

14.3 - Cardiac Resynchronisation Therapy (CRT)

Long term conservation of electrical synchrony by multipoint pacing with dynamic atrioventricular delays

Doctor Thibault B; Doctor Chow A; Doctor Mangual J; Doctor Badie N; Doctor Waddingham P; Doctor Mcspadden L; Doctor Betts T; Doctor Calo L; Doctor Leyva F.

Montreal Heart Institute, Montreal, Canada
 Barts Health NHS Trust, London, United Kingdom of Great Britain & Northern Ireland
 Abbott, Sylmar, United States of America
 John Radcliffe Hospital, Oxford, United Kingdom of Great Britain & Northern Ireland
 Polyclinic Casilino, Rome, Italy
 Aston Medical School, Birmingham, United Kingdom of Great Britain & Northern Ireland

Funding Acknowledgements: Type of funding sources: Private company. Main funding source(s): Abbott.

Introduction: Automatic adjustment of atrioventricular delay (AVD) with SyncAV has been shown to improve electrical synchronization. However, the long term effects of SyncAV optimization on electrical synchrony are unknown.

Purpose: Evaluate the effect of SyncAV programming on 6-month (6mo) QRS duration during biventricular (BIV) and left ventricle only MultiPoint Pacing (MPP).

Methods: Patients with LBBB and QRS duration (QRSd) ≥ 150 ms scheduled for CRT-P/D device implantation with quadripolar LV lead were enrolled in this prospective study. QRSd was measured post-implant from 12-lead surface ECG by blinded experts during the following pacing modes: intrinsic conduction, MPP (MPP=RV+LV1+LV2) and LV-only MPP (LVMPP=LV1+LV2). For each mode, SyncAV was enabled (e.g. MPP+SyncAV) with the patient-tailored SyncAV offset that minimized QRSd. Patients were then randomized 1:1 to receive MPP+SyncAV or LVMPP+SyncAV with the optimal offset identified at implant, and QRSd was re-evaluated at the 6mo follow-up.

Results: Fifty-nine patients (72% male, 41% ischemic, 26% ejection fraction, 166 ms intrinsic QRSd) completed device implant and QRSd assessment. Relative to intrinsic conduction at implant, the MPP+SyncAV group (n=30) had a QRSd reduction of 26% at implant (162 to 122 ms, $p<0.001$), and 20% at 6mo (162 to 130 ms, $p<0.001$). The LVMPP+SyncAV group (n=29) had a QRSd reduction of 24% at implant (165 to 128 ms, $p<0.001$), and 15% at 6mo (165 to 140 ms, $p<0.001$). In the MPP+SyncAV group, 28/30 (93%) of patients had more than 10% reduction in QRSd with respect to intrinsic at implant, with 27/30 (90%) maintaining this trend at 6 mo follow up. With LVMPP+SyncAV pacing, only 25/29 (86%) of patients had more than 10% reduction in QRSd with respect to intrinsic at implant, and this reduced to 18/29 (62%) maintaining this trend at 6 mo follow up.

Conclusion: MPP combined with SyncAV significantly improved acute electrical synchrony at implant in CRT patients with LBBB, as assessed by QRSd reduction. Significant QRSd reduction was maintained at 6 months post-implant by both biventricular and LV-only MPP configurations.

