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Editorial

Percutaneous treatment of coronary perforation in acutely occluded right coronary artery after reimplantation in the aortic root

The Bentall procedure involves composite graft replacement of the aortic valve, aortic root, and the ascending aorta with reimplantation of the coronary arteries into the graft.[1] Acute occlusion of the reimplanted coronary arteries can be challenging to treat with reoperation, as it carries a high risk of bleeding or infection. Conversely, percutaneous coronary intervention (PCI) can be logistically easier to perform but carries a risk of suture dehiscence and perforation. We present a case of acute occlusion of a reimplanted right coronary artery (RCA) after aortic root replacement. The RCA was successfully recanalized with PCI, but the procedure was complicated by anastomotic site perforation that was treated with covered stent implantation (see Fig. 1).

A 45-year-old man presented with ascending aortic aneurysm causing severe aortic regurgitation. He underwent the Bentall technique[1] using a Gelweave Valsalva Graft (Vascutek, Scotland, UK) replacement with tri-leaflet aortic valve resuspension and coronary reimplantation. On the first postoperative day, the patient developed inferior ST-segment elevation and progressive cardiogenic shock requiring insertion of an intraaortic balloon pump and multiple pressors.

Emergent diagnostic angiography revealed ostial occlusion of the RCA and patent circumflex and left anterior descending arteries. After heart team discussion, PCI was attempted through right femoral access with an 8-French Multipurpose guiding catheter. A Gaia 2nd guidewire was advanced to the distal RCA through a Corsair microcatheter, thereby restoring TIMI 1 flow. Subsequent low-pressure balloon inflations restored TIMI 2 flow; however, Ellis 3 perforation occurred at the anastomotic site possibly because of suture dehiscence. A balloon was immediately inflated

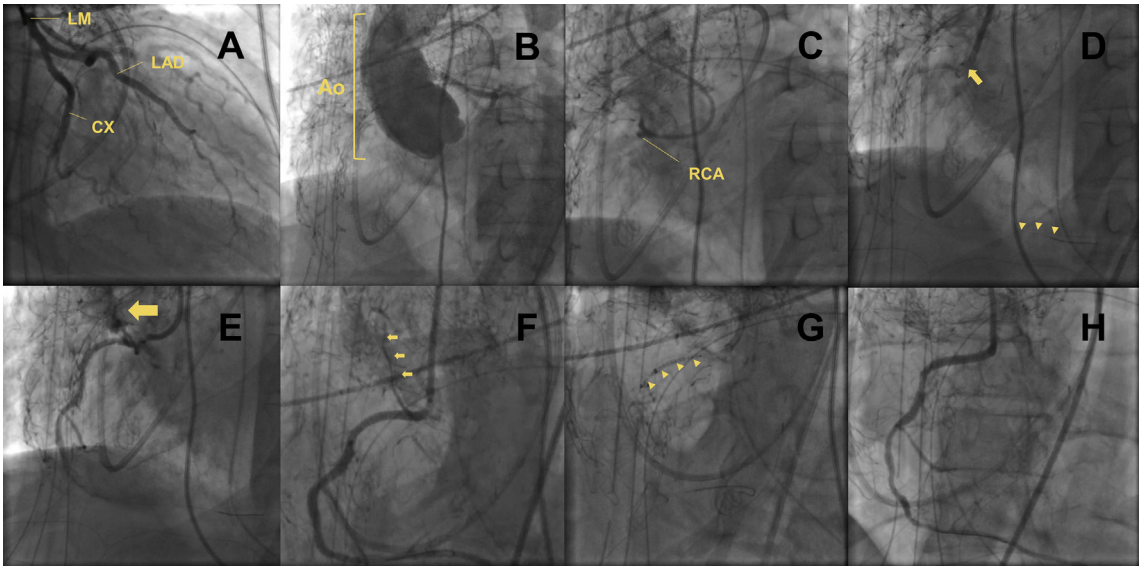

Fig. 1. Percutaneous management of a perforation that occurred during percutaneous coronary intervention of an acutely occluded reimplanted right coronary artery (RCA) after aortic root replacement. **Panel A:** Diagnostic angiography showing patency of the left main (LM) as well as left anterior descending (LAD) and circumflex (CX) arteries. **Panel B:** Aortography revealed ostial RCA occlusion. **Panel C:** Injection through a multipurpose guide catheter confirmed ostial occlusion of the RCA. **Panel D:** A Gaia 2nd guidewire (arrowheads) was advanced through a Corsair microcatheter (arrow) restoring TIMI 1 flow in the RCA. **Panel E:** Ellis 3 perforation (arrow) after low-pressure predilation of the proximal RCA. **Panel F:** Continuing extravasation (arrows) despite prolonged balloon inflation and covered stent implantation through a second guide catheter ("ping-pong" technique). **Panel G:** A second covered stent was delivered through a guide catheter extension (GuideLiner, Vascular Solutions, Minneapolis, MN, USA) (arrowheads). **Panel H:** An excellent final result was achieved with TIMI 3 flow in the RCA and successful sealing of the perforation.

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tamponading the perforation site. Two Graftmaster (Abbott Vascular, Minneapolis, MN, USA) covered stents were delivered through a guide catheter extension using the ping-pong guide technique,[2] successfully sealing the perforation.

In summary, coronary artery reimplantation during the Bentall procedure carries a risk of occlusion at the anastomotic site.[3] PCI of acutely occluded reimplanted coronary arteries can restore antegrade flow but carries a risk of perforation that requires immediate treatment.

Disclosures

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