Coronary Obstruction After Transcatheter Aortic Valve Implantation. A Systematic Review

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Introduction. Very few data exist on coronary obstruction after transcatheter aortic valve implantation (TAVI). This study sought to evaluate, through a systematic review of the published data, the main baseline characteristics, management, and clinical outcomes of patients suffering coronary obstruction as a complication of TAVI.

Methods. Studies published between 2002 and 2012, with regard to coronary obstruction as a complication of TAVI, were identified with a systematic electronic search. Only the studies reporting data on the main baseline and procedural characteristics, management of the complication, and clinical outcomes were analyzed.

Results. A total of 18 publications describing 24 patients were identified. Most (83%) patients were women, with a mean age of 83 ± 7 years and a mean logistic European System for Cardiac Operative Risk Evaluation score of 25.1 ± 12%. Mean left coronary artery (LCA) ostium height and aortic root width were 10.3 ± 1.6 mm and 27.8 ± 2.8 mm, respectively. Most patients (88%) had received a balloon-expandable valve, and coronary obstruction occurred more frequently in the LCA (88%). Percutaneous coronary intervention was attempted in 23 cases (95.8%) and was successful in all but 2 patients (91.3%). At 30-day follow-up, there were no cases of stent thrombosis or repeat revascularization, and the mortality rate was 8.3%.

Discussion. The reported incidence of coronary obstruction after TAVI has usually been <1%, ranging from 0% to 4.1%. Its most frequent reported mechanism has been the displacement of the calcified native cusp over the coronary ostium. A low position of the coronary ostia with respect to the aortic annulus, the severity of valve calcification and, especially, the presence of bulky calcium nodules on the left or right aortic leaflets and a narrow aortic root with shallow sinuses of Valsalva leaving little room to accommodate the calcified native aortic leaflets after valve deployment have been highlighted as the most important factors contributing to this complication. In conclusion, reported cases of coronary obstruction after TAVI occurred more frequently in women, in patients receiving a balloon-expandable valve, and the LCA was the most commonly involved artery. Percutaneous coronary intervention was a feasible and successful treatment in most cases. Continuous efforts should be made to identify the factors associated with this life-threatening complication to implement the appropriate measures for its prevention.

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