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EDITOR'S PAGE

The evolution in the management of aortic valve disease: From surgical techniques to transcatheter interventions



Valvular heart disease represent a mechanical failure of valve apparatus and when severe, strategies to restore mechanical function by surgical repair or replacement or by invasive strategies are consider the gold standard of treatment.

Aortic stenosis is mainly a degenerative deteriorating and morbid disease, when left untreated, which was used to manage by surgical replacement of the aortic valve (SAVR).¹ Over the last 10–15 years transcatheter aortic valve replacement (TAVR) revolutionized the management of patients with aortic stenosis. The Placement of Aortic Transcatheter Valves (PARTNER) trial and the CoreValve US Pivotal trial have shown that bioprosthetic valves can be effectively transcatheterely implanted in severely stenotic and calcified natural or bioprosthetic aortic valves and to increase survival in patients unsuitable for operation.^{2,3} Improving equipment and expanding experience^{4,5} have broaden the indications including healthier patients with intermediate surgical risk while a few registries and randomized control trials have even applied this revolutionized technology even in patients with low risk (Table 1).

However, we should notice that although data are in favor of TAVR in selected intermediate risk patients there are no convincing data in low risk populations since despite the positive results from randomized control data, data from registries representing every day clinical life are not unequivocal. Nevertheless, evolution of TAVR cannot stop and in depth involvement of anesthesiologists in the periprocedural management and type of anesthesia may improve short term outcome and eliminate complications in the future which may turn the balance in favor of TAVR even in intermediate and low risk patients as is discussed by Melidi et al. in this issue of Hellenic Journal of Cardiology.¹¹ However, complicated cases with annular Aortic annular

erosion and abscess will continue to manage surgical with either aortic valve translocation or left ventricle outflow tract reconstruction which seems to have similar post-operative outcomes as Perrotta et al. conclude after review of the literature.¹² Surgical management is also the only effective treatment in complicated cases such as those presented in this issue of Hellenic journal of cardiology with sequential spontaneous severe aortic and mitral regurgitation¹³ and with interrupted aortic arch with post interruption aneurysm and bicuspid aortic valve.¹⁴

In this issue of Hellenic journal of cardiology interesting data on coronary artery disease and atherosclerosis are also discussed. Endothelial shear stress is considered as the most prominent factor driving the diversity in atherosclerosis progression. However as discuss by Zaromytidou et al.¹⁵ at the moment techniques to access endothelial shear stress such as intravascular ultrasonography or optical coherence tomography are invasive. Nevertheless, non-invasive modalities are under development which may change the management of coronary artery disease focusing on high risk lesions. From another approach Katsimpoulas et al. examined the combined effects of exercise training and endocannabinoid receptor 1 inhibitor (Rimonabant) on atherosclerosis burden and composition of apolipoprotein E-deficient mice concluding that such an approach can reduced plaque macrophages and matrix metalloproteinases inducing plaque regression and promoting plaque stability.¹⁶ Epidemiological data from the MEDIS study in inhabitants of the Eastern Aegean islands with a relative low incidence of cardiovascular disease show that overall cardiovascular disease risk seems to be low among Eastern Aegean Islanders highlighting the role of primary and secondary prevention in the management of coronary artery disease.¹⁷

Finally, interesting data on an upcoming modality of cardiovascular imaging, cardiac magnetic resonance, are discuss and presented emphasizing the role of novel

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Table 1 Representatives studies on the outcome of transcatheter aortic valve replacement in subjects of variable operative risk.

Study	Study type design	Patient population	Patient characteristic/risk	Main findings
PARTNER trial 2011 ⁶	Randomized control	699	Patients at high surgical risk	Similar rates of survival at 1 year with transcatheter and surgical procedures
U.S. CoreValve High Risk Study 2014 ⁷	Randomized control	795	Patients at high surgical risk	Significantly higher rate of survival at 1 year with transcatheter compared to surgical replacement
Thourani et al. 2016 ⁸	Observational/ propensity score	1710	Patients at intermediate risk	Significant superiority for death from any cause, all strokes, and incidence of moderate or severe aortic regurgitation for TAVR compared to SAVR
The Nordic Aortic Valve Intervention Trial (NOTION) 2015 ⁹	Randomized Prospective cohort	280 patients	82% of the patients population was of low surgical risk	No significant difference between TAVR and SAVR was found for the composite rate of death from any cause, stroke, or MI after 1 year
The Observational Study of Effectiveness of SAVR—TAVI Procedures for Severe Aortic Stenosis Treatment (OBSERVANT) registry ¹⁰	Registry	710	Patients at low risk	significantly better 3-year survival and freedom from major adverse cardiac and cerebrovascular events were observed after SAVR compared with TAVR

SAVR: Surgical replacement of the aortic valve; TAVR: transcatheter aortic valve replacement.

developments in the evaluation of complex cases of myocarditis¹⁸ and mitral regurgitation¹⁹ indicating the future direction of cardiovascular medicine.

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