

BRS Imaging: What We Learned?

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Bioresorbable vascular scaffolds (BVS) provide a promising novel approach for the percutaneous intervention in patients with coronary artery disease. Disappearing scaffolds has been considered to reduce not only the incidence of stent related events in terms of stent thrombosis, in-stent restenosis, neoatherosclerosis but also the duration of antiplatelet use. It was very promising that initial intracoronary imaging data showed complete bioresorption of BVS associated with late vessel lumen enlargement, plaque regression, and restoration of endothelial function (vasomotion).

However the issue of stent thrombosis after implantation of Absorb BVS, which is the most widely used BVS in the world, has been raised from several clinical studies including ABSORB II and III clinical studies and registries. Recently published meta-analysis showed an increased incidence of subacute scaffold thrombosis with BVS compared with everolimus-eluting metallic stents. However, an optimal implantation technique with intracoronary imaging may overcome this limitation and favor the large-scale implementation of this new technology.

Intracoronary imaging could provide proper information about vessel size and plaque characteristics (both morphology and component) before procedure and assess accurate stent apposition and expansion which are not evaluated by angiogram alone. Optical coherence tomography (OCT) is the best tool for analysis the relationship between stent and vessel among various intracoronary imaging modalities. Previously an OCT study from the ABSORB cohort B trial reported the incidence and imaging outcomes of acute scaffold disruption and late structural discontinuity after implantation of the BVS. They suggested that acute scaffold disruption was a rare iatrogenic phenomenon that has been anecdotally associated with symptoms or clinical events, whereas late strut discontinuity was observed in approximately 40% of patients and could be viewed as a serendipitous OCT finding of a normal bioresorption process without clinical events. However stent thrombosis related with late discontinuity was also reported from other studies.

Intracoronary imaging might have an important role during percutaneous intervention with BVS in patients with coronary disease. Proper lesion preparation, accurate stent sizing and optimal stent implantation might be crucial for BVS implantation.