

## BACKGROUND

- Despite many advantages, leadless pacemakers are currently only capable of single-chamber ventricular pacing.
- More recently it was developed a new software to detect atrial contraction using a 3-axis accelerometer enabling AV synchronous pacing.
- **The aim of this study was to evaluate the feasibility of AV synchronous pacing in a leadless pacemaker.**

## METHODS

- This is a prospective single centre registry enrolling 11 consecutive patients with AV block referred to leadless pacemaker Micra™ with AV synchronous algorithm (VDD).
- Baseline, procedural and follow-up data were collected.
- The last segment of cardiac activity in accelerometer signal (A4) which corresponds to atrial contraction was measured in amplitude.
- Atrioventricular synchrony (AVS) was measured during 30 minutes of rest (Holter monitor) in patients with complete or high-degree AV block and was defined as a P wave visible on surface ECG followed by a ventricular event <300 ms.

## RESULTS

- The baseline and pacing characteristics of the study population can be found on table 1 and 2, respectively.
- The mean follow up was 118 ± 76 days. No major complications related to the procedure were reported at implantation nor during follow-up.
- The average AM-VP measured in office was 74% in patients with complete or high-degree AV block.
- After programming, the average AVS in complete or high-degree AV block measured with Holter monitor was 93%. No patient showed sinus disease.

**Table 1.** Baseline characteristics of the study population

Parameters	All Cohort (n = 11)
<b>- Demographics</b>	
Age, mean ± SD (years)	73 ± 10
Male sex, n (%)	8 (73%)
Hypertension, n (%)	10 (91%)
Diabetes mellitus, n (%)	5 (45%)
Paroxysmal atrial fibrillation, n (%)	3 (27%)
Congestive heart failure, n (%)	5 (45%)
Coronary artery disease, n (%)	8 (73%)
<b>- Pacing indication</b>	
Complete or high-degree AV block, n (%)	5 (45%)
Other (predominantly intrinsic conduction), n (%)	6 (55%)

**Table 2.** Pacing characteristics

Parameters	Implantation	Follow-up
Pacing threshold, mean ± SD (V)	0.71 ± 0.34 @ 0.24ms	0.84 ± 0.63 @ 0.24ms
R-wave amplitude, mean ± SD (mV)	217 (75%)	155 (75%)
Pacing impedance, mean ± SD (ohms)	199 (69%)	136 (66%)
Pacing percentage > 90%, n (%)	---	5 (45%)
A4 Amplitude, mean ± SD (m/s)	---	1.7 ± 1.9

## CONCLUSION

- Leadless pacemaker with accelerometer-based atrial sensing is feasible and had a high AVS, similar to conventional VDD pacemakers with the advantages of leadless pacing.