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CLINICAL VIGNETTE

Bioresorbable vascular scaffolds for a long diffuse coronary lesion: insights from optical coherence tomography at 25-month follow-up

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A 57-year-old man with crescendo angina had a long segment of diffuse lesion in the left anterior descending artery (LAD) (Fig. 1A). Surgical revascularisation was precluded due to poor distal targets, so the patient underwent percutaneous coronary intervention. Overlapping drug eluting stents (DESs) would have resulted in a full metal jacket, which poses long-term risk of stent thrombosis and restenosis, which are often difficult to treat. Considering these issues, we used three overlapping bioresorbable vascular scaffolds (BVS) following adequate lesion preparation (Fig. 1B–D). At the LAD/first-diagonal (D1) bifurcation we used a short DES that overlapped the BVS to minimise the risk of losing D1, given the bulky nature of the scaffolds (Fig. 1E). An excellent angiographic result was obtained (Fig. 1F), which was confirmed by optical coherence tomography (OCT) (Fig. 2). The patient remained asymptomatic, and a follow-up angiogram with OCT at 25 months demonstrated continued good results. The LAD appeared larger on the latest angiogram. The OCT revealed complete endothelialisation, and detailed three-month and at 25-month follow-ups have shown an increase in the lumen area, as well as in the inner and outer scaffold areas, which was suggestive of positive remodelling (Figs. 3–5). The use of BVS technology escalated globally following the series of ABSORB trials. However, recent reports have raised safety concerns in regard to late and very late stent/scaffold thrombosis that have brought commercial usage of BRS in Europe and the United States to a halt. The bad outcomes seen in these trials may be due to a combination of poor procedural techniques and lesion selection. The scaffolds, due to lack of radial strength and bulky nature, should be avoided in certain cases, e.g. in calcified lesions, when the vessel calibre is either small (< 2.5 mm) or large (> 4.0 mm). The deployment technique must be optimal, with appropriate lesion preparation, scaffold sizing, and utilisation of image-guided optimisation. Justifying the use of BVSs in simple, type A lesions is difficult, because they probably do not offer additional benefits compared to the current generation DESs, which have excellent long-term outcomes. However, their use is probably best appreciated in long diffuse lesions, especially in the LAD, and it may even allow future surgical revascularisation.

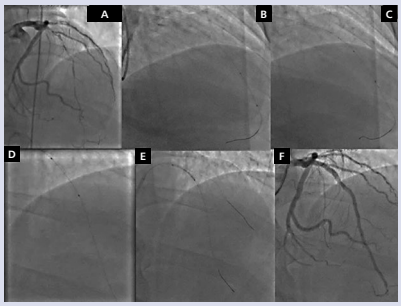


Figure 1. **A.** Severe diffuse lesion in the left anterior descending artery; **B–D.** Three overlapping bioresorbable vascular scaffolds; **E.** A short drug eluting-stent at the bifurcation; **F.** Final result after percutaneous coronary intervention

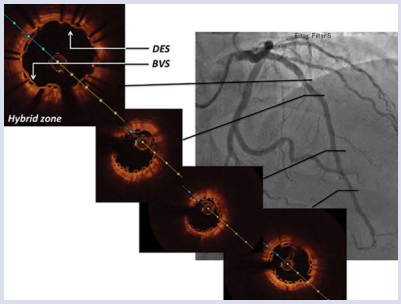
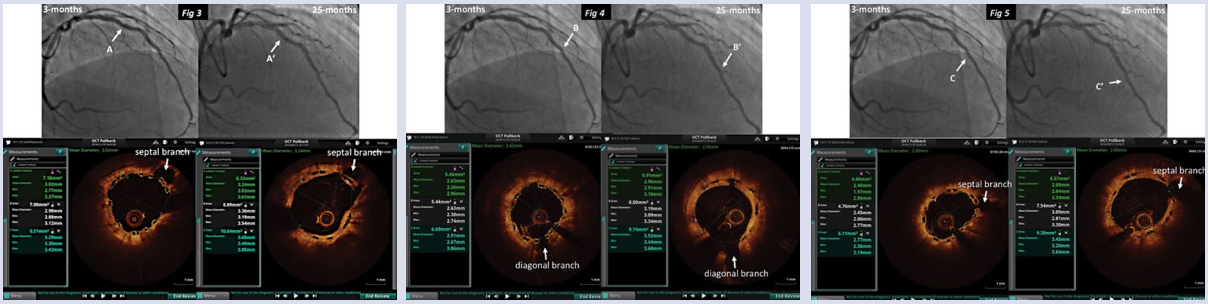


Figure 2. Optical coherence tomography at three-month follow-up; DES — drug-eluting stent; BVS — bioresorbable vascular scaffold



Figures 3–5. Optical coherence tomography images at similar locations on the left anterior descending artery (LAD) after percutaneous coronary intervention and at 25-month follow-up, with measurements exhibiting expansion of lumen, inner scaffold, and outer scaffold areas, indicating positive remodelling; **A, A'.** Measurements at a septal branch; **B, B'.** Measurements at a diagonal branch; **C, C'.** Measurements at another septal branch in the distal LAD

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