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IMAGES IN INTERVENTION

# Very Late Restenosis Following Bioresorbable Scaffold Implantation

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A 70-year-old man who was enrolled in the ABSORB EXTEND trial (1) underwent percutaneous coronary intervention with implantation of a 3.0 mm × 18.0 mm Absorb bioresorbable vascular scaffold (Absorb BVS, Abbott Vascular, Santa Clara, California) for the de novo lesion in the mid-right coronary artery (**Figures 1A and 1B**). Optical coherence tomography (OCT) showed well-expanded Absorb BVS without strut fracture immediately after implantation (**Figure 1C, a to d**).

Follow-up angiography at 8 months demonstrated no restenosis at the BVS site (**Figure 1D**). OCT showed residual struts with preserved black box appearances that were completely apposed to the vessel and mostly covered with thin neointima (**Figure 1E, a′ to d′**). There was no evidence of scaffold fracture or discontinuity. He returned with unstable angina after 4 years following Absorb BVS implantation. Angiography demonstrated restenosis at the BVS site (**Figure 1F**). OCT showed excessive in-scaffold tissue growth with peristrut low-intensity area (PLIA) (**Figure 1G, a″ to d″**).

Absorb BVS has emerged as a new device to overcome the long-term limitations of drug-eluting stents by the transient presence of scaffolds. In our case, OCT images at 4 years showed a couple of preserved black box appearances and excessive neointimal proliferation accompanied by PLIA, although there was no evidence of PLIA or restenosis at 8 months. Sato et al. (2) reported that PLIA following Absorb BVS implantation was associated with neointimal formation in OCT study. Pathologically, PLIA suggested peristrut inflammation or neovascularization (3). These mechanisms (inflammation or neovascularization) might be at play in this case of late restenosis.

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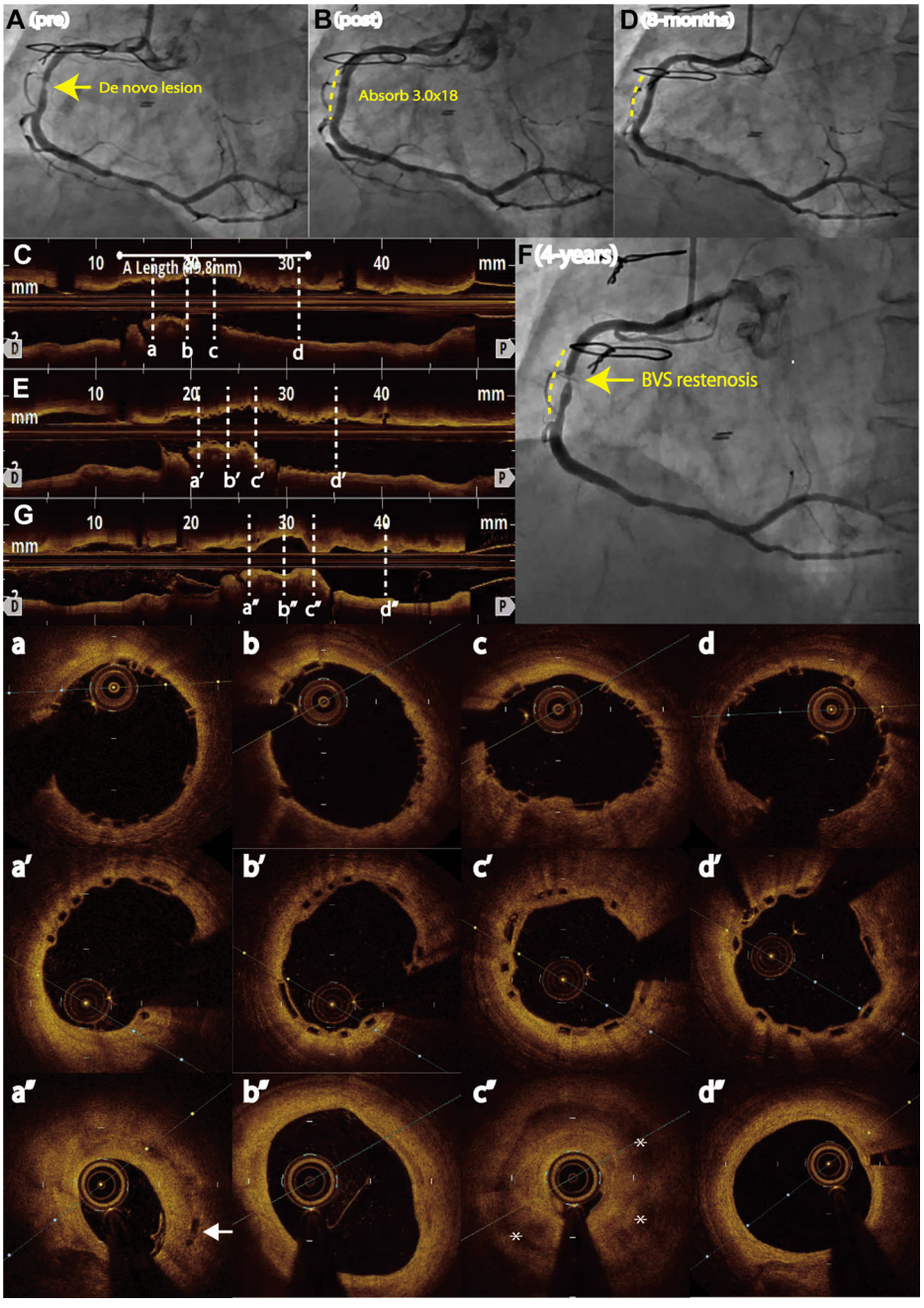
**FIGURE 1 Angiographic and OCT Images at Baseline, 8 Months, and 4 Years**




**(A)** Initial coronary angiogram demonstrating severe stenosis in the mid-right coronary artery. **(B)** Coronary angiogram after treatment with bioresorbable vascular scaffold (3.0 mm × 18.0 mm Absorb BVS). **(C)** Longitudinal optical coherence tomography image after BVS implantation **(a to d)**. Cross-sectional images showing an optimal scaffold apposition without any acute disruption. **(D)** Coronary angiogram at 8-month follow-up demonstrating no restenosis. **(E)** Longitudinal optical coherence tomography image at 8-month follow-up after BVS implantation **(a′ to d′)**. Cross-sectional images showing discernible struts mostly covered with thin neointima. **(F)** Coronary angiograms 4 years after BVS implantation demonstrating in-scaffold restenosis. **(G)** Longitudinal optical coherence tomography image at 4 years demonstrating in-scaffold restenosis **(a″ to d″)**. Cross-sectional images showing heterogeneous neointimal hyperplasia with peristrut low-intensity area **(asterisks in c″)**. The **arrow** indicates preserved black box appearance at 4 years **(a″)**. The **yellow dashed line** indicates the BVS site. The **white dashed lines** in the longitudinal view correspond to the respective cross sections **(a to d″)**.

## REFERENCES

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**KEY WORDS** bioresorbable scaffold, optical coherence tomography, restenosis