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IMAGES IN INTERVENTION

Collapse of a Bioresorbable Novolimus-Eluting Coronary Scaffold

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Bioresorbable vascular scaffolds (BVSs) have many hypothetical advantages over metal stents due to early restoration of vasomotion, unimpaired imaging with computed tomography, as well as the maintenance of potential insertion sites for future bypass grafting.

We report a 66-year-old male patient who presented with unstable angina. Cardiac catheterization showed coronary artery disease with a high-grade stenosis of the proximal right coronary artery (RCA) (**Figure 1A**). After predilation with a 3.0-mm balloon, a 3.25 × 14-mm novolimus-eluting BVS (DESolve, Elixir Medical, Sunnyvale, California) was deployed at 12 atm. Thereafter, post-dilation with a 3.5-mm noncompliant balloon at 12 atm was performed. At the end of the procedure, no residual stenosis or dissection was observed (**Figure 1B**). Two months later, the patient presented to the emergency department with acute chest pain. Coronary angiography did not show restenosis or thrombosis in the scaffold area (**Figure 1C**). Optical coherence tomography (OCT) of the RCA showed partial malapposition of some struts with incomplete neointimal coverage but without restenosis (minimal/mean scaffold area, 3.21/5.03 mm^2) (**Figure 1E**). Five months after BVS implantation, the patient presented again with unstable angina. Coronary angiography showed subtotal occlusion of the RCA at the vascular scaffold site (**Figure 1D**). OCT revealed a collapsed scaffold as well as considerable proliferation of the neointima leading to restenosis (minimal/mean scaffold area, 1.01/2.73 mm^2) (**Figure 1F**, Online Video). We successfully treated the stenosis using 2 drug-eluting metal stents.

The observed partial malapposition with incomplete neointimal coverage 2 months after BVS implantation might partly explain the late scaffold discontinuity with subsequent strut protrusion, leading to BVS collapse. One possible reason for late BVS collapse might be a more rapid and nonuniform resorption process of this novel novolimus-eluting BVS leading to fragmentation of the malapposed scaffold. The reported reduced resorption time of 12 to 24 months for the novolimus-eluting BVS compared with 24 to 48 months for the everolimus-eluting BVS supports this hypothesis (1).

Although there are numerous pre-clinical and clinical studies on everolimus-eluting BVSs, data about performance of a novolimus-eluting BVS are sparse (2,3). Therefore, further meticulous studies are warranted for new BVS platforms before widespread use can be recommended.

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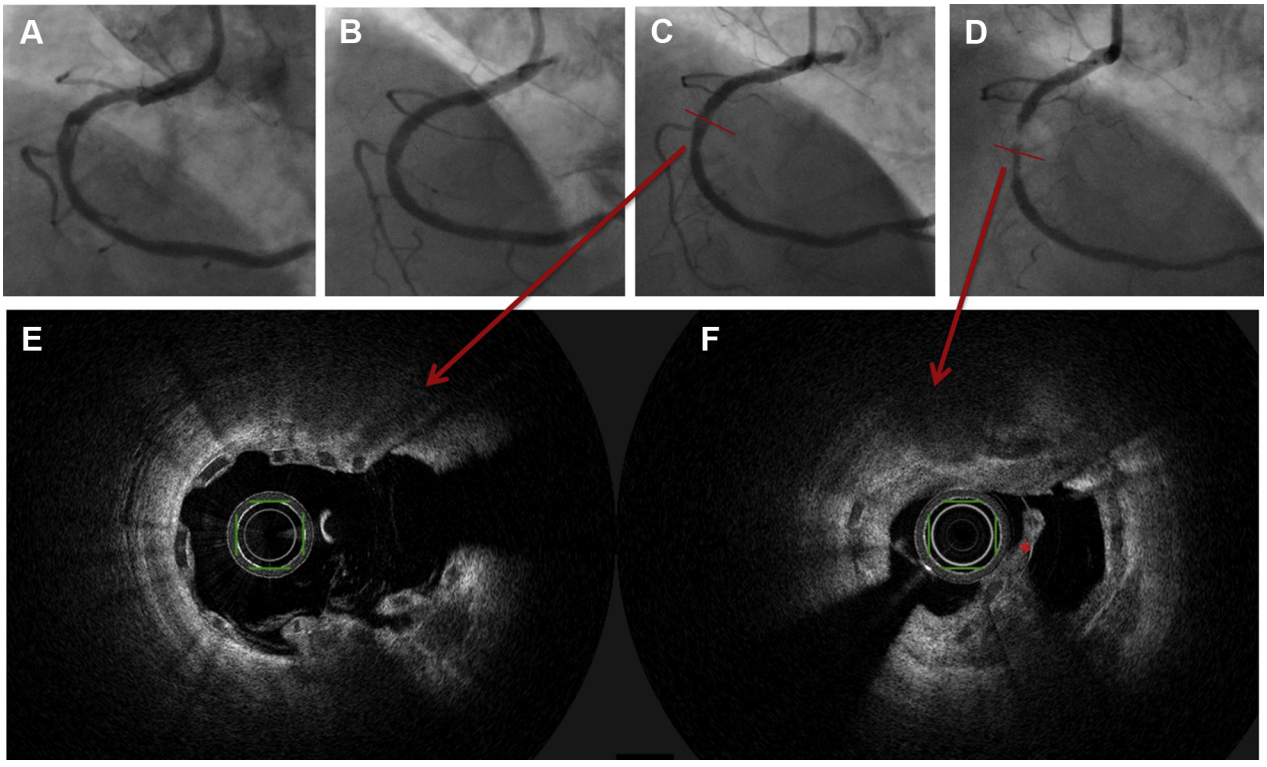
FIGURE 1 Angiography and Optical Coherence Tomography After Implantation of a Bioresorbable Novolimus-Eluting Coronary Scaffold



(A) High-grade stenosis of the right coronary artery caused by thrombus. **(B)** Angiographic result after treatment with a novolimus-eluting bioresorbable vascular scaffold (BVS). **(C)** Angiographic result 2 months after implantation of the scaffold. **(D)** Angiographic result 5 months after implantation of the BVS. **(E)** Optical coherence tomography (OCT) 2 months after BVS implantation (Online Video). **(F)** OCT 5 months after BVS implantation (Online Video). **Red asterisk** indicates a protruding strut of the collapsed scaffold.

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KEY WORDS BVS, collapse, coronary scaffold, novolimus

APPENDIX For a supplemental video please see the online version of this article.