

Long term results of the leadless CRT (WiSE-CRT) in patients with failed implantation of a conventional CRT device

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Background: WiSE-CRT and SELECT-LV studies were investigated to prove the leadless cardiac stimulation as a feasible therapy with comparable effects to conventional CRT. However, the long term performance of this promising new therapy in terms of clinical and echocardiographic heart failure parameters as well as NT-proBNP levels is unknown.

Methods: From 2011 to 2016 n=12 patients were implanted with a WiSE-CRT system in our heart centre [? n=10 / ? n=2; Age 67±12 (41-87) years; ICM n=5 und NICM n=7; LVEF 22.6±7.2%, QRS 174±19ms, NT-proBNP 2.005±1.172pg/ml]. All patients were prospectively followed up in a 3 months interval up to 5 years. Reasons for failed conventional CRT were: in 9 patients appropriate coronary veins and 3 patients had no vascular access for a conventional CRT (either thrombosis of subclavian vein or left persisting SVC).

Results: Mean follow-up time was 2.2±1.9 years (0.2 up to 5 years). The NYHA class significantly improved from 2.9±0.3 to 1.7±0.6 (p=0.03) after 5 years. In addition echocardiographic parameters improved significantly, like LVEDD from 71.4 ±12.4 mm to 57.8±16.2 mm, p=0.05 and for LVEF from 23±7% to 33±1%, p=0,001. There was a trend in reduction of the QRS width of 12ms under CRT and of intrinsic QRS width of 14ms at 5 year visit (not significant) compared to baseline measurements. During the long term course the biventricular pacing rate improved from 80% to 96% due to technical optimizations and reduction of intrinsic heart rate by optimization of the drug therapy.

Summary: The WiSE-CRT system shows a good long term performance in patients with failed conventional CRT implantation. Larger randomized registers and studies are necessary to prove this innovative therapy to be as effective or even more effective than conventional CRT.

	baseline	6 months	2 years	5 years	p
n	12	11	6	3	
NYHA class	2.9±0.3	2.0±0.4 *	2.0±0.6 *	1.7±0.6	<0.05 *
QRS intrinsic (ms)	174±18.6	159±12	176±26	160±34	0.1
QRS width CRT (ms)	153±20	148±22	158±33	141±17	0.9
LVEF (%)	22.6±7,2	33.6±10 **	34.2±6.8	33.0±1.0	0.001**
LVEDD (mm)	71.4 ±12,4	61.4±8 *	57.8±16.2 *	62.3±12	<0.05 *
LVEDV (ml)	210±86	198±77	159±112	181±63	0.8
NTproBNP (pg/ml)	2,005±1,172	2,073±1,882	1,715±854	1,951±890	0.5
BV rate (%)	0	80±28 **	95.2±5.7 **	95.7±3.8 **	0.001**