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# Lipid Plaque Modification During Resorption of Absorb Bioresorbable Scaffold

## Insights From Optical Coherence Tomography

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A 65-year-old man with non-ST-segment elevation myocardial infarction underwent implantation of two 3.0 × 28-mm Absorb bioresorbable vascular scaffolds (BVSs) (Abbott Vascular, Santa Clara, California), in a large obtuse marginal branch. Post-procedural optical coherence tomography (OCT) showed complete strut apposition, good scaffold expansion, and absence of fracture. The underlying vessel wall showed signs of a plaque prolapsing with a bright luminal aspect and high signal attenuation (**Figure 1A**), suggestive of fibroatheroma, possibly with macrophages and a discontinuity of the luminal contour.

Planned OCT 4.6 years later demonstrated complete scaffold resorption, with good lumen area (mean 5.4 $mm^2$). Comparison between baseline (**Figures 1A and 1A′**) and 4.6-year (**Figures 1B and 1B′**) OCT showed an apparent change in the described eccentric plaque with marked reduction in the light attenuation, suggesting a considerable modification in the overall lipid content. Inspection of the luminal contour—which at follow-up corresponded to the neointimal layer on top of the BVS—showed a homogenous, signal-rich tissue in the majority of the circumference except at 8 to 10 o'clock, where a superficial line with bright signal and abluminal transparent shadowing (**Figure 1B**) could be seen. The former is indicative of a fibrous neointimal layer, whereas the latter suggests macrophage accumulation.

Although the changes in optical properties in the underlying plaque of BVS could suggest plaque passivation, it remains unclear whether the neointimal macrophages infiltration represents a lower inflammatory grade of neoatherosclerosis, or merely the general scavenging function of those cells. To our knowledge, this is the first report on late fibroatheroma modification after BVS, highlighting the importance of further exploring the possible therapeutic benefits of absorbable scaffolds and stents, in terms of plaque modification and vessel healing at long term.

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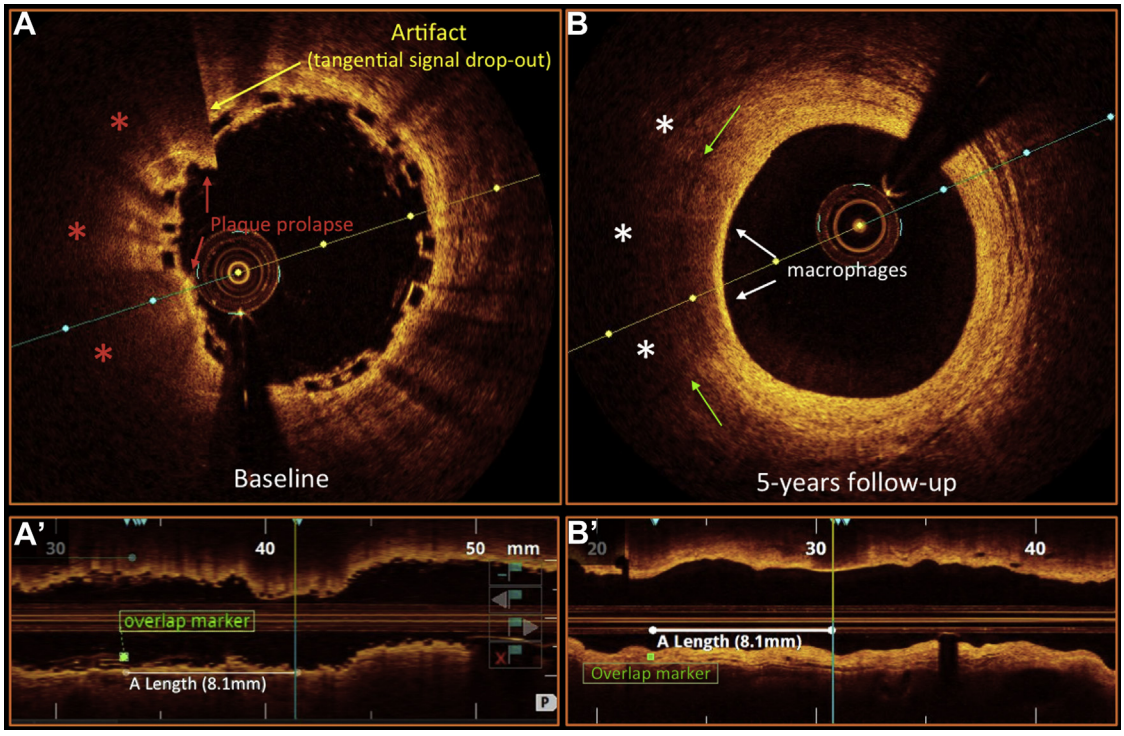
**FIGURE 1 OCT Changes in Coronary Plaque After BVS**




**(A)** shows a signal-poor region from 7 to 11 o'clock, with high light attenuation **(red asterisks)** and plaque prolapsing between struts **(red arrows),** suggestive of a fibroatheroma (cap thickness not possible to measure), possibly with macrophages and a discontinuity of the luminal contour. **(A′)** shows the longitudinal optical coherence tomography image. **(B and B′)** show the same site after 4.6 years, in which the optical signal damping appears less pronounced **(white asterisks)**, suggesting plaque stabilization. Moreover, the luminal homogeneous signal-rich layer that has formed during complete scaffold resorption is interrupted by a superficial line of brighter signal with abluminal transparent shadowing sharply delineated to the sides **(green arrows)**, consistent with macrophages, whose specific role remains unclear. BVS = bioresorbable vascular scaffold.

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