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LETTER TO THE EDITOR



Drug-coated balloons for coronary bifurcations lesions: a new approach in the 'BioPCI' era?

The era of 'bioPCI' guided by the principle of 'leaving nothing behind' is progressively reshaping contemporary interventional cardiology [1,2]. In this context, drug-coated balloons (DCBs) have regained increasing attention, supported by a growing body of evidence indicating their usefulness for side branch (SB) treatment in coronary bifurcations lesions (CBLs). These lesions accounted for nearly 20% of all percutaneous coronary interventions (PCI) and remain associated with reduced procedural success and inferior long-term outcomes compared with non-bifurcation PCI [3].

We read with great interest the comprehensive review by Fezzi et al. [4] in *EuroIntervention*, addressing the expanding role of DCBs in coronary bifurcation PCI, particularly within the framework of provisional stenting strategy. The authors propose an elegant, pragmatic and anatomy-driven approach based on Medina classification, advocating procedural simplification and standardisation.

Randomised clinical trials (RCTs) including SARPEDON [5], PEPCAD-BIF [6], BEYON [7] and DCB-BIF [8], consistently demonstrated the superiority of DCB over plain balloon angioplasty (POBA) for SB treatment [9,10]. At mid-term follow-up, DCB use was associated with significantly reduced late lumen loss (LLL) (0.13 ± 0.31 vs 0.51 ± 0.66 ; $p=0.045$) and lower rates of in-stent restenosis (ISR) (6% vs 26%; $p=0.045$). Importantly, the DCB-BIF⁸ trial further confirmed a meaningful reduction in 12-month major adverse cardiac events (MACE) (7.2% vs 12.5%, hazard ratio 0.56, 95% CI: 0.35–0.88; $p=0.013$), largely driven by a reduction in myocardial infarction.

The OCVB-BIF [11] study represents the latest addition to this evidence base. In patients with SB diameters between 2.0 and 3.0 mm undergoing provisional drug-eluting stent (DES) implantation in the main vessel, DCB use resulted in a significant reduction in SB restenosis at 9 months (8.1% vs. 18.3%), as well as lower residual diameter stenosis (32.5% vs. 36.2%; $p=0.03$), and larger minimal lumen diameter (1.45 mm vs. 1.32 mm; $p=0.02$). Interestingly, LLL in the main vessel was also significantly lower in the DCB group (0.21 mm vs. 0.36 mm; $p=0.037$), underscoring a possible beneficial impact beyond the SB.

Beyond SB-focused strategies, Pan et al. [12] reported a superiority of a DES-DCB approach over DES-only PCI at 2-year follow-up in true bifurcation lesions, with lower target lesion failure (7.6% vs 14.4%) and reduced LLL (0.13 vs 0.42 mm; $p<0.001$). These observations are supported by emerging real-world registries and smaller cohort studies suggesting improved durability and reduced need for revascularization with hybrid approaches [13].

Importantly, no excess risk of coronary dissection has been demonstrated with the use of DCB. While bailout stenting remains mandatory in the presence of

flow-limiting dissections (NHLBI types C-F: National Heart, Lung, and Blood Institute criteria) [14], accumulating data suggest that low-grade dissections (types A-B) [14,15] may confer a favourable vessel remodelling and contribute to improved long-term outcomes following DCB angioplasty [16]. This phenomenon may reflect enhanced drug penetration into the vessel wall and adaptive arterial healing mechanisms.

In summary, DCBs have emerged as a credible and effective alternative for SB management in coronary bifurcation PCI. Current evidence supports their superiority over POBA and favours hybrid strategies over complex stent configurations in selected anatomies. However, most available data are limited to short- and mid-term follow-up (9 months to 2 years) and adequately powered randomised trials with extended observation periods are now required to confirm the durability and generalisability of DCB-based strategies.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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