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A Case of Severe Aortic Regurgitation Caused by Fissured Aortic Cusps Reconstructed with Autologous Pericardium



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An 82-year-old woman was hospitalised in our institution because of worsening dyspnoea on effort. She had a history of aortic valve reconstruction with autologous pericardium (AVrC) for severe aortic stenosis 1 year and 9 months ago. Her transthoracic echo examination revealed that she had severe aortic regurgitation with preserved left ventricular systolic function. Compared with her previous echo findings shortly after AVrC, her left ventricle was clearly dilated with newly detected moderate mitral regurgitation. Transoesophageal echo was performed for further investigation, which showed that, in particular, her right coronary cusp (RCC) was obviously prolapsed toward the left ventricular outflow tract with wide aortic regurgitant jet. After conservative medical therapy, aortic valve replacement and mitral annular plasty were performed. Her removed autologous aortic cusps clarified the details: not only did the RCC, but also left coronary cusp have two clefts on both ends of each cusp, and the non-coronary cusp had one fissure on one end. Her symptoms improved dramatically after aortic valve replacement. Aortic valve reconstruction with autologous pericardium is characterised by excellent valvular durability with a low mortality. However, the patient in this case suffered from rapid deterioration of the reconstructed autologous aortic valve. According to a previous report, one AVrC case was required reoperation due to aortic regurgitation caused by prolapse of RCC, which was the same cusp as in this case. Autologous RCC for AVrC is usually the smallest and made from thinner side of pericardium. This may be the reason why RCC is the culprit cusp when aortic regurgitation occurs shortly after AVrC.

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A Comparison of Long-Term Mortality Prediction Using Two Methods of Ejection Fraction Assessment from the National Echo Database Australia



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Background: Echocardiography is well established in the evaluation of left ventricular ejection fraction (LVEF). We evaluated the prognostic impact of two established methodologies for calculating LVEF: basal long-axis two-dimensional Teicholz method (Teich) and the Apical Biplane Method of Disks (MOD).

Methods: Data were from 352,844 individuals who had a mean follow-up of 5.4 years per person and 63,142 fatal events. We compared Teich and MOD (102,850 cases) in predicting all-cause mortality at various time points (1 year and 5 years) across the full distribution of LVEF values. This included all cases and those with the lowest quintile of LVEF ($\leq 55\%$).

Results: In age- and sex-adjusted Cox proportional hazard models, both methods performed well in delineating the risk of all-cause mortality. The Teich method performed slightly better: adjusted HR for mortality in the lowest versus highest quintile of LVEF was 1.89 (95% confidence interval [CI] 1.80–1.98) for MOD versus 2.00 (95% CI 1.93–2.07) for Teich ($p < 0.001$ for all outputs). The sensitivity and specificity of age- and sex-adjusted multiple logistic regression models using Teich were superior in predicting all-cause mortality.

Conclusion: LVEF is a powerful predictor of short-to-long-term mortality with a steep gradient of increasing risk in those individuals with a LVEF $< 55\%$. However, in like-for-like comparisons, within a large population, Teich appears to be a stronger correlate of mortality both within the entire spectrum of LVEF values and, specifically, among those with impaired EF. For an individual patient, the best method for EF assessment may be dependent on initial image quality.

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