Documents

Navarra, E.[a b c] , Bollen, X.[d] , Zito, F.[c] , de Kerchove, L.[a b] , El Khoury, G.[a b] , Parla, A.[a b]

Native Aortic Valve Resection Using a Novel Blade-Based Device

(2024) *Innovations: Technology and Techniques in Cardiothoracic and Vascular Surgery*, 19 (2), pp. 150-155.

DOI: 10.1177/15569845241232645

[a] Pôle de Recherche Cardiovasculaire, Institut de Recherche Expérimentale et Clinique, Université Catholique de Louvain, Brussels, Belgium
[b] Department of Cardiovascular and Thoracic Surgery, Cliniques Universitaires Saint-Luc, Université Catholique de Louvain, Brussels, Belgium
[c] Department of Cardiac Surgery, Ospedale Sant'Andrea, “Sapienza” Università di Roma, Italy
[d] Center for Research in Mechatronics, Catholic University of Louvain, Belgium

Abstract
Objective: The aim of this study was to validate the use of a new resection device in patient candidates for surgical aortic valve replacement. We evaluated the efficacy of this new circular blade to resect the aortic valve and the efficacy to collect the debris during the resection. Methods: For this study, a single size instrument was used, with an external diameter of 22 mm, and patients were selected on the basis of the preoperative assessment of the aortic diameters. Results: From October 2018 to June 2019, 10 patient candidates for surgical aortic valve replacement were selected to undergo native aortic valve resection using a new device, before surgical valve implantation. The mean age of the patients was 74 ± 7.6 years, and 8 of 10 were male. The mean aortic annulus diameter, measured before the procedure, was 25.7 ± 1.57 mm. The resection was complete in 9 (90%) patients. In 1 patient, due to an imprecise positioning of the device, the valve resection was partial. None of the patients showed signs or symptoms due to debris embolism. In all patients, the postoperative course was uneventful. Conclusions: These preliminary results show that resection of the aortic valve using a circular foldable blade is feasible. This prototype, used during conventional surgery even through a small incision, provided an efficient tool to easily resect the valve without debris release. © The Author(s) 2024.

Author Keywords
aortic valve; resection; TAVI; transcatheter

Index Keywords
aged, aortic annulus, aortic clamping, aortic diameter, aortic leaflet, aortic pressure, aortic root diameter, aortic stenosis, aortic surgery, aortic valve, aortic valve disease, aortic valve replacement, Article, blood flow velocity, cannulation, cardiac gated imaging, cardioplegia, cardiopulmonary bypass, clinical article, computer assisted tomography, coronary angiography, cross clamp time, echocardiography, electrocardiogram, female, follow up, heart left ventricle outflow tract, heart valve replacement, human, male, New York Heart Association class, new-onset atrial fibrillation, operation duration, physical examination, pleura effusion, preoperative evaluation, pulmonary vein, sternotomy, surgical infection, thorax radiography, transcatheter aortic valve implantation, transesophageal echocardiography, transthoracic echocardiography, aortic valve, devices, equipment design, procedures, surgery, treatment outcome, very elderly; Aged, Aged, 80 and over, Aortic Valve, Equipment Design, Female, Heart Valve Prosthesis Implantation, Humans, Male, Treatment Outcome

Correspondence Address
Navarra E.; Pôle de Recherche Cardiovasculaire, Belgium; email: enavarra@ospedalesantandrea.it

Publisher: SAGE Publications Ltd

ISSN: 15569845
PubMed ID: 38462786
Language of Original Document: English
Abbreviated Source Title: Innov. Technol. Tech. Cardiothorac. Vasc. Surg.
2-s2.0-85187475827
Document Type: Article
Publication Stage: Final
Source: Scopus