

Keyhole heart valve surgery after previous heart transplantation

Advances in heart transplant techniques and medication that control rejection and infections resulted in improved survival and quality of life. These improved long term outcomes are unfortunately paralleled by a variety of associated coronary-, mitral- and tricuspid valve diseases. These include potential injuries caused by heart muscle biopsies or aging related valve disease. To prevent the development of heart failure, correction or replacement of these valve are usually performed either by splitting the breast bone again, by large cuts on the side of the chest or, in special circumstances, by using special valve correction technology through the groin blood vessels.



Fig. 1. Endo-aortic balloon occlusion of the aorta.

The current robotic- and minimally invasive heart surgery team of Onze Lieve Vrouw Clinic, in Aalst, Belgium, recently reported their experience in offering heart transplant patients suffering from mitral- or tricuspid valve disease (Fig. 1) the option of surgical correction by using the latest 3D camera- and keyhole heart surgery technology. The operation entails the use of a heart-lung machine that is connected to the body through a small groin incision, a specially engineered balloon that is inflated in the aorta and a 3-4 cm chest incision for the use of special instruments. This approach provides focused and targeted access to the relevant heart valves without the risks of injuring the heart by splitting the breast bone again. The heart and its blood vessels may become

stuck to surrounding structures after the initial heart transplant operation. Our minimally invasive technique also facilitates the protection of the heart muscle during the operation by allowing infusion of special solutions into the heart vessels. Subsequently, simple- and complex valve repair and replacements procedures can be performed (Fig. 2). In addition, other procedures, like the correction of certain heart rhythm abnormalities, can be performed using the same approach. The operative outcomes and more than 200 months of data of 7 consecutive heart transplant patients with mitral- or tricuspid valve disease (average age 57.9 ± 17.2 years, 57.1% severe heart failure), were analysed in the study, which amounted to a total of more than 860 months of data since the initial heart transplant. There were no operative deaths, in-hospital re-operations or wound infections. In addition, no repeat mitral- or tricuspid valve procedures were required in any of the patients and 83.4% experienced marked improvement of their heart failure symptoms.

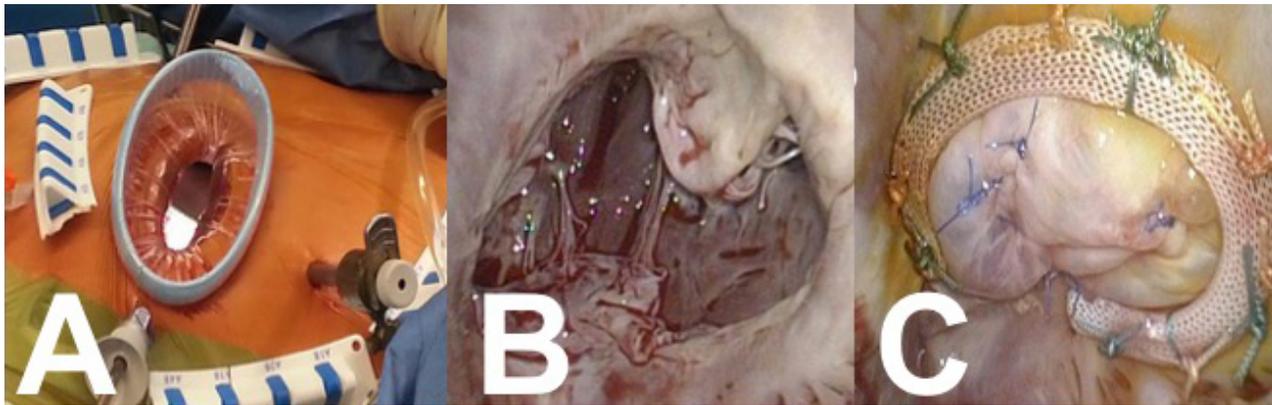


Fig. 2. Endoscopic surgery is performed through small incision (A). Heart muscle biopsies resulted in tricuspid valve injury (B), which was subsequently repaired (C).

Furthermore, no patients had new heart rhythm abnormalities or required the implantation of pacemaker devices to assist with the generation of impulses for the heart to contract. Heart scans also confirmed that no patient had significant mitral- or tricuspid valve disease that would require another operation. The study concluded that the technique routinely applied at Onze Lieve Vrouw Clinic was safe and durable with favourable operation related survival, low complication rates and excellent longer term results in experienced hands. The team emphasised that this technique provides an attractive benchmark against which emerging technology may be measured and that earlier referral should be considered to avoid the progression of heart transplant related valve disease into heart failure.

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Publication

[Endoscopic Port Access Surgery for Late Orthotopic Cardiac Transplantation Atrioventricular Valve Disease.](#)

van der Merwe J, Casselman F, Stockman B, Vermeulen Y, Degrieck I, Van Praet F
J Heart Valve Dis. 2017 Mar