed to the fact that only small veins are present in the vicinity of the radial artery. Palpable thrill, persistent pain and swelling in the forearm following transradial access should raise suspicion, and the diagnosis is usually confirmed with duplex ultrasound. The Doppler spectrum of the veins can reveal arterialised blood flow, which is usually not seen (figure 2). The treatment depends on the size and location of the fistula. As in our case, spontaneous closure of the fistula is observed in majority of the cases. In rare instances, surgical management is required, which includes partial resection, ligation, excision and/or repair.\textsuperscript{4} The complications arising from the AV fistula include enlarging size leading to high-output cardiac failure or neurovascular compromise of the extremity.\textsuperscript{4} The best way to prevent such complications is by performing a real-time arterial ultrasound during radial artery cannulation.

Acknowledgements We acknowledge Dr Johnston for his contribution in image acquisition and in reading the vascular Doppler ultrasound.

Contributors AM and AB prepared the initial manuscript. AB collected the images. JK proofread and edited the manuscript. AM and AB proofread and finalised the manuscript. All authors agreed on the final version of the manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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