

Half of transcatheter heart valves show degeneration within 10 years of TAVI

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Half of transcatheter heart valves may undergo degeneration within 10 years, according to estimates from the first study investigating the long-term durability of these valves in patients undergoing transcatheter aortic valve implantation (TAVI) reported at EuroPCR 2016.

"TAVI is increasingly being performed in younger [patients](#) and in those at lower surgical risk. As a result, [life expectancy](#) after transcatheter heart valve implantation will increase. But the durability of these valves has been assessed only over the short- and intermediate term," explains lead author Danny Dvir, from the Centre for Heart Valve Innovation, St Paul's Hospital, Vancouver, Canada.

The research group carried out the first long-term evaluation of transcatheter heart valves. They evaluated 704 patients (mean age 82 years) who underwent TAVI more than five years ago between April 2002 and May 2011 in two centres: Vancouver (Canada) and Rouen (France). A total of 378 patients were followed up with repeat echocardiographic examinations for up to 10 years, after excluding patients who died within 30 days of TAVI, those with device failure immediately after TAVI and those having valve-in-valve procedures. Implanted valves included: the Edwards SAPIEN XT (36%), the Edwards SAPIEN (50%) and the Cribier-Edwards™ valves (14%).

One hundred patients survived at least five years after TAVI and were investigated for valve degeneration, which was defined using central lab adjudicated criteria of moderate/severe intravalvular regurgitation and/or

aortic stenosis (mean gradient > 20mmHg) that did not appear within 30 days of the TAVI procedure.

Over this time the study identified 35 cases of valve degeneration. Approximately two-thirds of the failed valves were associated with intravalvular regurgitation and the remained third with valvular stenosis. A few rare cases also showed a mixture of stenosis and regurgitation. Dr Dvir noted that a significant number of valves showed degeneration between five and seven years after TAVI.

Based on their findings the research group reported that the Kaplan-Meier estimate for the eight-year rate of structural valve degeneration was approximately 50%. They noted that

"Physicians performing TAVI in younger patients and in those expected to survive long after the procedure should be aware that the long-term rate of THV degeneration is not negligible, at least for first-generation THV devices," advises Dr Dvir. He suggests, "Physicians must be mindful of the limitations of the THV they implant and whether patients can be safely treated by another transcatheter approach, such as valve-in-valve, if a THV fails years later."

For the future, Dr Dvir says, "We hope that the next-generation THV devices than the valves used in this study. Unfortunately we currently have no data to suggest what the durability of new THV devices will be they have been used in clinical cases for less than five years."

Commenting on the new findings, Pieter Kappetein, from Erasmus Medical Center, Rotterdam, the Netherlands, says, "This is extremely important data and addresses the concerns that many people had when transcatheter heart valve were introduced: will they last as long as surgical bioprostheses? Can we therefore expand the indication to younger patient?" He adds, "Hopefully, the new generation of TAVI will

last longer and there might also be a need for self-regenerating tissue-engineered [heart valves](#). He concludes, "Expansion of TAVI indication should only take place in the confines of a randomised trial."

Provided by PCR

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