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IMAGES IN INTERVENTION

Percutaneous Endovascular Repair of a Radial Artery Pseudoaneurysm Using a Covered Stent

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A 65-year-old man with a history of hypertension and atrial fibrillation on oral anticoagulant agents underwent transradial percutaneous coronary intervention for an acute coronary syndrome. A week after the procedure, the patient presented with a progressively enlarging pulsatile mass at the radial puncture site (**Figure 1A**), which was confirmed by ultrasound to be a large pseudoaneurysm emanating from the right radial artery, measuring 27 × 17 mm (**Figure 1B**). Following 2 unsuccessful attempts of manual compression, and due to limited thrombin availability in our institution, we opted for percutaneous endovascular repair as an alternative to surgical repair.

A 6-F sheath was introduced into the ipsilateral ulnar artery (**Figure 1C**). Subsequent radial artery angiography revealed a narrow aneurysm neck with contrast flow into the pseudoaneurysm (Online Video 1). Using a 6-F IMA guide catheter, a 0.014-inch guidewire was advanced into the distal radial artery and a 3.0 × 18-mm covered stent was placed over the pseudoaneurysm neck, isolating the aneurysm sac (**Figure 1D**, Online Videos 2 and 3). Subsequent radial artery angiography demonstrated complete closure of the pseudoaneurysm without any signs of extravasation into the sac (Online Video 4). The pseudoaneurysm was then evacuated with a syringe and mild external compression was applied (**Figure 1E**). The next day, duplex ultrasonography detected a thrombosed pseudoaneurysm without to-and-fro flow and confirmed radial artery patency distal to the stent (**Figure 1F**). After 2 months of follow-up, the patient had a normal Barbeau test and no signs of recurrence.

Radial pseudoaneurysm is a rare complication after transradial interventions, affecting 0.03% of patients (1), with several predisposing factors, such as multiple puncture attempts, ongoing anticoagulation, inadequate post-procedural hemostasis, and large sheath size (2). Surgical repair was the only treatment option after failed attempts to induce pseudoaneurysm thrombosis by manual compression or thrombin injection. We herein describe the first successful attempt to our knowledge for percutaneous endovascular repair using a covered stent.

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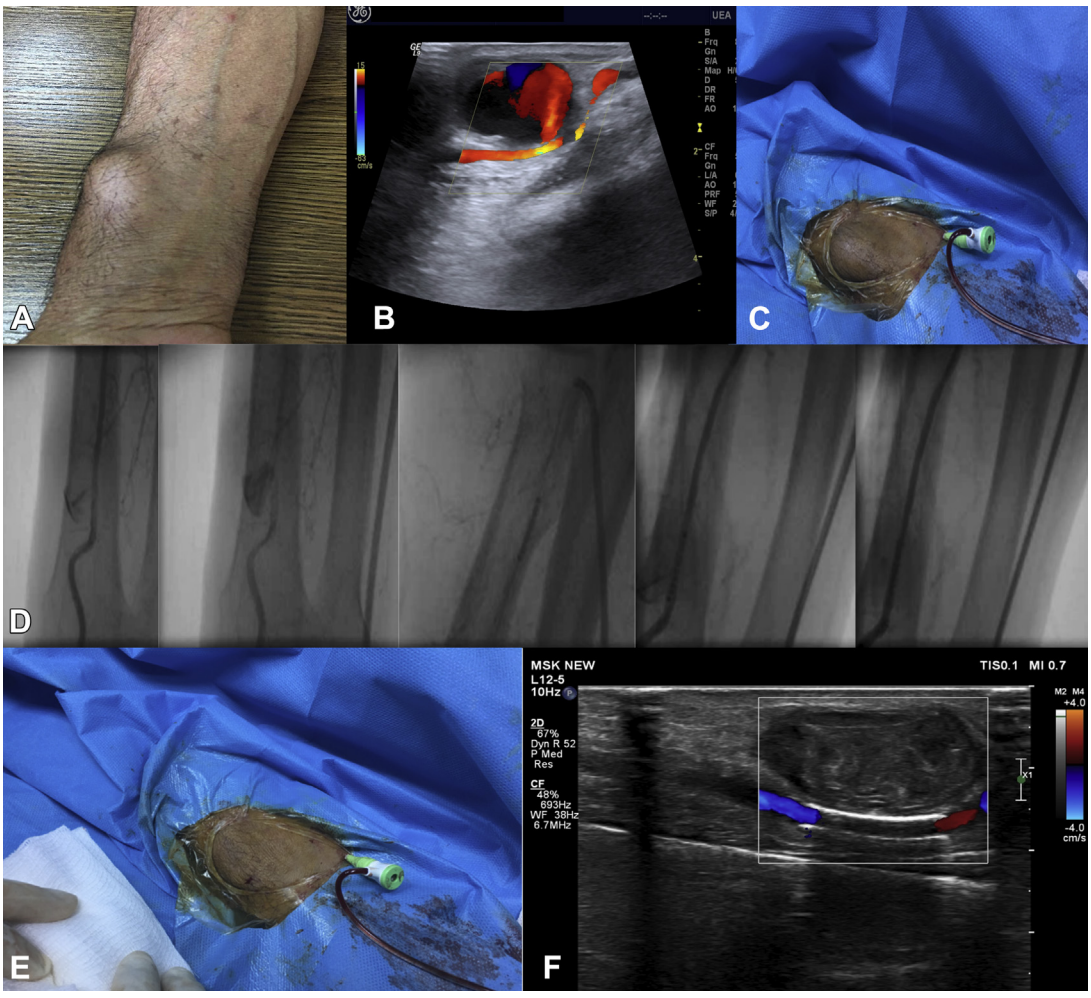
FIGURE 1 Synopsis of Pseudoaneurysm Features and Treatment



(A) Pulsatile mass at the radial puncture site. **(B)** Doppler ultrasonography demonstrating a large pseudoaneurysm emanating from the right radial artery with characteristic to-and-fro flow. **(C)** Ipsilateral ulnar artery cannulation. **(D)** Radial artery angiography demonstrating contrast flow into the pseudoaneurysm (Online Video 1). A covered stent was positioned over the aneurysm neck with the use of a 6-F IMA guide catheter and was successfully deployed, thereby isolating the aneurysm sac (Online Videos 2 and 3). Subsequent radial artery angiography demonstrating no signs of extravasation (Online Video 4). **(E)** Evacuated pseudoaneurysm following the procedure. **(F)** Doppler ultrasonography demonstrating pseudoaneurysm thrombosis with no to-and-fro flow.

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KEY WORDS percutaneous coronary intervention, pseudoaneurysm, radial artery

APPENDIX For supplemental videos, please see the online version of this paper.