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Background

- Catheter ablation (CA) of premature ventricular complexes (PVCs) or outflow tract ventricular tachycardias (VTs) is effective in eliminating symptoms and reversing PVC-induced cardiomyopathy.
- Localising the PVC or VT origin can be challenging,
- There are limitations to current mapping techniques, including:
- poor spatial resolution of pace mapping
- inaccurate localization of VT origin based on ECG algorithms
- lack of spontaneous ectopy rendering activation mapping ineffective.
- Non-invasive mapping pre-procedure may be particularly useful to guide ablation where arrhythmias occur infrequently or are transient.
- VIVO[™] (Catheter Precision Inc) is a novel software application based on Cardiac Isochrone Positioning System and uses standard 12 lead ECG.
- The system determines the origin of the PVC by correlating ECGs simulated from the activation sequences originating from every node of a triangulated ventricular model.
- ECG with the highest correlation between measured and simulated ECG is selected as the rough estimate of the cardiac isochrones. The origin of the PVC can be derived from the resulting cardiac isochrones on the cardiac anatomy.

Objective

We sought to determine the accuracy of the VIVO[™] software (Catheter **Precision Inc) at localizing site of origin of spontaneous or paced** ventricular complexes in patients undergoing catheter ablation.

Novel Software Application For Non-invasive Localisation Of Premature Ventricular Complexes To Guide Catheter Ablation



3 independent assessors.

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RVOT septum.



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	Location as per EA map														
× = paced location 0 = PVC location	RV freewall	RV apex	RV mid septum	RV high septum	RVOT ant septum	RVOT ant freewall	RVOT post freewall	RVOT post septum	LV summit	LV apex	LV freewall	LV basal septum	LV coronary sinus	LV GCV	AIV
RV freewall	0 × × × × ×		×	×											
RV apex		× × × × ×													
RV mid septum			×××												
RV high septum			×	×××											
RVOT ant septum					×										
RVOT ant freewall					×	×××			1.00						
RVOT post freewall				×	××	×	0 × × × ×	×							
RVOT post septum					×			×							
LV summit									× × × ×		-				
LV apex										×××					
LV freewall											×××				
LV basal septum										×	×	××			
LV coronary sinus												-	××	×	
LV GCV	_														
AIV															×

Conclusion

- This is the first study to demonstrate the accuracy of VIVO in correctly and noninvasively localising the origin of ventricular complexes.
- This has potential for use in advance of a procedure, to plan and guide PVC ablation, using standard 12 lead ECG and cardiac imaging.
- This is particularly useful for patients with low number of PVCs at the time of procedure.
- Further work is required to assess its accuracy in differentiating between outflow tracts and myocardial layers.

Disclosures

Z. Vali - Boston Scientific Corp., Catheter Precision Inc; M. Lazdam - None; Mistry - St. Jude Medical/ Abbott; X. Li—None; G.A. Ng - St. Jude Medical/ Abbott, Catheter Precision Inc., Boston Scientific Corp., Sorin Group, Biosense Webster Inc.