

Transcatheter Aortic Valve Replacement for Low Gradient Severe Aortic Stenosis: Clinical Outcomes

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Background: Aortic stenosis (AS) characterized by aortic valve $<1.0\text{cm}^2$, mean aortic pressure gradient (MPG) $<40\text{ mmHg}$ and left ventricular (LV) ejection fraction $>50\%$ is referred to as low gradient severe aortic stenosis (LGSAS). Symptomatic LGSAS may be a form of a more advanced stage of AS with poorer prognosis. Transcatheter aortic valve replacement (TAVR) is an effective treatment in patients with typical severe AS (defined as aortic valve area $<1.0\text{cm}^2$, MPG $>40\text{mmHg}$), however the role of TAVR in patients with LGSAS and high operative risk is uncertain.

Methods: In this study we retrospectively compared clinical outcome of TAVR in patients with symptomatic LGSAS to those with typical severe AS.

Results: Echocardiography among 104 consecutive TAVR patients, revealed typical severe AS in 72(69%) patients where as 32(31%) patients were classified as LGSAS. The New York Heart Association functional class improved by the same extent in patients with severe AS (3.1 ± 0.4 to 1.3 ± 0.3 , $p<0.001$) and in patients with LGSAS (3.2 ± 0.4 to 1.4 ± 0.3 , $p<0.001$). The one-year survival rate was not different between patients with LGSAS, and patients with typical AS ($89.5\pm 5.8\%$ vs. $92.4\pm 3.7\%$; $p=0.95$). The one-year freedom from death or re-admission for heart failure was not different between the groups ($86.3\pm 6.5\%$ vs. $84.0\pm 5.0\%$; $p=0.25$), nor the one-year freedom from the combined cardiac outcome (all cause mortality, or heart failure or new onset atrial fibrillation, or AV block requiring pacemaker implantation, or re-admission for syncope) ($75.7\pm 8.2\%$ vs. $75.4\pm 5.6\%$; $p=0.34$).

Conclusion: Transcatheter aortic valve replacement in patients with high operative risk provides similar clinical benefit in patients with LGSAS to that of patients with typical severe AS.