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"Leave Nothing Behind": Is It a Dream?

EDITORIAL COMMENT

Despite advances in Drug-Eluting Stent (DES) technology, at 10-year follow-up there has been no significant difference between DES and Bare-Metal Stent (BMS) in terms of target-lesion revascularization or stent thrombosis (P = .7).[1] After about 18 months, a DES is essentially nothing more than a metallic implant and a source of reaction-inflammation. These long-term adverse features of DES have given rise to the "Leave Nothing Behind" hypothesis.

The European Bifurcation Club's Keep it Simple, Swift, and Safe (KISS) principle guides the main treatment approach. Although stenting the main branch with provisional side-branch stenting remains the basic strategy, carinal shift and significant side-branch ostial narrowing sometimes make this impossible.

In the current issue's publication on DCB use in bifurcation lesions,[2] the author's meta-analyses did not demonstrate the superiority of DCB in bifurcation lesions.[2] However, these studies exhibit a high degree of heterogeneity. In the DEBUIT trial,[3] the main determinant of DCB's inferiority to DES was use of a matrix-free DCB. In addition to the drug, the presence of a carrier matrix both accelerates transfer into the vessel wall and enhances efficacy. Moreover, both the DEBUIT[4] and BABILON trials[4] included concomitant use of a BMS alongside DES; the higher restenosis rate with BMS further increases heterogeneity of results.

Jiang and Liu[5] examined DCB use in bifurcation lesions through meta-analysis and showed that side-branch DCB application significantly reduced MACE; this finding held for both randomized and non-randomized studies.[5] Ikuta et al[6] demonstrated that 71% of cases treated with side-branch DCB exhibited late lumen gain (LLG) rather than late lumen loss (LLL).

In the DCB-BIF trial, Gao et al compared main-branch stenting with side-branch treatment using either DCB or a non-compliant balloon (NCB).[7] They found that the primary endpoint was significantly lower in the DCB group (7.2% vs. 12.5%, P = .013). This result was driven primarily by a lower rate of periprocedural myocardial infarction (MI) in the DCB group.[7] Paradoxically, despite the increase in peri-procedural MI, there was no change in TLR, rendering the study's conclusions debatable. This discrepancy may reflect the drug's therapeutic effect, prolonged inflation times with DCB, or that troponin elevations were not deemed sufficient indication for repeat intervention.

Her et al[8] divided de novo bifurcation lesions into three groups—main-branch DCB, DES, or medical therapy alone—and reported LLL at the side-branch ostium of −0.16 ± 0.45 mm in the DCB group, 0.08 ± 0.38 mm in the medical group, and 0.50 ± 0.52 mm in the DES group (P < .001).[8]

In the REC-CAGEFREE I Trial, Gao et al[9] showed that in non-complex lesions, DCB was inferior to DES (P = .0008).[9] However, subgroup analysis in the same study found DCB non-inferior to DES in small vessels and bifurcation lesions.[9]

WHICH DCB SHOULD WE USE IN BIFURCATION LESIONS?

In the SPACIOUS study,[10] sirolimus- and paclitaxel-coated balloons were compared. While there was no significant difference in LLL between groups (P = .59),

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restenosis was lower in the sirolimus-coated balloon group (4.4% vs. 12.4%, *P* = .043).

As a result, Recent data suggest that at least in small vessels and bifurcation lesions (in the absence of dissection beyond type C in the side branch and with residual stenosis under 30%), DCB offers efficacy at least equivalent to DES or NCB.

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