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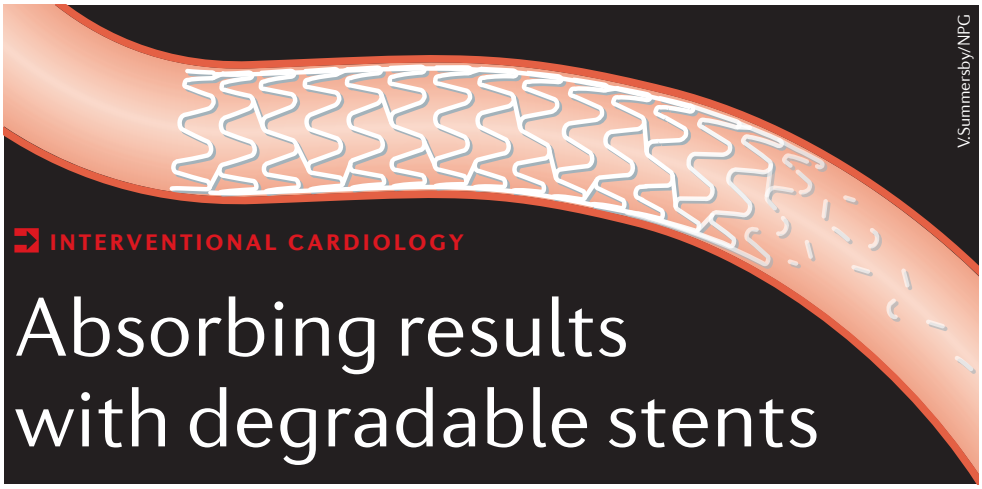

INTERVENTIONAL CARDIOLOGY

Absorbing results with degradable stents

Two trials published in *The Lancet* call into question whether bioresorbable scaffolds, and stents with biodegradable polymers have any long-term superiority over previous-generation metallic stents with durable polymers. The trials were both presented at the TCT 2016 conference in Washington DC, USA.

Thin-strut stents with biodegradable polymers and fully bioresorbable scaffolds have been designed in response to concerns that the continuing presence of rigid metallic stents years after implantation leads to accelerated in-stent neoatherosclerosis and impairment of vasomotor function.

In the ABSORB II trial, 501 patients with coronary artery stenosis were randomly assigned to receive an everolimus-eluting bioresorbable scaffold (Absorb; Abbott Vascular, USA) or an everolimus-eluting metallic stent (Xience; Abbott Vascular, USA). After 3 years (by which time the bioresorbable scaffold is expected to be well degraded), vasomotor reactivity (the primary end point) was not significantly different between the two groups (0.047 mm vs 0.056 mm; $P = 0.49$ for superiority). Moreover, late luminal loss (the co-primary end point) was larger in the Absorb group than in the Xience group (0.37 mm vs 0.25 mm; $P = 0.78$ for noninferiority). Of note, the rates of definite or probable stent thrombosis and of target-vessel myocardial infarction were higher in patients treated with the bioresorbable scaffold than with the drug-eluting metallic stent. According to the investigators, "the benefit and need for prolonged dual antiplatelet therapy after bioresorbable scaffold implantation" requires further study.

An alternative to completely resorbable scaffolds is stents with very thin struts and a biodegradable polymer, which leave only a bare-metal stent after polymer resorption. In the all-comer BIO-RESORT trial, three stents were compared: a very-thin-strut, biodegradable-polymer, everolimus-eluting, platinum–chromium stent (Synergy; Boston Scientific, USA); a very-thin-strut, biodegradable-polymer, sirolimus-eluting, cobalt–chromium stent (Orsiro; Biotronik, Switzerland); and a thin-strut, durable-polymer, zotarolimus-eluting stent (Resolute Integrity; Medtronic, USA). A total of 3,514 patients with coronary artery disease (70% with acute coronary syndromes and 31% with ST-segment elevation) were randomly allocated to receive one of the three stents. After 12 months of follow-up, the combined safety (cardiac death or target-vessel-related myocardial infarction) and efficacy (target-vessel revascularization) end point occurred in 4.7%, 4.7%, and 5.4% of patients in the Synergy, Orsiro, and Resolute Integrity groups, respectively, confirming the noninferiority of the biodegradable-polymer stents compared with the durable-polymer stent. Similarly, the rate of definite stent thrombosis was the same in each group (0.3%). The investigators will now continue their follow-up of patients to 5 years.

"The findings demonstrate to cardiologists or patients who prefer a biodegradable-polymer, drug-eluting stent that the use of the novel very-thin-strut Synergy and Orsiro stents is safe and efficacious," comments Clemens von Birgelen, lead author of the BIO-RESORT trial report. However, in an accompanying editorial in *The Lancet*, Aloke Finn and Renu Virmani note "the very low event rates in all three stents at 1 year", and pose the question "are design improvements in drug-eluting stents even necessary?"

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ORIGINAL ARTICLES Serruys, P. W. *et al.* Comparison of an everolimus-eluting bioresorbable scaffold with an everolimus-eluting metallic stent for the treatment of coronary artery stenosis (ABSORB II): a 3 year, randomised, controlled, single-blind, multicentre clinical trial. *Lancet* http://dx.doi.org/10.1016/S0140-6736(16)32050-5 (2016) | von Birgelen, C. *et al.* Very thin strut biodegradable polymer everolimus-eluting and sirolimus-eluting stents versus durable polymer zotarolimus-eluting stents in allcomers with coronary artery disease (BIO-RESORT): a three-arm, randomised, non-inferiority trial. *Lancet* http://dx.doi.org/10.1016/S0140-6736(16)31920-1 (2016)

FURTHER READING Indolfi, C. *et al.* Bioresorbable vascular scaffolds — basic concepts and clinical outcome. *Nat. Rev. Cardiol.* http://dx.doi.org/10.1038/nrcardio.2016.151 (2016)