

## Management of Coronary Ostial Stenosis with Drug Coated Balloons: Technical and Clinical Aspects

To the Editor,

In clinical practice, management of coronary ostial stenoses (aorto-ostial or bifurcation lesions) with percutaneous coronary intervention (PCI) might be associated with adverse outcomes largely due to a variety of procedural and long-term factors including inadvertent stent positioning (resulting in proximal or distal geographic miss), stent underexpansion along with potential stent thrombosis and restenosis, etc.<sup>1-3</sup> In this context, unfavorable outcomes of coronary stenting at these specific sites have been attributed to histopathological, anatomical as well as rheological factors.<sup>2,3</sup> Therefore, alternative techniques other than coronary stenting seem to be necessary for the management of coronary ostial stenoses.<sup>2</sup> In their recently published article, Erdoğan et al<sup>1</sup> have reported the efficacy and safety of drug-coated balloons (DCBs) in the setting of left main stem (LMS) bifurcation stenoses (Medina types 0,1,0 and 0,0,1). In this context, we would like to comment on further implications of their study findings, and obtain further information on a couple of specific points:

First, management of ostial stenoses located at coronary bifurcation points (as part of pseudo or true bifurcation lesions) might be even more challenging as compared with aorto-ostial stenoses due to additional adverse factors including post-stenting "carina shift" and/or "atherosclerotic plaque migration" to the ostium of neighboring coronary branch.<sup>1</sup> In particular, the potential challenge of "carina shift," which is particularly encountered in the setting of the "crossover stenting" technique might be largely eliminated with the use of DCBs.<sup>1,2</sup> However, the risk of plaque migration still persists in bifurcation lesions managed with DCBs. In this regard, plaque migration to the neighboring coronary branch might arise just preceding (during preparation with cutting balloons, etc.) or following DCB inflation, and might potentially require further techniques including "kissing balloon" inflation. However, this technique might lead to the evolution of significant coronary dissection in one or both coronary branches and might end up with unnecessary stent implantation. Accordingly, did they encounter any plaque migration in their study group? We wonder about their preventive and management strategies regarding this phenomenon during the management of ostial stenoses with DCBs.

Second, as an alternative strategy, a small portion of the study population (n=8) was reported to undergo initial drug eluting-stent (DES) implantation (positioned 1 or 2 mm distally to the ostium) followed by DCB inflation covering the ostium.<sup>1</sup> However, even though there were no adverse events reported in this group,<sup>1</sup> we oppose the routine use of this strategy due to the risk of "stent edge dissection" that might potentially lead to certain challenges including the need for implantation of an additional stent (usually extending to LMS), etc. Previous studies have suggested certain predictors of "stent edge dissection" including the presence of atherosclerotic plaque in the proximal or distal "stent landing zones," certain plaque characteristics (calcified or soft), and arterial over-stretching.<sup>4,5</sup> Moreover, the risk of stent edge dissection might be even higher in lesions

### LETTER TO THE EDITOR

Kenan Yalta <sup>1</sup>

Gökay Taylan <sup>1</sup>

Murat Gök <sup>1</sup>

Tülin Yalta <sup>2</sup>

<sup>1</sup>Department of Cardiology, Faculty of Medicine, Trakya University, Edirne, Turkey

<sup>2</sup>Department of Pathology, Faculty of Medicine, Trakya University, Edirne, Turkey

#### Corresponding author:

Kenan Yalta  
✉ [kyalta@gmail.com](mailto:kyalta@gmail.com)

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pretreated with semi-compliant and/or cutting balloons (as used in the present study<sup>1</sup>).

As an important clinical outcome, an existing edge dissection following DES implantation was previously reported to be associated with target lesion revascularization at 1 year.<sup>4</sup> Interestingly, antiproliferative actions of DES might have an adverse impact on the healing of edge dissections potentially requiring longer duration of dual antiplatelet therapy.<sup>6</sup> Of note, spontaneous healing of DES-related minor edge dissections (those treated medically without additional stenting) subsequently treated with DCBs might be even more delayed due to more substantial antiproliferative actions of combined therapy (DES plus DCB). Importantly, additional stents for edge dissections, regardless of whether they are implanted immediately (in case of significant dissections)<sup>5</sup> or on follow-up, are well known to be associated with certain risks including stent thrombosis and restenosis,<sup>6</sup> etc. Interestingly, an emerging distal edge dissection, despite its proper management with an additional stent, was previously reported to be associated with a giant coronary aneurysm formation.<sup>7</sup> Taken together, it seems prudent to avoid interventional maneuvers that might potentially predispose to stent edge dissections (as might be exemplified by the alternative strategy reported in the present study<sup>1</sup>). Since a portion of emerging coronary dissections might not be evident on plain coronary angiogram,<sup>4,5</sup> we also deem it more plausible to perform these suggested DCB-based techniques only with the guidance of advanced imaging modalities (OCT or IVUS).

Finally, we also wonder about the safety and efficacy of DCBs in more complex and precarious scenarios.<sup>2</sup> Therefore, we wonder about their experiences, if any, regarding the use of DCBs for the management of other types of LMS bifurcation stenoses including Medina types 0,1,1 and 1,1,1 or LMS aorto-ostial stenosis.

In summary, the authors<sup>1</sup> should be congratulated for their groundbreaking proof-of-concept study that has

demonstrated the feasibility of DCB use in more risky populations including those with LMS bifurcation stenoses. Regarding the management of coronary osteal lesions, DCBs seem to be devoid of potential challenges associated with coronary stents (carina shift, stent thrombosis or restenosis, etc.), yet might confer a similar efficacy in clinical practice.<sup>1-3</sup> However, large-scale studies are still warranted to investigate further implications of DCBs (including longer-term results, further technical aspects, etc.) in the setting of coronary osteal stenoses.

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