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Short Communication

Important Tips and Tricks during Drug Coated Balloon Angioplasty

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INTRODUCTION

Drug Coated Balloons (DCB's) allow local delivery of anti-proliferative drug into the coronary atherosclerotic plaques without the need for metal scaffold and polymer and hence gives the option of leaving nothing behind [1,2]. This advantage eliminates the risk of stent thrombosis and in-stent restenosis. DCB angioplasty substantially differs from conventional angioplasty on several aspects and in this commentary, we give some tips and tricks that operators should be aware when using DCBs in Percutaneous Coronary Intervention (PCI) [3].

One of the most important aspects of DCB angioplasty is the lesion and patient selection. Based on the current evidence, DCB's can be used in in-stent restenosis, small vessel (<3.0 mm) disease, bifurcation lesions and in patients with high-bleeding risk who cannot take dual anti-platelet therapy beyond a month [4]. There is no data as of now to support the use DCBs in larger vessels.

In regards to lesion preparation, we would advocate the use of non-compliant balloons as a first choice. In diffuse lesions, we suggest taking a longer balloons (25 or even 30 mm) so that multiple inflations can be avoided. In addition, we recommend inflation times of 20-30 seconds to reduce recoil rates and it may also have the added benefit of ischaemic preconditioning as DCB inflations requires up to 60 seconds. In complex lesions, we recommend the use of adjuvant devices; scoring, cutting and/or shockwave balloons or even rotational atherectomy to ensure adequate lesions preparation. Although there is a theoretical advantage in drug delivery due to the cuts and dissections caused by these balloons, there is relative dearth of evidence to demonstrate their superiority except in restenotic lesions (ISR), where there is some data to suggest better angiographic performance if scoring balloon is used prior to DCB [5]. In conventional PCI, even if there is re-coil post successful pre-dilatation, the scaffolding from stent platform takes care of it. However, in DCB-PCI, we cannot accept recoil of >30% as per the current consensus [6]. Effort should be made to achieve recoil of <30% by escalating balloon size or using any of the specialized balloons. If there is persistent recoil, then DES has to be considered over DCB. In addition, non-flow limiting dissections (type A and B) can be accepted, but if there are type C or more dissection, then operators should abort the idea of using DCB and use DES instead. We also highly recommend the use of Intravascular Imaging (IVI) in such complex lesions and ISR for lesions assessment and optimal preparation.

DESCRIPTION

The DCB should be sized 1:1 for the vessel diameter based on the angiographic assessment. The balloons should not be meddled especially the drug coated segment to ensure the coating remains intact and is not activated. DCB deployment should be within 60's of contact with the blood stream to minimise drug loss, in fact the balloon should be abandoned if it has been longer than 2 minutes. In lesions requiring longer DCBs, adequate guiding catheter support, buddy wires and additional guide extension catheters may be needed. If the balloon cannot be delivered within 2 minutes, it should be abandoned and not re-used. Once the balloon is at the lesion site, it should be inflated for a period of 60 seconds or ischaemia, 2-step inflation can be performed with 30's for each step and no movement of the balloon in between. Post-DCB, we recommend taking angiogram in 2 orthogonal view with a prolonged acquisition to ensure the contrast clears with no dye hang-up in the vessel wall. If there is no flow limiting dissection or recoil of >30%, no further intervention is needed. We do not recommend taking repeated pictures as it may propagate the non-flow limiting dissection. In addition, there is no role for IVI post DCB or even functional assessment. Unlike stents, the acute gain post DCB is generally not excellent and hence the functional assessment maybe misleading. Our eyes are trained to expect stent like result, but while using DCB, we have to train our eyes not to expect stent like result. Generally, the vessel remodel over time and hence one should refrain from bailout stenting unless there is significant recoil (>30%) or if there is flow limiting dissections. Despite initial fears about increased toxicity, bailout stenting with DES has proved to be a safe intervention [7].

CONCLUSION

Drug coated balloons promise an exciting treatment in angioplasty and offers excellent alternatives in lesion and subsets

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where stents are not desired. DCB-PCI substantially differs from conventional PCI and we hope the tip and tricks provided above will aid operators when embarking DCB in coronary intervention.

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