Three-year Outcomes of
Quantitative Flow Ratio-guided
Coronary Artery Bypass grafting in Primary
Valve Surgery: A Propensity Score Weighted
Analysis

Objectives: The guidelines recommend fractional flow reserve (FFR)-guided coronary artery bypass grafting (CABG) during primary valve surgery without evidence. Quantitative flow ratio (QFR) is a novel coronary angiography (CAG)-based FFR. We aimed to compare the three-year clinical outcomes between QFR-guided and CAG-guided CABG in these patients.

Methods: This observational study screened all 2081 patients admitted to our institution for elective primary mitral and/or aortic valve surgery from January 2017 to Sept 2020. Of them, all 188 patients with comorbid coronary artery lesions (visual diametrical stenosis ≥50%) were included in this study. Patients were assigned into QFR-guided group when lesions were bypassed only if QFR ≥0.80 (N=69) or CAG-guided group when all stenosis ≥50% were bypassed (N=119). Propensity overlap weighting was used to neutralize the intergroup imbalance. The primary endpoint was major adverse cardiovascular events (MACE), defined as all-cause death, myocardial infarction, stroke, unplanned repeated revascularization, and rehospitalization for unstable angina, or heart failure.

Results: After propensity score weighting, the baseline characteristics were comparable. Concomitant CABG was performed 58.1% vs 100% in QFR-guided and CAG-guided group, respectively. The mean number of grafts was significantly lower in QFR-guided group than in CAG-guided group (0.9±0.7 vs. 1.6±0.5; p<0.001). The weighted 30-day incidence of MACE was numerically lower in QFR-guided group than in CAG-guided group, but not statistically significant (6.3% vs 11.8%; p=0.429). After a median follow-up of 31.8 months, the weighted risk of MACE, mortality and myocardial infarction were significantly lower in QFR-guided group than in CAG-guided group (MACE: hazard ratio, 0.42; 95% CI, 0.17-1.07; log-rank p=0.009; mortality: hazard ratio, 0.35; 95% CI, 0.10-1.23; log-rank p=0.018; myocardial infarction: hazard ratio, 0.20; 95% CI, 0.02-2.03; log-rank p=0.037).

Conclusions: Compared with CAG-guided CABG, QFR-guided CABG is associated with less grafting and better clinical outcome in primary valve surgery with comorbid coronary artery disease. To confirm this finding, the FAVOR IV-QVAS trial (NCT03977129) is on-going.

Jiaxi Zhu (1), Yunpeng Zhu (1), Wei Zhang (2), Zhe Wang (1), XIAOFENG YE (1), Mi Zhou (1), Haiqing Li (1), Jiapei Qiu (1), Yanjun Sun (1), Hong Xu (1), Lei Kang (1), Shengxian Tu (3), Qiang Zhao (1), (1) Ruijin Hospital Shanghai Jiao Tong USM, Shanghai, China, (2) Department of Biostatistics, School of Public Health, Fudan University, Shanghai, China, (3) Med-X Research Institute, School of Biomedical Engineering, Shanghai Jiao Tong University, Shanghai, China