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The lumenless 4.1 Fr transvenous Pacemaker electrode (Medtronic 3830) in patients with congenital heart defects – a single center experience with 39 patients

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Introduction: Transvenous pacing is state-of-the-art in adult patients whereas epicardial pacing may have advantages in children or in congenital heart disease (CHD). Due to its very slim design (4.1 Fr), the recently introduced model 3830 lead (Medtronic Inc., MN, USA) is a very attractive candidate for transvenous lead delivery even in very young and CHD patients. We report our first experience with this bipolar fixed-screw, steroid-eluting lumenless pacing lead in this group using adjusted application techniques to avoid vascular access trauma.
Methods: All procedures were done in conscious sedation except for 2 cases with general anaesthesia. Venous access was obtained in standard fashion via the cephalic vein. For lead placement we either used the original steerable catheter (7 Fr) without an outer sheath or in patients < 20 kg, a modified cut-off peel-away 5 Fr Attain Select II catheter (Medtronic) without additional sheath. Subcutaneous Generator placement was performed in a standard fashion.
Results: 58 Electrodes were implanted in 39 patients: age was 12.8 y (2.1-70) and weight 43 kg (9.7-114), 7 patients < 20 kg. Ventricular leads were successfully placed in RVOT or RV apical septum. There were no lead displacements acutely and no procedural complications. No failure to capture or sense was observed during implant. Follow-up was 392 d (8-1209). Initial pacing thresholds were low in all patients and remained stable during follow-up except in 3 leads with significant increasing values. In one patient this led to change of ventricular electrode after 955 days

	Imlantation		**Last Follow up**	
	Threshold	**Sensing**	**Threshold**	**Sensing**
atrial n = 35	0.7±0.36 V (0.3-2.1)	3.0±1.64 mV (1.4-10.0)	0.5±0.24 V (0.25-1.25)	2.8±2.12 mV (1.4-8.3)
ventricle n=23	0.5±0.17 V (0.25-1.0)	12±7.4 mV (2.8-30.0)	0.75±0.78 V (0.25-3.75)	15±10.16 mV (4.0-31)

Conclusions: The 3830 pacing lead can be successfully implanted in the CHD population with good short- and midterm performance. We used modified delivery techniques that minimize the access size to 5-7 Fr, to tap the full potential of the very slim 4.1 Fr design even for small patients. Of course, long-term data on greater patient collectives are needed to confirm these results. The electrode has several advantages in (complex) CHD patients.