

## Preliminary experience with a novel High Density Grid Mapping Catheter for cardiac mapping in patients with and without congenital heart disease

Özcan S. (1), Ostermayer S.(1), Panagiotou E.(1), Hanten J.(1), Lieck S. (2), Hartmann L. (2), Vazquez-Jimenez J.(3), Kerst G.(1)

University Clinic of RWTH Aachen Pediatric Cardiology, Aachen Germany (1); Abbott, Eschenbach Germany (2); University Clinic of RWTH Aachen, Pediatric Cardiac Surgery, Aachen Germany (3)

**Introduction:** Cardiac mapping is time-consuming and frequently incomplete. The idea of high-density mapping is to obtain a more comprehensive understanding of the arrhythmia mechanism and substrate to facilitate the ablation procedure and to enhance ablation success.

**Methods:** 3D non-fluoroscopic electroanatomic cardiac mapping (Ensite NavX Precision, Abbott) was performed utilizing a novel high-density mapping catheter (Advisor HD Grid Mapping Catheter, Abbott) followed by conventional point-by-point mapping in areas of interest. A paddle-like formed distal tip of the 8-F catheter is created by four soft splines. 16 electrodes are distributed over the four soft splines (1 mm electrode length separated by 3-3-3 ring spacing). The equidistant spacing allows a bi-pole recording along and across the splines.

**Results:** Our single center study comprised 12 patients (table 1; age 25 +/- 11 years, range 7 to 46 years) undergoing ablation of supraventricular tachycardias, premature ventricular contractions (PVC) or ventricular tachycardias (VT). Primary ablation success was achieved in all patients (endpoints defined as: non-inducibility n = 6, bidirectional conduction block n = 2, absence of AP-conduction n= 2, absence/non-inducibility of PVC n = 2).

**Table 1**

Pt-No	CHD	Substrate
1	DILV, Fontan with dilated lateral tunnel	Multiple IARTs
2	TA and PA, Fontan with dilated tunnel	Multiple FAT and IARTs
3	DILV, Fontan	IART
4	TA and PA, Fontan with lateral tunnel	FAT
5	ASD, closure with patch	multiple IARTs
6	DORV, CoA, VSD closure with patch, subclavian flap, RVOT patch	Monomorphic RVOT-PVC, incessant RVOT-VT
7	PA- VSD, RV – PA conduit	RVOT-VT, polymorphic RVOT-PVC
8	D-TGA, Senning, baffle leak	Multiple IARTs
9	None	Idiopathic RVOT-PVC/ns VT
10	None	Left lateral AP
11	None	Idiopathic RVOT-PVC
12	None	Left posterolateral AP

**Conclusion:** The novel HD mapping catheter appears to facilitate cardiac mapping (activation and substrate) and catheter ablation, especially in patients with congenital heart disease. Further studies are needed to evaluate whether this approach improves primary and long-term catheter ablation success.