

Editorial Comment

The Fork in the Road: A Dedicated Turn or a Provisional One?

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The approach to bifurcation lesions has now become an important decision for interventional cardiologists who embark on treating these more complex lesions. Numerous technical challenges face the operator planning to intervene therapeutically upon a coronary bifurcation lesion using straight, concentric tubular catheter systems. These lesions can be irregular, generally related to the vessel curvature and flow dynamics that result from the vessel geometry.

Several classification systems have been developed to characterize the various bifurcation lesions. Many of these systems are problematic due to their redundancy or the difficulty in applying them to relevant clinical scenarios. Currently, the Medina classification is the most popular and widely used system for categorizing these lesions [1,2]. However, there are limitations to the Medina classification as well, as it does not take into account bifurcation angle, vessel size and lesion length, all of which have important implications in the strategy for treating these lesions.

Several complex technical factors play a role in interventions on coronary bifurcation. For the purpose of simplicity, these factors can be grouped into three broad categories: side branch access challenges, vessel injury, and scaffolding.

The side branch brings in various issues, including angulations, ostial coverage, vessel dissections, and nidus for subsequent restenosis. In an attempt to avoid these issues, a provisional technique has been implemented which seems to work well in many situations. In fact many studies have shown an improved outcome in choosing this strategy when treating bifurcations [3,4]. However, there are times when a true bifurcation lesion is encountered involving two large vessels (parent and daughter) with significant stenoses in which optimal treatment usually requires a stent. Although bifurcation stenting of both the main and sidebranch vessels have been associated with major adverse cardiac events, including stent thrombosis [3–5], the use

of a dedicated bifurcation stent for these lesions has not been systematically evaluated.

The Tryton Side-Branch Stent (Tryton Medical, Newton, MA), attempts to address deficiencies in stenting side branches in important “true bifurcation” lesions. In the current issue of CCI, Margo et al. evaluate the safety and efficacy of the Tryton side branch stent in a single arm study of bifurcation lesions at two centers. In this study, 96 patients with 100 lesions were included. At a median 6 months follow-up, excellent results were obtained with TLR rate of 4%, MI 3%, and cardiac death 1%. Interestingly, no cases of definite stent thrombosis occurred. Although one is encouraged with these data, we must keep in mind that this is a small, nonrandomized study. These excellent results will need to replicate in a randomized fashion against the provisional strategy, which has already been shown to be effective in bifurcation lesions. As such, a large randomized study is planned with this stent. Furthermore, there are many other new technologies on the horizon, which also plan to tackle this area with devices geared toward a provisional strategy and an easy bail out for stenting of the side branch if needed. Until then we remain with the unresolved reality of how to best treat bifurcation lesions, and the question of which way to go when we come to our fork in the road, remains for bifurcation lesions.

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