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Editorial

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Thick or Thin, Durable or Biodegradable Polymers: Does Stent Design Still Matter?

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▸ See the article "Comparison of Thick Biolimus A9-Eluting Stent and Thin Zotarolimus-Eluting Stent in Multi-Vessel Percutaneous Coronary Intervention" in volume 55 on page 396.

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Advances in stent manufacturing technology have enabled thinner struts with maintained radial force, while biocompatible polymers ensuring consistent anti-proliferative drug release have lowered stent failure rates.[1] In contrast to first-generation drug-eluting stents (DESs), which were associated with an increased risk of stent thrombosis, next-generation durable polymer DES (DP-DES) have been shown to significantly reduce the risk of stent thrombosis while maintaining low rates of in-stent restenosis compared to bare-metal stents.[2][3] However, the risk of very late stent thrombosis remains following the implantation of second-generation DES, potentially due to chronic vascular inflammation induced by the persistent polymer within the stent.[4] In this context, DESs with biodegradable polymers (BP-DESs), which could minimize the possible polymer-related complications, are increasingly utilized in contemporary clinical practice.[5] Despite this rationale, robust evidence from randomized controlled trials assessing the impact of stent platform, polymer design, and pharmacologic characteristics on clinical outcomes remains limited.

In this issue of *Korean Circulation Journal*, Nam et al.[6] presented the results of a prospective, open-label, multicenter, randomized controlled trial evaluation whether a biolimus A9-eluting BP-DES with thick struts is non-inferior to a zotarolimus-eluitng DP-DES with thin struts in patients undergoing multi-vessel percutaneous coronary intervention with respect to a composite outcome of all-cause death, myocardial infarction, or any revascularization for 2 years. Among the 936 patients randomly assigned to either biolimus A9-eluting BP-DES (n=472) and zotarolimus-eluting DP-DES (n=464), there was no significant differrence in the primary endpoint occurrence (11.2% vs. 10.9%; hazard ratio, 1.00; 95% confidence interval, 0.68–1.48; p=0.99), confirming the primary non-inferiotiry hypothesis. Concordantly, the risks of each individual component of the primary endpoint—all-cause death, myocardial infarction, or any revascularization—were comparable between the 2 groups. Interestingly, the rate of device failure requiring implantation of an alternative DESs was higher in patients treated with the biolimus A9-eluting BP-DES, likely due to its inherent stent design. Notably, the relatively thinner cobalt–chromium struts (81–91 μm) of zotarolimus-eluting DP-DES may enhance deliverability and conformability in complex lesions compared to the thicker stainless steel struts (114–120 μm) of biolimus A9-eluting BP-DES.

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Data Sharing Statement
The data generated in this study is available from the corresponding author upon reasonable request.

The contents of the report are the author's own views and do not necessarily reflect the views of the *Korean Circulation Journal*.

As the authors acknowledged, relatively lower event rates than expected should be considered during interpretation of the result, as a major limitations. These findings are consistent with those of the HOST-REDUCE-POLYTECH-ACS (Harmonizing Optimal Strategy for Treatment of Coronary Artery Diseases—Comparison of Reduction of Prasugrel Dose or Polymer Technology in ACS Patients) trial, which demonstrated comparable outcomes between BP-DES and DP-DES in patients with acute coronary syndrome, with respect to the primary composite endpoint of all-cause death, nonfatal myocardial infarction, or any repeat revascularization at 12 months.[7)]

Taken together, In the contemporary era, where most DESs have highly refined stent platforms, polymers, and pharmacologic profiles, achieving optimal procedural results through intravascular imaging, physiologic assessment, optimal medical therapy, and cardiac rehabilitation appears to be of primary importance, regardless of DES type.

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