Letters

TO THE EDITOR

The Bioresorbable Scaffold
Will Oversizing Affect Outcomes?

Stent strut thickness is associated with both angiographic restenosis (1) and thrombogenicity (2). In addition, narrow struts may promote early neointimal coverage (3). On the other hand, thick and wide struts give a device higher radial strength and plaque coverage. Therefore, stent design has long been a compromise between strut thickness and radial strength. Given the increased strut thickness and width of the current bioresorbable scaffolds (BRS), concerns exist regarding appropriate scaffold sizing, which will affect scaffold/artery ratio.

The strut thickness of the Absorb BRS (Abbott Vascular, Santa Clara, California) is 157 μm, which

![Figure 1](image)

**Figure 1** Comparison of Absorb BRS and Metallic DES Strut Characteristics

(A) Hoops and links (Absorb BRS). Macroscopic picture showing the scaffold structure. White arrows show the links, and red arrows, the hoops of Absorb BRS (Abbott Vascular). (B) Strut thickness and width of 3.0-mm Absorb BRS, Cypher Bx Velocity (Cordis Corporation, Johnson & Johnson), and Xience V (Abbott Vascular) metallic stents. The table summarizes the strut thickness, width (link and hoop part), and percentages of abluminal strut surface area (ASSA) when implanted to the nominal size of the vessel. Macroscopic pictures have been reproduced with permission from Elsevier and Wolters Kluwer (4,5).
is roughly equivalent to the first-generation drug-eluting Cypher stent (Cypher Bx Velocity 152.6 μm, Cordis Corporation, Johnson & Johnson, Warren, New Jersey), and almost double the second-generation Xience stent (Xience V 81.3 μm, Abbott Vascular). However, the strut width is significantly larger in the Absorb BRS (2.5- and 3.0-mm: 190.5 μm, and 3.5-mm: 215.9 μm) in comparison to the metallic stents (Cypher 130 μm, and Xience V 81.3 μm) (Figure 1).

As shown Figure 2, if a 3.0-mm Absorb BRS is implanted in a 3.0-mm vessel, the scaffold occupies 27% of the vessel surface area and 5.7% of the vessel volume. However, if the same scaffold is implanted into a smaller vessel (2.5 mm), these percentages increase to 32.4% (vessel surface area) and 8.1% (vessel volume) (Figure 2). This fact may increase thrombogenicity and neointimal thickness, and impede the early neointimal coverage of the struts. By contrast, the larger size of BRS may have increased radial strength and lesion coverage when compared with smaller BRS and therefore may prevent restenosis and plaque prolapse. Considering these issues, proper sizing of BRS by intravascular imaging modalities including intravascular ultrasound or optical coherence tomography (or quantitative coronary angiography) is strongly recommended in order to limit excessive scaffold/artery ratio.

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REFERENCES