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Determinants of conversion to aortic valve replacement in patients selected for valve repair

Background

Whether patients with aortic regurgitation and/or a dilated ascending aorta undergo valve repair or replacement highly depends on the center in which the patient is treated. In specialized repair centers surgeons can correctly predict the suitability of repair of the aortic valve in the vast majority of cases. In 4326 patients in the AVIATOR registry, information on the intention to repair before and after cusp analysis was complete. The fast majority receives repair (89%) as the prior intention was. At the other side of the spectrum: ninety-one patients receive a replacement when it was clear that the valve could not be repaired. In between are the cross-overs. The objective of the current study is to give further inside in the patient and valve characteristics that determine a repair or replacement strategy and to assess determinants that predict valve repair failure (conversion to aortic valve replacement or early reoperation).

Research questions

- Which patient and valve characteristics determine valve repair or replacement in specialized repair centers?
- Does patient selection - for aortic valve repair - differ among specialized repair centers?
- Are there determinants that predict aortic valve replacement after initial aortic valve repair?

Methods

A random mixed model will be developed with preoperative patient and valve characteristics as determinants (predictors) and conversion to aortic valve replacement as outcome variable. Potential determinants are, for example: left ventricular function, age, connective tissue disease, NYHA, detailed aortic valve morphology, aortic root dimensions, main reason for referral. Conversion to aortic valve replacement will be defined as conversion to valve replacement in an additional clamp

session after initial repair or as reoperation during follow-up. As treatment decisions could be dependent on center specific factors, we will model 'center' as random co-variate in the model.

Data selection

We would like to select all patients where the question 'intention to repair' is complete as well as before as after the cusp analysis. More in detail, we would like to select the following data variables from the AVIATOR registry: subject ID, center ID (anonymised), gender, DOB, reason for referral, dissection, endocarditis, height, weight, HR, LVEF, COPD, IDDM, dialysis, poor mobility, extracardiac arteriopathy, recent myocardial infarction, critical state, creatinine value, pulmonary hypertension, CTD, urgency of operation, intention to repair before and after cusp analysis, operation date, age, hegar, AV morphology, cusp analysis, operation type, repair type, replacement type, graft, clamp duration, additional clamp session needed, operation type during additional clamp session, all pre-op and intra-op ECHO variables, operation type during follow-up.

Planning

November/December: receive data set

January-March: data analysis

April: writing (draft) manuscript