Valve-In-Valve Implants Aid Recovery, Reduce Risks

Replacing failing artificial animal-based heart valves by implanting mechanical valves inside them is an effective option for high-risk patients, according to research reported in *Circulation: Journal Of The American Heart Association.* In the study, physicians describe how 24 high-risk patients, whose previous implants failed, received transcatheter valve-in-valve implantation – where a new artificial valve is seated within a previously implanted valve made of pig or cow tissue. The new valve is inserted on a catheter through a small incision between the ribs or through a puncture in a blood vessel in the leg. Placed inside the old surgically implanted valve and expanded by inflating a balloon, the new valve pushes the old one out of the way.

“Once expanded and opened, the new valve opens and functions similarly to the patient’s own valve,” said John G. Webb, M.D., lead author of the study and Medical Director of Interventional Cardiology and Research at St. Paul’s Hospital in Vancouver. “The advantage is that failing surgical valves can be replaced without the need for open-heart surgery.”

Many, but not all, surgical valves can be replaced this way. “Patients may recover more rapidly, and the concerns about major surgery are reduced,” said Webb. The procedure is offered only to selected patients with failed surgical valves who would be poor candidates for another operation. Factors that made the patients in the study risky or ineligible as surgical candidates included two or more prior open-chest surgeries, severe pulmonary hypertension and various heart or other complications.

Although the procedure was first done about five years ago, only isolated cases have been reported on so far, Webb said. The new study presents data from a significant number of patients and involves all four heart valves. Ten patients in the study had failed aortic valves; seven, failed mitral valves; six, failed pulmonary valves; and one, a failed tricuspid valve.

All patients survived the transcatheter procedure. However, one mitral valve patient whose implantation was converted to traditional open chest surgery suffered a stroke and renal failure and died the next day. Another mitral valve patient died 45 days after the surgery.

While re-operation has been the standard treatment for deteriorated prosthetic valves, such repeat open-heart surgeries can have significant risks, the study authors said. They cite calculations from the Society of Thoracic Surgeons that predict an 80-year-old man with no other health problems faces a five percent risk of death for re-operation on an aortic valve, 10 percent risk for a mitral re-operation

and more substantial risk if he has other complications.

Previously implanted valves have many different shapes, sizes and manufacturers — making it difficult to assess how universally the transcatheter valve implants will function, Webb said. “The procedure only works well if the original surgical valve is large enough for the new transcatheter valve to fit inside it. Most surgical valves are large enough, but not all. If the surgical valve is small, the new valve may open more fully than the old valve but not as well as you would like.”

Nevertheless, he continues, “Generally the transcatheter valves work very well for treating leaky, failed surgical valves.”

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