

Letter to the Editor

Second versus first generation drug eluting stents during stent overexpansion

Dear Editor,

Recently European Review for Medical and Pharmacological Sciences reports the results of two different overexpansion techniques during first generation drug eluting stent (DES) deployment. Patients with different proximal and distal coronary artery reference segments were recruited in the study and twenty months follow up results of high pressure expansion (group A) and two different pressure expansion (group B) (high pressure for proximal end, low pressure for distal end) strategies were compared. Results are very interesting. Authors reported similar restenosis rates in both groups but higher late lumen loss in group A¹.

Drug-eluting stents were developed to overcome the relatively high rates of restenosis with bare metal stents. The first two DES to be approved in the United States were the sirolimus-eluting stent (Cypher) in 2003 and (Taxus) in 2004. They are now often referred to as "first generation" DES. In 2008, the zotarolimus-eluting stent and the everolimus-eluting stent were approved for use and they are referred to as "second generation" DES. Cypher and Taxus stents (Taxus Ion still available with major modifications compared to Taxus) are no longer available in the United States and Europe and paclitaxel-eluting stent are infrequently used due to superiority of second generation stents.

Increased thrombogenicity and smooth muscle cell proliferative response induced by the metal struts are major disadvantages of coronary stenting. This was clearly evaluated in intracoronary stenting and angiographic results: strut thickness effect on restenosis outcome (ISAR-STEREO) trial². Compared to first generation DES second generation DES have thinner struts which cause less restenosis. Besides strut thickness, there are other differences in mechanical and physical properties between two generations such as stent material, polymer durability and drug elution kinetics.

Lin et al¹ evaluated two different overexpansion patterns in vessels with different proximal and distal reference segments. Beside good study design they conducted the study between 2009 and 2010 – mainly the first generation DES era. In the light of the recent medical literature second generation stents have lower late luminal loss rates even in patients with overexpansion. A new study with similar design should be conducted with second generation DES which can alter our daily practice during DES deployment.

Conflict of Interest

The Authors declare that they have no conflict of interests.

References

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