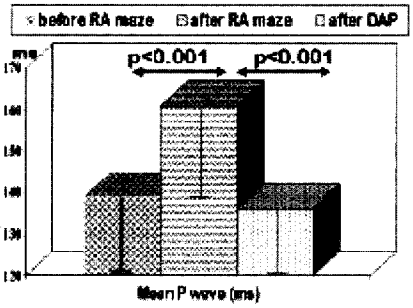
Endpoint	DDDR Average±st.dev. (median) [coefficient of variation]	DDDR+Prev Average±st.dev. (median) [coefficient of variation]	p value
AF frequency (episodes per day)	0.90 ± 2.58 (0.04) [286 %]	0.92 ± 2.40 (0.01) [261 %]	0.96
AF burden (minutes per day)	180.2 ± 369.1 (3.4) [205 %]	154.4 ± 319.7 (5.3) [207 %]	0.43
SR interval length (days)	10 ± 18 (2) [180 %]	15 ± 27 (2) [182 %]	0.20
Percentage of days with AF (%)	5.7 ± 8.7 (0.9) [153 %]	3.7 ± 6.6 (0.4) [178 %]	0.02

Frequencies of time intervals between the onset of consecutive atrial arrhythmia detections were fitted by power law functions showing that DDDR+Prev pacing is associated to longer SR intervals (slope 1.15) when compared to DDDR pacing (slope 1.25). Conclusions. Prevention pacing significantly decreased the percentage of days with symptomatic or asymptomatic AF episodes and increased SR intervals. AF frequency and AF burden high variability may limit the capability to measure prevention pacing impact via standard measures of central tendency.

1017-3 Three-Dimensional Noncontact Mapping Demonstrates Synergistic Electrophysiologic Effects of Multisite Atrial Pacing and Linear Atrial Ablation in Patients With Refractory Atrial Fibrillation

Artur Filipecki, Sanjeev Saksena, Atul Prakash, George Philip, Atlantic Health System, Passaic, NJ

Background: While linear right atrial (RA) ablation has limited efficacy in atrial fibrillation (AF) & dual site RA pacing (DAP) can be efficacious, the electrophysiologic effects of combined "hybrid" therapy have not been studied using 3-D non-contact mapping (NCM). **Methods:** We examined global atrial activation & RA activation before & after RA maze in pts with refractory AF & evaluated the impact of DAP after RA maze using NCM. **Results:** 30 pts, mean age 69±10 yrs, mean LA size 42±9 mm, mean LVEF 43+/-12%, with cardiac disease (n=25) were studied. Mean P wave duration (Figure) increased after maze from 139±19 to 169±20 (p<.001) & mean P wave amplitude was reduced from 1.9 to 1.1 mV(p<.05). NCM showed linear intra-atrial block & segmentation into anterior & posterior RA compartments. Slow & prolonged RA activation was noted in both compartments after maze. Spontaneous macro-reentrant tachycardias around linear lesions or in a compartment after maze were seen in 8 pts (26%) . P wave duration was reduced by DAP to 136±16(p<.001). DAP produced 2 simultaneous RA wavefronts, one in each RA compartment resynchronizing them & preventing spontaneous tachycardias. Global atrial activation time was reduced by 10-30% (mean 18%). **Conclusions:** 1. RA maze procedures produce conduction delay, prolong global atrial activation & can promote macroreentrant arrhythmias. 2. DAP resynchronizes RA maze compartments & prevents macroreentry. 3. DAP & RA maze have potential for synergy in antiarrhythmic effects in hybrid therapy of AF .



1017-4 Bachmann s Bundle Region Pacing Maintains Pulmonary Venous Transport Compared to Right Atrial Appendage and Dual Site Right Atrial Pacing

Douglas A. Hettrick, Paul D. Ziegler, Jacquelyn P. Kulinski, Rahul Mehra, Medtronic, Inc., Minneapolis, MN

Background: Alternate atrial pacing lead locations including Bachmann's Bundle region(BB), the coronary sinus ostium (CSO), and dual site pacing from the right atrial appendage (RAA) and CSO (DSRA) have been proposed for prevention of atrial fibrillation (AF). These pacing sites may also affect AF indirectly by changing atrial contraction patterns and hence atrial and pulmonary venous transport function. We compared hemodynamic indices during dual chamber pacing from the RAA, BB, CSO and DSRA. Methods: Ansesthetized dogs (n=7, 27±2 kg) were instrumented for measurement of left atrial (LA), left ventricular end diastolic (LVEDP), and mean arterial pressure (MAP), dP/dt, LA volume, LV end-diastolic diameter (EDD), cardiac output (CO) and pulmonary venous flow (PVF). Hemodynamics were compared during DOO pacing (90 bpm) from each site at AV delays of 90, 120, 150 and 180 ms following AV nodal ablation. Results: CO, dP/dt and LVEDP did not change with site or delay. EDD varied significantly (p<0.05) with AV delay at all lead locations. MAP depended on AV delay during RAA and DSRA, but not BB and CSO pacing. Minimum PVF following atrial contraction, an index of PV transport, depended significantly on both AV delay and atrial lead location (table). Conclusions: BB pacing maintained PV transport during atrial contraction relative to RAA and DSRA pacing in anesthetized dogs with normal intra-atrial conduction. Other hemodynamic parameters were unchanged. PV flow patterns may influence mechanical triggers of AF.

Minimum PVF (ml/min)

AV Delay (ms)	90	120	150	180
RAA	2±11	5±2[d]	24±6	54±12[abd]
BB	18±11	24±10	36±12	73±]16[abc]
CSO	7±14	11±9	27±10	64±14[abc]
DSRA	8±12	6±13[d]	24±8	69±13[abc]

a p<0.05 vs. 90ms, b p<0.05 vs. 120, c p<0.05 vs. 150, d p<0.05 vs BB

1017-5 Combined Atrial Pacing Prevention Algorithms Reduce Atrial Tachyarrhythmia Burden in Bradycardia Patients With Frequent Premature Atrial Contractions and Standard Atrial Lead Placement: ASPECT Trial Results

Mark Harvey, Reece Holbrook, Martin Young, Brent Sakowski, Andrew Mugglin, Doug Hettrick, The Worldwide ASPECT Investigators, Presbyterian Hospital, Oklahoma City, OK, Medtronic, Minneapolis, MN

Background: Atrial prevention pacing algorithms (PPA) have previously been shown to reduce the frequency of premature atrial contractions (PAC) in bradycardia patients with a history of atrial tachyarrhythmias (AT). Whether this reduction is associated with a reduction in AT burden in patients with high PAC frequency is unknown.
Methods: 120 patients with a Class 1 pacing indication and a history of paroxysmal AT receiving a DDDRP pacemaker with AT and PAC detection and enhanced far-field R-wave rejection features (AT500, Medtronic) including 69 patients with atrial septal leads were eligible for analysis. After a one-month monitoring period with DDDR pacing at 60 ppm, patients were randomized to 3 months of PPA programmed ON or OFF in a cross-over fashion. Patients were stratified into two groups based on whether their PAC frequency during the monitoring period was above or below the median PAC frequency in the overall group (2841/day). Device classified AT burden was compared between PPA ON and OFF periods.
Results: High PAC frequency during the monitoring period was associated with burden reduction during the PPA ON period in patients with non-septal, but not with septal lead placement (Table). In the 60 patients with PAC frequency ≤ 2841/day, no significant difference in burden between the PPA ON and OFF periods was observed, regardless of lead placement.

Patients with PAC Frequency>2841/day	n	Median Burden Reduction (on-off) (hr/day)	p
ALL	60	-0.04	0.08
Non-Septal	29	-0.63	0.04
Septal	31	0.01	0.42

Conclusion: Patients with non-septal lead placement and high frequency PAC's may represent a responder group for atrial prevention pacing algorithms.

1017-6 Effects of Atrial Septal Lead Location on Atrial Tachyarrhythmia Detection and Device Diagnostics in Bradycardia Patients

H. Pürerfellner, Reece Holbrook, Martin Young, Jaquelyn Kulinski, Jodi Koehler, Doug Hettrick, A.ö. Krankenhaus der Elisabethinen Linz, Linz, Austria, Medtronic, Minneapolis, MN

Background: The impact of atrial septal lead placement on the accuracy of atrial tachyarrhythmia (AT) detection is unknown.
Methods: Patients with a history of bradycardia and AT were randomized to atrial septal or non-septal lead placement and implanted with a DDDRP pacemaker (AT500, Medtronic). Each stored episode was classified for appropriateness of AT detection (i.e. AT confirmed at episode onset) and termination (i.e. sinus or paced rhythm confirmed at device-classified episode termination). Positive predictive value (PPV) was adjusted for multiple episodes within a patient.* AT episodes from septal patients were analyzed by lead position (low, mid, or high-septal).
Results: A total of 16,843 stored episodes were analyzed from 239 patients. PPV for episode detection was similar for both lead locations (Table). The PPV of episode termination was significantly lower for patients with septal leads. Most inappropriately terminated episodes were followed by appropriate re-detection within 1 minute. The PPV value of