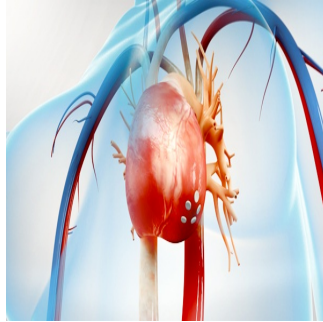

Transcatheter Aortic Valve Implantation For Failed Bioprostheses



The one-year survival rate for patients who undergo transcatheter valve-in-valve implantation inside a malfunctioning bioprosthetic valve was 83.2 percent, according to a study by researchers at St. Paul's Hospital in Vancouver, Canada. With bioprosthetic valves becoming more common than mechanical ones in surgical aortic valve replacement, an evaluation of the efficacy of the minimally invasive repair was lacking. The report appears in the 9 July 2014 issue of JAMA.

Bioprosthetic Aortic Valves

There has been a considerable shift away from mechanical valves for surgical aortic valve replacement, toward ones which are composed of biological tissue. Nevertheless, bioprosthetic valves degenerate in many patients, not all of whom can withstand repeated cardiac surgery to replace the malfunctioning bioprosthesis due to age or other medical conditions. Transcatheter valve-in-valve implantation is a less invasive method of repairing the failed bioprosthesis.

Danny Dvir, MD, and his colleagues at St. Paul's Hospital analysed the survival rates in a group of 459 patients from a multinational registry, all of whom underwent transcatheter valve-in-valve implantation between 2007 and May 2013. There were 55 centres involved in the study; the average age of the patients was 78 years. The team found that the one-year survival rate was 83.2 percent, with prognosis related to surgical valve size and the specific mechanism of failure of the bioprosthetic valve.

Survival Depends on Failure Mechanism

Three mechanisms were associated with the failure of the bioprosthetic valves in the study. The most common, experienced by 39.4 percent of the patients, was stenosis, in which the valve opening becomes narrow. Regurgitation due to imperfect closure of the valve was another cause of bioprosthetic failure; 30.3 percent of the patients in the study experienced a backflow of blood through the valve's orifice. The third cause of failure was a combination of stenosis and regurgitation, experienced by 30.3 percent of patients.

The group of patients whose valves failed due to stenosis had a worse one-year survival compared to those who experienced regurgitation (76.6 percent and 91.2 percent, respectively). Patients with both stenosis and regurgitation had a survival rate of 83.9 percent. Surgical valve size also played a role in survival. Small valves (21 mm or less) were associated with worse one-year survival compared to larger valves.

The authors of the study call attention to the need for physicians to understand the reasons for why a bioprosthetic valve has failed in a patient, prior to any operation intended to repair the malfunction. "Thorough assessment of candidates for valve-in-valve implantation is a key step to obtain optimal results. The current analysis highlights the need for meticulous evaluation of bioprosthesis mechanism of failure before attempting a valve-in-valve procedure," they wrote.

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