

Minimally-invasive failed biological aortic valve replacement successful in high risk patients

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When a biologic aortic valve prosthesis fails, the patient often faces a high risk valve replacement through repeat open heart surgery. A new technique, known as Valve-in-Valve, uses minimally invasive techniques to introduce a collapsible aortic heart valve into the damaged valve in order to restore function. This procedure avoids the need to open the chest or use cardiopulmonary bypass (heart-lung machine), according to Leo Ihlberg, MD, PhD, a cardiothoracic surgeon at the Heart and Lung Center of Helsinki University Hospital, Finland, who will be presenting the results of a new study at the 93rd AATS Annual Meeting in Minneapolis on May 6, 2013.

For decades, replacing faulty [heart valves](#) with a biological valve prosthesis has been a standard procedure in modern heart surgery. However, these valve substitutes have a limited [life span](#) as they degenerate over time, prompting a need to replace them. Traditionally done in a repeat open heart operation using cardiopulmonary bypass, these procedures have far more risks involved and are often more difficult on the patient than the [initial operation](#).

Transcatheter Aortic Heart Valve (TAVI) is a procedure involving a collapsible aortic heart valve that can be manipulated into place with minimally-[invasive techniques](#). The surgeon introduces the collapsed valve through a tube inserted into the groin or between the ribs and guides it through the blood vessels and into the failing valve. The

damaged valve is sealed off and the collapsed valve is then inflated to restore function. This can be done while the heart is still beating (without using cardiopulmonary bypass) and without opening the chest.

"There has been a trend towards lower age at which a bioprosthesis is preferentially chosen over a [mechanical valve](#) substitute. Biologic valves, however, have limited durability due to late degenerative valve failures and dense calcification that often necessitates reoperation," says Dr. Ihlberg, a [cardiothoracic surgeon](#) at the Heart and Lung Center of Helsinki University Hospital in Finland.

By the time a valve fails, oftentimes patients are elderly and experiencing deteriorating health. Thus, there is an increased need for an alternative to replacing a damaged [aortic valve](#) such that it avoids mortality (estimated at 2-30%), morbidity, longer hospital stay, and prolonged recovery associated with repeat [open-heart surgery](#). The Valve-in-Valve technique could be that option for these patients.

In this report of 45 Valve-in-Valve surgeries performed in elderly patients in four Nordic countries (Finland, Sweden, Norway, and Denmark) with very high or prohibitive risk for a repeat open heart surgery, "the results were excellent in terms of low procedural complications and a significant improvement in patients' functional status," said Dr. Ihlberg. Relief from valve stenosis was incomplete for a small subgroup of patients, although it is unknown whether this will cause any long term side effects. The patients were followed for an average of 14 months, and Dr. Ihlberg will present details regarding short-term and long-term cumulative survival rates, causes of death, and functional and hemodynamic status.

This technique gives patients with failing biologic valves a new, less-invasive option for replacement, especially high risk individuals who cannot undergo a repeat open heart procedure.

At the current time, Valve-in-Valve aortic [valve replacement](#) is done infrequently, but Dr. Ihlberg expects that its use will increase as more surgeons gain experience and more patients require biologic valve replacements after having an initial replacement at an earlier age. Dr. Ihlberg even suggests that initial valve replacements should be done in ways that set the stage for future Valve-in-Valve repairs.

More information: "Early Clinical Outcome of Transcatheter Valve-in Valve Implantation in the Nordic Countries," by Leo Ihlberg, Henrik Nissen, Niels-Henrik Nielsen, Andreas Ruck, Rolf Busund, Kaj-Erik Klaarborg, Lars Soendergaard, Jan Harnek, Heikki Miettinen, Markku Eskola, Alexander Wahba, and Mika Laine. Presentation at the 93rd AATS Annual Meeting. May 4-8, 2013. Minneapolis, MN, during the Plenary Scientific Session on May 6, 11:00 AM CT.

aats.org/annualmeeting/

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