Severe coronary lesions in secondary branches: percutaneous coronary revascularisation versus conservative treatment

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Background: Secondary branch (SB) vessels are the generally less developed, smaller calibre branches of main coronary arteries which supply blood to a smaller area of the myocardium. The few studies that focus on the treatment of SB lesions are based on a post hoc analysis of clinical trials, and on the revascularization of small calibre vessels, whether SB or not.

Purpose: To analyse the percutaneous revascularization strategy for severe lesions in the secondary branches (diameter =2 mm) of major epicardial arteries compared to conservative treatment.

Methods: This study analyses patients with severe secondary branch (SB) lesions who underwent percutaneous revascularization treatment compared to patients who received pharmacological treatment. The study examined the percentage of branch-related events (cardiovascular death, myocardial infarction attributable to SB, or the need for revascularization of the SB).

Results: We analysed 679 SB lesions (662 patients). Percutaneous treatment was used in 430 lesions (63.3%), whereas 249 (36.6%) of the lesions received conservative treatment. The lesions selected for PCI presented a larger reference diameter (2.57±0.34 mm vs. 2.31±0.17 mm, p<0.0001), a greater lesion length (14.77±5.93 mm vs. 12.54±3.72 mm, p<0.0001) and severe stenosis (86.9±11.1% vs. 78.6±10.8%, p<0.0001). After a mean follow-up of 22.2±10.5 months, there were no significant differences between the two treatment groups regarding the percentage of death from cardiovascular causes (1.7% vs. 0.4%, p=0.14), non-fatal AMI (1.7%, vs. 1.7%, p=0.96), the need for SB revascularization (4.1% vs. 5.4%, p=0.45) or in the total percentage of events (5.1% vs. 6.3%, p=0.54). The variables showing an association with event occurrence in the multivariate analysis were diabetes mellitus (SHR 2.87, CI 95%, 1.37-5.47, p=0.004), prior AMI (SHR 3.54, CI 95%, 1.77-7.30, p<0.0001), SB reference diameter (SHR 0.16, CI 95%, 0.03-0.97, p=0.047) and lesion length (HR 3.77, CI 95%, 1.03-1.13, p<0.0001). These results remained the same after the propensity score analysis.

Conclusions: The percentage of SB-related events during follow-up is low, with no significant differences between the two treatment strategies. In the multivariate analysis, the presence of diabetes mellitus, prior AMI and greater lesion length are the variables associated with event occurrence.