



## Novel Heart Valve Replacement Technique



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New research presented at South African Association Heart Congress 2016 reveals a novel heart valve replacement method that could offer hope to thousands of patients with rheumatic heart disease.

As highlighted by lead author Dr Jacques Scherman, a cardiac surgeon in the Chris Barnard Division of Cardiothoracic Surgery, University of Cape Town, South Africa, transcatheter aortic valve implantation (TAVI) has revolutionised heart valve surgery over the past decade or so. TAVI makes it possible to replace or repair heart valves without open heart surgery or a heart-lung machine.

TAVI is specifically indicated for patients with calcific degenerative aortic valve disease typically prevalent in developed countries. However, it is rheumatic heart disease that affects majority of patients in developing countries. Patients suffering from rheumatic heart disease may develop fibrosis of the valves which could lead to valvular heart disease, heart failure and death. Patients in developing countries such as Africa often have limited access to sophisticated cardiac surgery or imaging.

To deal with this challenge, Dr Scherman and his team have developed a simplified TAVI device that is especially designed for patients with rheumatic heart disease. This new device is non-occlusive and self-locating therefore it does not require any sophisticated cardiac image for accurate positioning nor does it need to stop blood circulating to the body with rapid ventricular pacing.

The device was tested in a sheep model. Findings show that it is fairly easy to use and was able to position the valve correctly. In addition, the procedure could be performed without rapid ventricular pacing.

Dr Scherman said: "We showed that this new non-occlusive, self-locating TAVI delivery system made it easy to perform transcatheter aortic valve replacement. Using tactile feedback the device is stabilised in the correct position within the aortic root during the implantation. It also has a temporary backflow valve to prevent blood leaking backwards into the ventricle during the implantation of the new valve. All these factors together allowed for a slow, controlled implantation compared to the currently available balloon expandable devices."

The biggest advantage of this novel technique is that it can be done in hospitals without cardiac surgery and costs much less than conventional TAVI. The use of this method could potentially save the lives of numerous patients with rheumatic heart disease, especially in regions that may have many general hospitals but none that offer open heart surgery or those that have adequate provisions of cardiac surgery.

Professor Fausto Pinto, ESC president and course director of the ESC programme in South Africa, said: "The development of innovative therapeutic strategies is extremely important to allow a larger number of patients to be treated."

Source: [ESC](#)

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