

Cardiac resynchronization therapy using endocardial versus trans-coronary sinus, epicardial left ventricular pacing: the Epi-Endo study

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Aims: Some studies have suggested that cardiac resynchronization therapy (CRT) using endocardial left ventricular (LV) pacing (Endo-CRT) is superior to a conventional transvenous, epicardial CRT (Epi-CRT). To determine whether, in CRT recipients, endocardial LV pacing is haemodynamically superior to trans-coronary vein (trans-CV) LV epicardial pacing.

Methods and results: At implantation patients (n=16; aged 68.9±8.32 years; 13 male) underwent Epi-CRT and Endo-CRT in basal, mid and apical myocardial segments, delivered using the trans-CS lead and an intra-cavitary, roving EP catheter to achieve juxtapositions of the epicardial and endocardial side of the LV free wall respectively. Myocardial scar was quantified using cardiovascular magnetic resonance. An acute haemodynamic response (AHR) was defined as a ≥10% increase in the maximal rate of rise of LV pressure (%LV dP/dtmax) in relation to RV pacing (DOO). When the 84 paired segments were taken together, the %ΔLV dP/dtmax was higher with Endo-CRT than with Epi-CRT (9.9±8.6% vs 7.9±8.3% respectively, p<0.002; 52.3% vs 28.6% responders [p<0.045]). However, Endo-CRT was not always superior to epi-CRT in individual patients. For example, in basal segments, only 5/10 (50%) patients were converted from non-responders with epi-CRT to responders with endo-CRT whereas 1/4 (25%) epi-CRT responder was converted to a non-responder with endo-CRT (Figure). There was no difference in ΔLV dP/dtmax between Epi-CRT and endo-CRT in segments with myocardial scar.

Conclusions: On average, endo-CRT provides a better AHR than epi-CRT. Within patients, however, endo-CRT is not always better.

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Epicardial versus Endocardial CRT

