

Editorial



Don't Touch My POT!

OPEN ACCESS

Received: Feb 19, 2019

Accepted: Feb 21, 2019

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Conflict of Interest

The authors have no financial conflicts of interest.

Author Contributions

Conceptualization: Daggubati R; Writing - original draft: Daggubati R, Brahmabhatt K, Rigatelli G; Writing - review & editing: Daggubati R.

The contents of the report are the author's own views and do not necessarily reflect the views of the *Korean Circulation Journal*.

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► See the article “The Proximal Optimization Technique Improves Clinical Outcomes When Treated without Kissing Ballooning in Patients with a Bifurcation Lesion” in volume 49 on page 485.

The study by Yang et al.¹⁾ represents one of the few clinical studies demonstrating a net benefit of the proximal optimization technique (POT) in the bifurcation lesions and the first performed on a large cohort of patients.

Since Darremont et al.²⁾ reported the clinical application of POT in 2015, POT has been accepted as a necessary step in coronary bifurcation lesions treatment all over the world and stated as mandatory by the European Bifurcation Club.³⁾

POT has been postulated to have several advantages including a more physiological stent conformation to the carina, reduce strut mal-apposition, the projection of struts toward the side-branch ostium to maintain patency of the side-branch, facilitate re-wiring of the side branch, the eventual correction of the elliptical stent distortion and restoration of the circular stent shape after kissing balloon technique.⁴⁻⁶⁾ Over the past 4 years, despite the widespread use of POT, very few clinical studies have assessed the impact of POT on clinical outcomes as shown by Takagi in reducing main vessel target lesion revascularization (TLR) with POT in unprotected left main bifurcation stenting.⁷⁾ Computed flow dynamic studies⁸⁾⁹⁾ have suggested a more physiological profile of POT in term of limiting the area of lower wall shear stress forces at the carina and side branch after stenting. The benefit in a computed model seem to extend also to double stenting techniques such as T-stenting, Culotte, nano-crush and also DK-crush, but not at the same magnitude.

The study of Yang contains close to 1,200 patients at 18 centers, and the primary outcomes included major adverse cardiac events (MACE) as a composite of death, myocardial infarction and TLR.

Study results show that patients treated with POT (vs. no POT) have lower MACE at a median follow up of 37 months. This finding is driven by a lower incidence of TLR in the main vessel in the POT group vs. no Pot group, confirmed by propensity score matching (3.8% vs. 11.8%, respectively). Furthermore, it appears that there is a reduction in MACE in those patients who received POT without kissing balloon technique. When no kissing ballooning was performed, there was a significantly lower MACE in the POT group vs. no POT group, 2% vs. 10.5%, respectively. This difference is driven by lower TLR between the groups.

There are limitations of this study, particularly its lack of randomization of patients, as the decision to perform POT was at the operator's discretion. There is a large discrepancy of patients between the POT and no POT group, with a significantly lower number of patients in the POT group (252 in POT vs. 939 in no POT). Furthermore, only 35.7% of patients in the POT group were classified as having a True bifurcation by Medina classification (1,1,1 or 1,0,1 or 0,1,1), which is also significantly lower than in the no POT group (47.2%). There are also significant differences between the POT group and no POT group in terms of pre-dilatation of side branch, use of intravascular ultrasound, and 2-stent technique. However, after propensity matching to account for possible confounding factors, the differences between the POT and no POT groups are resolved.

Despite these limitations, the results at mid-term follow up are in line with the results of other studies, which outlined the good impact of POT in respect of restenosis and thrombosis rates. Rigatelli et al.¹⁰⁾ compared on long-term the use of POT, POT-side-POT and kissing balloon on left main Cross-over stenting, suggesting that at least in big vessels such as the left main when a single stent strategy is used, POT had similar or even superior clinical outcomes than kissing balloon in terms of death and stent thrombosis at 5-year follow-up.

The findings by Yang et al.,¹⁾ demonstrate the potential clinical benefits of POT in treatment of bifurcation stenting, largely driven by a lower rate of TLR in the main vessel. Furthermore, this benefit is more pronounced when kissing balloon dilatation is not performed. The clinical advantages of POT combined to other sequences, as POT—side branch inflation and re-POT, the kissing balloon-POT, its impact in standard bifurcation vs. complex bifurcation, in cross-over stenting vs. double stenting techniques and the inference of bifurcation angles on rheology modification induced by POT are open questions, which however should not decrease the importance of POT by the modern coronary bifurcation interventional cardiologists.

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