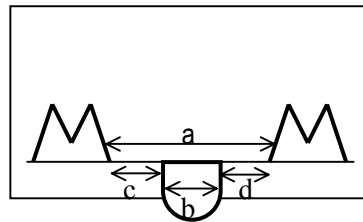


059 Right ventricular function during coronary surgery: feasibility of the Tei index

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Introduction: Ischaemia during cardiopulmonary bypass (CPB) can provoke deterioration of right ventricular (RV) function. Echocardiographic evaluation of RV function is limited by the complex RV geometric form. In transthoracic echocardiography, the Tei index (the sum of isovolumetric contraction [IVCT=c] and relaxation [IVRT=d] times divided by the ejection time [b]) has been proposed for evaluation of systolic and diastolic RV function [1].



$$\text{IVCT} + \text{IVRT} = c + d = a - b$$

$$\text{Tei} = (a - b) / b$$

However, its feasibility by transoesophageal echocardiography (TOE) is unknown, and its usefulness during cardiac surgery has never been demonstrated. Accordingly, the aim of this pilot study was to evaluate the feasibility of the Tei index during coronary artery bypass graft surgery with CPB (on-pump CABG), and without CPB (OPCAB).

Method: Tei index was obtained in 39 patients before and after surgical revascularization, from whom 26 underwent on-pump CABG (in 13, cardiac arrest was obtained with antegrade crystalloid cardioplegia and for the others with antegrade blood cardioplegia), and 13 patients underwent OPCAB.

Results: Tei index could be obtained by TOE and measured off-line in all 39 patients at both time points. The Tei index was unchanged after OPCAB, whereas it markedly increased during on-pump CABG.

	Crystalloid Cardioplegia	Blood Cardioplegia	OPCAB
Number of patients	13	13	13
Preoperative Tei index	0.26 (0.12-0.32)*	0.13 (0.05-0.24)*	0.16 (0.04-0.25)
Postoperative Tei index	0.44 (0.21-0.58)*†	0.28 (0.15-0.52)*†	0.15 (0.06-0.28)†

Data are Median (95% Confidence interval).

* $P < 0.01$: postop. vs. preop. comparison (Wilcoxon signed rank test);

† $P = 0.01$ postop. intergroup comparison (Kruskal-Wallis).

Conclusion: The pilot data show that evaluation of the RV function using the Tei index is feasible by TOE during cardiac surgery. Furthermore, they suggest that CABG and OPCAB might differently affect RV function.

Reference:

- 1 Tei C, Dujardin KS, Hodge DO, et al. Doppler echocardiographic index for assessment of global right ventricular function. *J Am Soc Echocardiogr* 1996; 9: 838-847.