

Thrombotic Left Main Coronary Artery Occlusion Treated With Bioresorbable Scaffold

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A 56-year-old man with a history of smoking presented with an extensive anterolateral ST-segment-elevation myocardial infarction (Killip class III) and moderate left ventricular (LV) systolic dysfunction. Emergency coronary angiograms revealed acute thrombotic occlusion of the unprotected left main coronary artery (LMCA) (Fig. 1A) and a dominant right coronary artery contributing to Rentrop grade 2 collateral circulation (Fig. 1B). We directed a guidewire into the left anterior descending coronary artery (LAD) and then, under optical coherence tomographic (OCT) imaging guidance, deployed a 3.5 × 28-mm Absorb bioresorbable vascular scaffold (Abbott Vascular; no longer commercially available) in the unprotected LMCA and LAD. Next, we dilated the vessels with a 3.5 × 20-mm noncompliant

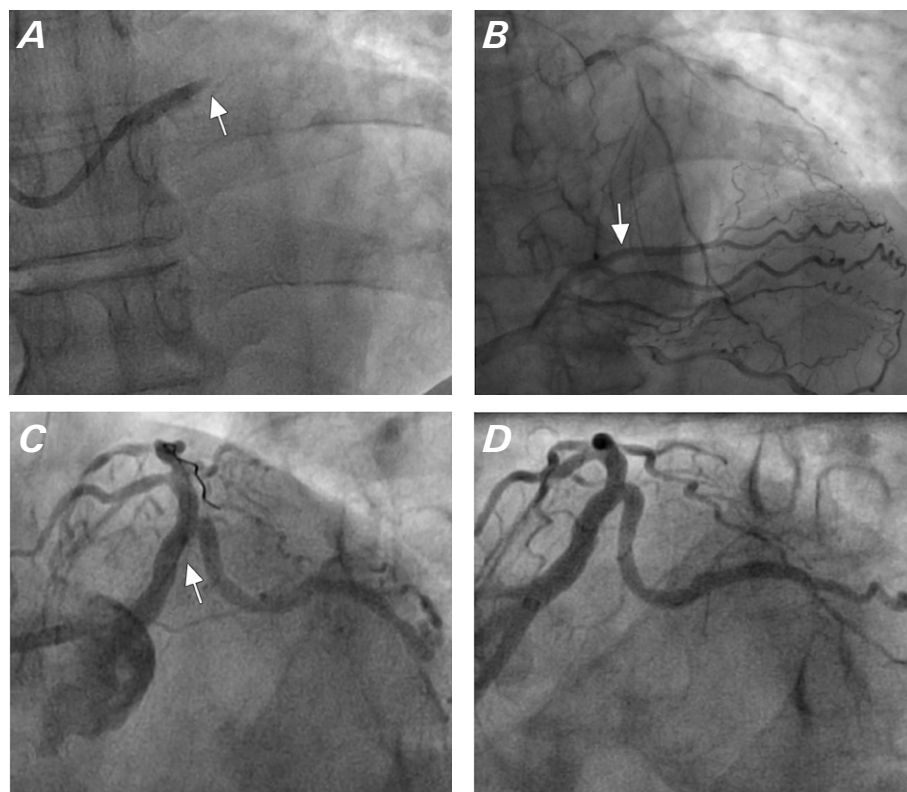


Fig. 1 Coronary angiograms show **A)** thrombotic occlusion of the unprotected left main coronary artery (LMCA) (arrow) and **B)** a dominant right coronary artery contributing to Rentrop grade 2 collateral circulation (arrow) at presentation; **C)** a patent unprotected LMCA and left anterior descending coronary artery (LAD) (arrow) immediately after implantation of a bioresorbable scaffold; and **D)** continued patency of the unprotected LMCA-LAD at the 40-month follow-up visit.

Supplemental motion images are available for Figures 1A, 1B, 1C, and 1D.

Citation:

Camacho Freire SJ, Gómez Menchero AE, Roa Garrido J, López Rojas M, Cardenal Piris R, Díaz Fernández JF. Thrombotic left main coronary artery occlusion treated with bioresorbable scaffold. *Tex Heart Inst J* 2022;49(4):e186912. doi: 10.14503/THIJ-18-6912

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balloon. The good angiographic result indicated that patency had been achieved (Fig. 1C). With use of OCT, we confirmed the correct apposition of the scaffold (Fig. 2A), but also identified a small distal edge dissection in the LAD unsuitable for stenting, leaving the ostium of the left circumflex coronary artery caged by struts (Fig. 2B). At the patient's 40-month follow-up visit, his LV function had recovered, and a coronary angiogram confirmed that the treated unprotected LMCA-LAD remained patent (Fig. 1D). Optical coherence tomograms showed most of the struts to be adequately covered with neointima and in the process of being reabsorbed (Fig. 2C); they also showed no remaining scaffold struts or neointimal bridges at the ostium of the left circumflex coronary artery and other branches (Fig. 2D).

Comment

To our knowledge, this is the first reported case of catastrophic acute thrombosis of an unprotected LMCA being treated with a bioresorbable scaffold. Acute myo-

cardial infarction due to unprotected LMCA disease is rare, but it is also clinically catastrophic and associated with a high mortality rate even after successful revascularization.¹ Despite the withdrawal of the Absorb bioresorbable scaffold from commercial sale,² bioresorbable scaffolds in general are still an attractive therapeutic option for de novo lesions or spontaneous coronary artery dissections during percutaneous coronary interventions, particularly in young patients with less complex lesions.

Published: 7 July 2022

References

1. Xu L, Sun H, Wang LF, Yang XC, Li KB, Zhang DP, et al. Long-term prognosis of patients with acute myocardial infarction due to unprotected left main coronary artery disease: a single-centre experience over 14 years. *Singapore Med J* 2016;57(7):396-400.
2. Neumann FJ, Sousa-Uva M, Ahlsson A, Alfonso F, Banning AP, Benedetto U, et al. 2018 ESC/EACTS guidelines on myocardial revascularization [published erratum appears in *Eur Heart J* 2019;40(37):3096]. *Eur Heart J* 2019;40(2):87-165.

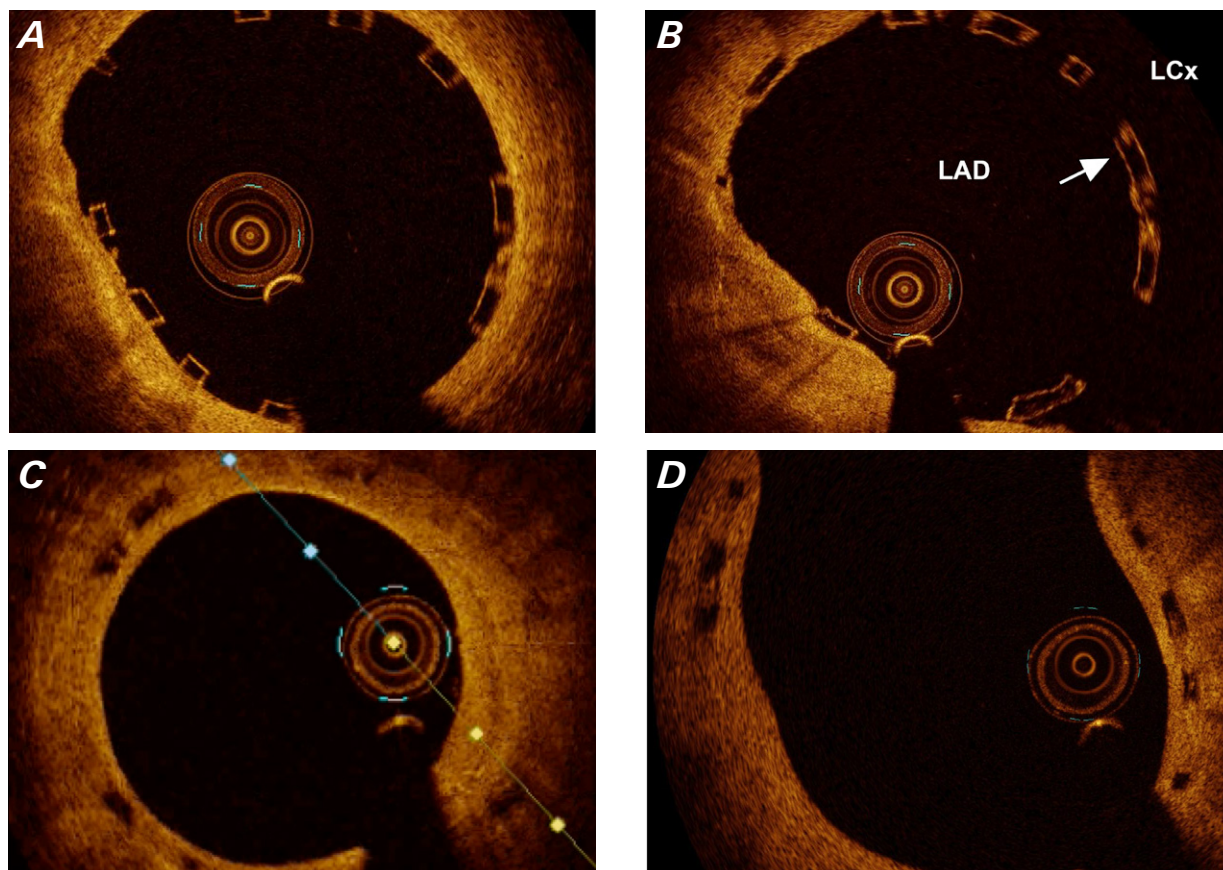


Fig. 2 Optical coherence tomograms (axial views) obtained immediately after implantation of a bioresorbable scaffold in the unprotected left main coronary artery and left anterior descending coronary artery (LAD) show **A**) correct apposition of its struts, but also a small distal edge dissection in the LAD, leaving **B**) the ostium of the left circumflex coronary artery (LCx) caged by struts (arrow). At 40 months, **C**) the scaffold struts are adequately covered by neointima and partially reabsorbed, the small distal edge dissection is healed, and there is no restenosis. **D**) No struts or neointimal bridges are seen at the level of the ostium of the LCx and other branches.

Supplemental motion images are available for Figures 2A-B and 2C-D.