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Single-Stent Double-Kissing Nano-Crush Technique for the Management of Side Branch Ostial Lesions: A Game Changer? Or Just Another Player in the Game?

LETTER TO THE EDITOR

To the Editor,

In the clinical setting, management of coronary side branch (SB) ostial lesions (Medina 0.0.1) with stent implantation has always been a challenging strategy due to a variety of factors, including ostial geographic miss and main vessel (MV) compromise (carina shift, dissection, etc.).[1-3] Therefore, optimal medical therapy has been the initially preferred strategy in patients with SB ostial lesions.[1] In this context, certain strategies, including the use of drug-coated balloons (DCBs), have also conferred promising results.[3] The recently published report by Acar et al[1] have introduced a novel strategy which they have termed as "osdokina crush" (1-stent double-kissing nano-crush) technique. The authors[1] have demonstrated the feasibility of "osdokina crush" in a patient with an obtuse margin ostial lesion. This technique might have important technical and clinical implications.

The technique introduced by Acar et al[1] may be regarded as a variant of the 2-stent nano-crush technique primarily used for the management of true bifurcation lesions.[4,5] Both techniques are primarily based on initial SB stent pull-back toward the inflated balloon in the MV followed by SB stent implantation and double-kissing balloon inflation in the later stages.[1,5] However, this novel strategy does not necessitate stent implantation in the MV (due to the absence of a critical MV lesion) and exclusively harnesses MV balloon inflation to crush the protruded SB stent struts.[1] It also encompasses a final DCB inflation in the MV for the improvement of clinical outcomes.[1] However, in a similar manner to the 2-stent nano-crush technique, this strategy might also be hampered by the inherent risk of SB stent over-protrusion during pull-back, particularly in the setting of relatively narrow bifurcation angles (<70°).[5] In this context, the bifurcation angle in the patient seems to be around 45°, suggesting a potential risk of SB stent over-protrusion during pull-back.[1] I wonder why they preferred this strategy in such a narrow bifurcation angle. In case of an SB stent over-protrusion, the procedure should be completed following the same steps. However, in that case, the technique may be termed "1-stent double-kissing mini-crush" that has a higher amount of crushed stent burden at the carina and its vicinity.

Conversely, the SB stent may also fail to cover the SB ostium in the setting of "osdokina crush," particularly in cases in which a relatively high-diameter MV balloon is inflated at high pressures [even if the balloon indentation is evident during SB stent pull-back on coronary angiogram (CAG)].[5-7] Therefore, could the authors suggest any other predictors of SB ostial geographic miss (failure to cover ostium or over-protrusion of the SB stent) in the pre-implantation setting and also any strategies to preclude this phenomenon? In a previous issue of the *Anatolian Journal of Cardiology*, a novel strategy, namely the "double-kissing nano-culotte technique," was introduced for the management of coronary bifurcation lesions.[6] It comprises an SB stent implantation with the Szabo technique followed by MV stenting accompanied by a double-kissing balloon inflation.[6] Importantly, this

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technique might work well in the presence of very narrow bifurcation angles.[4] Alternatively, a potential variant of this technique without MV stenting, yet, with a single-kissing balloon inflation along with a final DCB inflation (which may be termed '1-stent single-kissing nano-culotte) is morphologically based on modified flower petal technique for the management of SB ostial lesions (which is characterized by a variety of different technical steps including use of both balloon and wire anchor in the MV along with absence of kissing balloon and final DCB inflations).[8,9] Notably, 1-stent single-kissing nano-culotte technique, instead of SB stent implantation with the Szabo technique,[4,6] may also be performed based on single-string technique which allows wiring of the protruded single SB stent strut following SB stent implantation.[10] Taken together, 1-stent single-kissing nano-culotte technique may also be quite feasible in this patient[1] and in similar cases with narrow bifurcation angles. Furthermore, MV dissection may be less likely compared with "osdokina crush" due to the single-kissing balloon inflation in this technique. However, SB ostial geographic miss may also be likely in the "1-stent, single-kissing nano-culotte" technique in the presence of a large distal MV.[4]

Finally, the main handicap of the novel technique introduced by Acar et al[1] may be the potential likelihood of MV dissection (which may not be evident on CAG) due to repetitive balloon inflations. Therefore, use of intracoronary imaging may be needed for optimal results in this context.[2] Moreover, it is well known that coronary dissections due to plain balloon angioplasty may also arise as a late-onset phenomenon long after an uneventful percutaneous coronary intervention. Therefore, further evaluation of MV integrity with a computed tomography angiogram may be necessary on follow-up in this patient.[1]

In conclusion, various interventional techniques for the management of SB ostial lesions have been introduced into clinical practice.[1-5] However, each of these strategies has its own advantages and limitations and hence currently appears to be far from being perfect.[1-5] Therefore, patient characteristics as well as operator experience should be taken into consideration for the selection of the most appropriate technique in patients with SB ostial lesions.

REFERENCES

1. Acar E, Güneş Y, İzgi İA, Kırma C. One-stent double kissing Nano crush—osdokina crush— technique could be a game-changer in the treatment of medina 0.0.1 lesion. *Anatol J Cardiol*. 2023;27(7): 432-435. [CrossRef]
2. Yalta K, Taylan G, Gök M, Yalta T. Management of coronary ostial stenosis with drug coated balloons: technical and clinical aspects. *Anatol J Cardiol*. 2022;26(7):589-590. [CrossRef]
3. Erdoğan E, Li Z, Zhu YX, et al. DCB combined with provisional DES implantation in the treatment of de Novo Medina 0,1,0 or 0,0,1 left main coronary bifurcation lesions: a proof-of-concept study. *Anatol J Cardiol*. 2022;26(3):218-225. [CrossRef]
4. Yalta K. Nano-culotte stenting for coronary bifurcation lesions: pros and cons of a novel strategy. *Anatol J Cardiol*. 2023;27(5): 290-291. [CrossRef]
5. Ray S, Mukherjee P, Bandyopadhyay S, Karmakar S, Mitra S, Bhattacharjee P. A novel "nano-crush" technique for the management of coronary bifurcation lesions: in vitro bench test analysis and preliminary report on real-world clinical evaluation in patients with one-year angiographic follow-up. *AsiaIntervention*. 2019;5(1):41-51. [CrossRef]
6. Kahraman S, Çizgici AY, Ertürk M. A novel coronary bifurcation stenting technique: double kissing nano-culotte stenting. *Anatol J Cardiol*. 2023;27(2):113-116. [CrossRef]
7. Güner A, Uzun F, Kahraman S, et al. Pros and Cons of a Novel Coronary Stenting Technique for Medina 0.0.1 Lesions: Osdokina Crush. *Anatol J Cardiol*. 2023;27(9):552-553.
8. Çayli M, Elbasan Z, Gür M, et al. Modified flower petal technique in the treatment of Medina type 0,0,1 or 0,1,0 lesions. *EuroIntervention*. 2015;11(7):772-779.
9. Suleiman S, Coughlan JJ, Touma G, Szirt R. Contemporary Management of Isolated Ostial Side Branch Disease: An Evidence-based Approach to Medina 001 Bifurcations. *Interv Cardiol*. 2021;16:e06.
10. Toth G, Pyxaras S, Mortier P, et al. Single String Technique for Coronary Bifurcation Stenting: Detailed Technical Evaluation and Feasibility Analysis. *JACC Cardiovasc Interv*. 2015;8(7): 949-959.