

Role of Sutureless/Rapid Deployment Aortic Valve Replacement

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Although, surgical aortic valve replacement (AVR) remains the gold standard for patients with severe aortic stenosis, there were two different options for AVR in high risk patients. They are transcatheter aortic valve implantation (TAVI) and Sutureless AVR. But, even though TAVI is expanding indications from inoperable or high risk patients to moderate risk patients, there have been a concern about long term results related complete atrioventricular heart block, paravalvular leakage, and crimping effect of pericardial leaflets. And most of all, TAVI cannot remove heavily calcified diseased valve.

On the other hand, sutureless AVR have a several advantage compared to surgical AVR or TAVI. First, Sutureless valve replacement shortens aortic cross clamp time and cardiopulmonary bypass time because the valve is positioned without any suturing the valve and annulus. Shortening the time is helpful to reduce the morbidity and mortality, especially in patients who require concomitant heart surgery. Second, diseased valve leaflets were removed completely. This may help to decrease the paravalvular leakage compared to TAVI. Third, precise positioning could be possible with the guiding suture. It may enhance the minimal invasive cardiac surgery using mini sternotomy or mini thoracotomy. There are many reports to show the advantages of sutureless valve replacement. Pollaris and colleagues reported sutureless valve replacement is associated with better clinical outcomes and reduced hospital costs compared traditional tissue valve replacement. Shrestha and colleagues reported 0% of structural valve deterioration and 1.4% and 1.0% of early and late major paravalvular leakage during 5 years. Biancari and colleagues compared the outcomes in patients underwent sutureless valve replacement with those in patients underwent TAVI in intermediate risk patients. They demonstrated sutureless valve replacement is associated with a low incidence of significant paravalvular regurgitation and permanent pacemaker implantation.

In conclusions, the sutureless valve replacement would be a valid alternative method in high risk patients required AVR. Further randomized studies and long term follow up results are required to confirm the advantages of sutureless AVR. Gold standard treatment in severe aortic stenosis is surgical aortic valve replacement, and sutureless valve can remove risk of surgery by reducing cardiac arrest time and operation time significantly.