



Editorial

A wide-angle lens to focus on coronary bifurcational lesions[☆]

To show the life of bees, a good entomologist takes pictures of insects and their hive with a microscope. At the same time, he offers majestic images of large swarms hovering in the air. Something very similar happens in the study of coronary bifurcations: anytime we face a bifurcational lesion we try to capture as many details as possible, just like a naturalist does with his microscope. Lesion location, vessel tortuosity, severity of narrowing, angle between the two branches, presence of calcium, vessel diameter, plaque distribution, are scrupulously examined as in no other coronary setting.

Currently, we have images gathered through a multitude of procedures performed by hundreds of operators. However, the intrinsic limitations of large registries due to low accuracy of data collected, absence of external monitoring, and wide heterogeneity of patients included are well recognized. However, this type of studies provides information not contained in randomized clinical studies, as they capture the real-world population.

Treatment of bifurcational lesions has always been considered challenging. However, the type of challenge difficulties which the interventional cardiologist has to confront with has changed over time. The history of the treatment of bifurcational lesions begins in the era of bare metal stents [1–3]. At that time, operators focused on ensuring patency of both vessels. Restenosis was the Achilles heel of all stent angioplasties and bifurcations were no exception. The availability of drug eluting stents revolutionized the bifurcation's scenario, opening the hope that stent implantation on both bifurcation branches would have reduced restenosis [4]. For some time, interventionists divided into two parties that supported the use of a single stent on the main vessel or the routine use of two stents, respectively. “One stent versus two stents for bifurcational lesions” sounded like a mantra in congresses and has been the subject of fiery debates [5,6]. Prospective randomized clinical studies comparing the two treatment strategies of bifurcational lesions have established with few exceptions [7] the superiority of the single-stent technique on the main vessel and provisional stenting on the side branch over the “full metal jacket” strategy. This superiority was evident both in clinical and angiographic outcomes [8–13].

The value of the article from Murasato et al. [14] can be synthesized in the following key points:

- (1) The vast majority of bifurcations not located in the left main were treated only in the main vessel (MV-PCI), with a very conservative approach in the side branch (SB). Authors report that among all bifurcations 78% were in the MV-PCI group. Moreover, considering all patients only 4% received a stent in the SB. These

numbers are in line with other registries [15] and are in agreement with the recommendations of the European Bifurcational Club (EBC) [16], which represents the prevailing orientation in Europe. The homogeneity in clinical practice observed all over the world clearly indicates that the teachings of the randomized studies have been acknowledged and applied. The single stent technique simplifies the procedures, reduces the amount of stent struts inside the vessels, reduces the risk of stent thrombosis, and makes the patient less dependent to antiplatelet therapy [8–13].

- (2) Outcomes in terms of mortality and composite of adverse events are remarkably low and comparable to what reported in other studies including only simple lesions. Bifurcational lesions historically have been associated with high restenosis rates and early atherogenesis, with the ostium of the SB being the most common site of restenosis after stenting [5–9]. In the present study, the rate of repeat interventions for restenosis was extremely low. This finding strengthens the opinion that a moderate stenosis of the SB is rarely hemodynamically significant. Also, presence of a relatively small myocardial area underlying a SB stenosis has a small effects on adverse events [17–19].
- (3) There is an increasing use of invasive fractional flow reserve (FFR) measurement in the SB. The frequency of use of this diagnostic tool largely varies from one country to another according to type of reimbursement, hospital budget and operators' choice. Nevertheless, the significance of a correct function assessment of the ostial SB stenosis has been demonstrated by Koo et al. A systematic measurement of FFR in the SB showed that only 27% of SB with a severe stenosis by angiography had an FFR < 0.75, and no SB lesions with an angiographic stenosis of >75% were associated with a hemodynamically significant FFR [18]

Finally, it would be desirable that this type of reports, which are mainly angiographic oriented, could consider the lesson of studies such as the ISCHEMIA trial [20]. It would be useful for registries of interventional cardiology to be implemented with information regarding concomitant medical therapy and the antiplatelet regimen adopted. Although the clinical results reported in the Japanese registry are excellent, it remains to understand whether optimal medical therapy may have a positive impact on the large population of patients with complex coronary lesions.

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Declaration of Competing Interest

The authors report no relationships that could be construed as a conflict of interest.

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