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Asia-Pacific Hotlines at TCT 2015: Bioresorbable vascular scaffolds versus metallic stents in patients with coronary artery disease (ABSORB China trial)

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What was your rationale for this study and what was known before?

Outcomes with drug-eluting stents (DES) have improved progressively with the latest contemporary designs. However, the presence of a polymer-coated permanent metallic cage constrains the vessel with potential late (>1 year) deleterious consequences, including impaired cyclic pulsatility, abnormal vasomotion, loss of normal vessel curvature, strut fracture and neoatherosclerosis, etc.[1]. As a result, 2-3% of patients per year develop late serious adverse cardiovascular events arising at the stent site. To overcome this limitation, fully bioresorbable vascular scaffolds have been developed, with the potential to improve late outcomes compared to metallic DES. Whether these devices are as safe and effective as the best-in-class metallic DES within the first year of implant remains to be seen. As more than 100,000 everolimus-eluting Absorb bioresorbable vascular scaffolds (BVS) (Abbott Vascular, Santa Clara, CA, USA) have been implanted worldwide, this is an imperative issue.

Did you experience any unexpected challenges?

ABSORB China, presented as a late-breaking trial at TCT 2015 and simultaneously published online in the Journal of the American College of Cardioliology[2], is a 480-patient trial which randomised Absorb BVS 1:1 to the XIENCE cobalt-chromium everolimus-eluting stent (CoCr-EES) (Abbott Vascular), the DES with the best outcomes of all contemporary DES. This trial was designed for regulatory approval in China, and is the first randomised ABSORB trial with a powered primary endpoint of angiographic in-segment late loss at one year. The results revealed that the Absorb BVS was non-inferior to CoCr-EES in in-segment late loss at one year (0.19 mm vs. 0.13 mm, pnoninferiority=0.01). Absorb BVS reported comparable rates of one-year angiographic restenosis and clinical outcomes compared to CoCr-EES, with low rates of death (0.0% vs. 1.3%), myocardial infarction (2.1% vs. 1.7%) and scaffold thrombosis (0.4% vs. 0.0%), respectively, demonstrating the safety and effectiveness of BVS in treating *de novo* coronary lesions in a Chinese population.

The first-generation BVS has thicker struts and a larger crossing profile than contemporary metallic DES. Nevertheless, similar high rates of acute device and procedural success were achieved with Absorb BVS in the present and prior ABSORB studies, comparable to those of CoCr-EES in non-complex lesions. In the present study, aggressive predilatation was recommended, and post-dilatation was performed at a higher rate with BVS than CoCr-EES (63.0% vs. 54.4%, p=0.05), which may have helped achieve the high rates of acute procedural success with a bail-out rate of only 2.0%.

How does the conclusion apply to your daily practice?

Improvements in implantation technique (e.g., routine post-dilatation or more frequent use of intravascular imaging guidance, which was rarely used in the present study) and device iterations (thinner struts) may further improve deliverability and angiographic and clinical outcomes, especially in complex lesions.

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Conflict of interest statement

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