Updated TAVR Data: Current Status and Future Perspective

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TAVR (transcatheter aortic valve replacement) is the treatment of choice for high risk or inoperable patients with severe, symptomatic aortic valve stenosis (AS) as preferred alternative of surgical aortic valve replacement (SAVR). Several landmark studies were performed to evaluate benefit of TAVR. The PARTNER trial showed the comparable long-term mortality of TAVR to SAVR in high or extreme risk patients using balloon-expandable SAPIEN valve. TAVR using self-expandable CoreValve rather increased 2-year survival rate compared to SAVR in high risk patients in the CoreValve US Pivotal Trial. However, there were no differences in efficacy and safety between balloon- and self-expandable valve in the CHOICE trial. TAVR also improved disease-specific and genetic health-realted quality of life in the most patients received TAVR.

Over the last decade, TAVR has been performed in patients at highest risk, however, it is now gradually being assimilated into intermediate and lower risk patients in experienced centers. In the PARTNER 2 trial using balloon-expandable valve, TAVR was similar to SAVR with respect to the death or stroke in intermediate risk patients with severe AS. The SURTAVI trial using self-expandable valve will further extend the debate about the possibility of TAVR use in intermediate risk patients. The NOTION trial also demonstrated the safety and effectiveness of TAVI in low risk patients. Ongoing trials using SAPIEN valve (PARTNER 3 trial) or CoreValve Evolut R will test the efficacy of TAVR in low risk patients with severe AS.

Recently, TAVR has been performed in patients with severe AS and bicuspid aortic valve. However, the incidence of paravalvular leakage (PVL) was about 30% after TAVR in these patients, unacceptable high rate. Although use of balloon-expandable valve was known to reduce PVL with more circular-shape deployment, more studies are needed to optimize TAVR procedure in bicuspid aortic valve with severe AS.