Clinical outcomes of physiology-guided coronary revascularization in patients undergoing TAVR

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Background: Coronary artery disease frequently coexists with severe aortic valve stenosis (AS). Although an fractional flow reserve (FFR)-guided percutaneous coronary intervention (PCI) in native coronary artery has been shown to be associated with better clinical outcomes as compared with an angiography-guided PCI, it is unknown whether this applies to severe AS patients.

Purpose: The purpose of this study was to compare the outcomes of different revascularization strategies between FFR-guided and angiography-guided PCI in AS patients undergoing transcatheter aortic valve replacement (TAVR).

Methods: In this retrospective analysis, we included 401 patients with severe AS undergoing TAVR who had coexisting coronary artery disease at invasive coronary angiography. A total of 156 patients was considered to have significant coronary artery lesions (>50% of diameter stenosis) due to the visual estimation. Patients were divided into 2 groups: physiology-guided (n=96, PCI performed in case of FFR ≤0.80 or diameter stenosis ≥90%) and angiography-guided PCI (n=60, PCI performed based on angiographic evaluation). Patients were clinically followed up and evaluated for the occurrence of major adverse cardiac and cerebrovascular event (MACCE; defined as a composite of death, non-fatal myocardial infarction, target vessel failure, and cerebrovascular accident) and major bleeding event defined as ≥VARC-3 type 2.

Results: Most lesions (62/96; 65%) in the physiology-guided group had negative results and were deferred. During a median follow-up of 743 [from 400 to 1,186] days, physiology-guided group had a significantly lower rate of MACCE compared with the angiography-guided groups (adjusted hazard ratio [HR], 0.41; 95% confidence interval [CI], 0.20-0.83; P<0.01). In addition, physiology-guided group showed a lower major bleeding event rate compared with the angiography-guided group (adjusted HR, 0.12; 95% CI, 0.04-0.40; P<0.01).

Conclusion: Physiology-guided PCI resulted in better clinical outcomes and lower bleeding events than angiography-guided PCI in patients with AS undergoing TAVR.