Complication of BRS: Thrombosis and Restenosis

Sang-Rok Lee, MD, PhD

Division of Cardiology

Chonbuk National University Hospital, Jeonju, Chonbuk, South Korea

The use of fully bioresorbable stent technology and specifically the ABSORB™, a bioresorbable vascular scaffold (BRS) stent, is a breakthrough technology in the current era of percutaneous coronary interventions. The current understanding and the clinical evidence from trials/registries of ABSORB BRS including both simple and more complex "real-world" coronary lesions showed the potential roles. However, considering the current limitations of this device successful implantation of the ABSORB BRS has the crucial role in long-term results. Owing to differences in the structural and mechanical properties of the ABSORB BRS, meticulous attention to scaffold implantation is essential for procedural success and favorable clinical outcomes. Suboptimal implantation with underexpansion, malapposition, and incomplete lesion coverage are the main mechanisms for BRS thrombosis (similar to metallic stent thrombosis). Discontinuation of dual antiplatelet therapy (DAPT) might be a secondary contributor in several late events.

For the purposes of simplicity, an algorithm has been devised through consensus on best practice and is described by the procedural doctrine articulated as the “Five P’s”: Preparation of the lesion; Proper sizing of the vessel; Pay attention to expansion limits; Post-dilatation using an optimally sized noncompliant balloon; and Prescription for post-PCI DAPT.

BRSs have been evaluated in highly selected study cohorts with simple lesions in low-risk patient populations, whereas vascular response in real-world patients might be differ. Because BRSs are being increasingly used in complex lesions, several complications such as

BRS thrombosis (early or late), acute disruption, restenosis, neoatherosclerosis and aneurysm have been reported. In this session, the presenter would like to summarize the BRS complications such as stent thrombosis and re-stenosis.