

## **What is The Optimal Method for Substrate Mapping of Scar-Related VT? Results of High-Resolution Mapping During Stimulation at Multiple Sites**

**Background:** Substrate mapping of scar-related VT is often performed during sinus rhythm to identify areas of maximal activation slowing (MAS) vulnerable for reentry. While this region usually coincides with the vulnerable isthmus, the optimal method locating the isthmus is unknown.

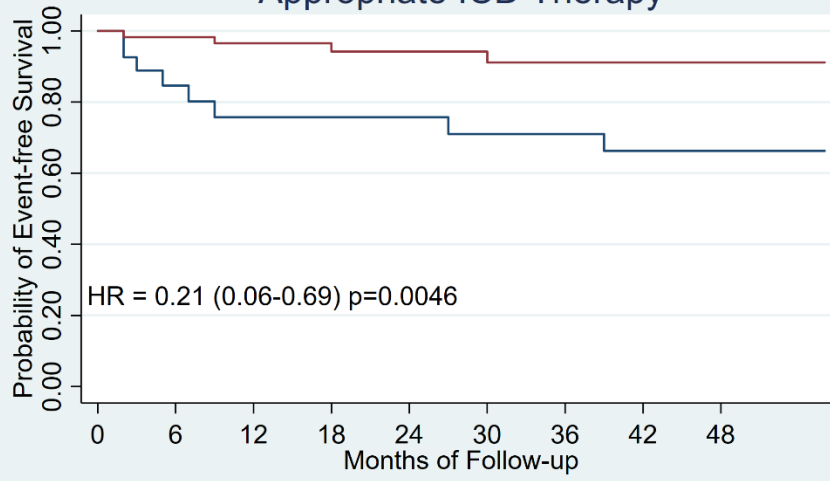
**Objectives:** Determine the optimal method for accurate substrate mapping of scar-related VT.

**Methods:** *PHYSIO-VT* was a prospective multicenter study of infarct-related VT, examining the relationship between the direction of LV activation and the spatial distribution of activation slowing. The LV was mapped during CS, RV and LV pacing and ablation was applied to areas of MAS. This sub-study compares the clinical outcome between patients who underwent ablation at sites of MAS determined by CS pacing alone to patients who underwent ablation at the cumulative area of MAS determined by activation from 3 stimulation sites.

**Results:** In 85 pts, the LV was mapped during activation from  $2.4 \pm 0.6$  directions. In 27 pts, ablation was performed in areas of MAS determined by CS pacing while in 58 pts ablation was performed at the cumulative area of MAS. The number of LV sites exhibiting MAS was higher when activation was interrogated from multiple directions  $3.1 \pm 0.4$  vs  $1.5 \pm 0.7$ ;  $P=0.002$ ). During a follow-up period of 3.6 years (IQR 1.3-4.7), pts who underwent ablation at the cumulative area of MAS had fewer ICD therapies compared with pts who were ablated selectively at areas of MAS determined by CS pacing alone ((HR 0.21 (0.06-0.69),  $p=0.0046$ ; Figure).

**Conclusions:** Substrate mapping during pacing-induced wavefronts from multiple directions increases the sensitivity for identifying isthmus sites that can be targeted with ablation.

### Appropriate ICD Therapy



No. at Risk		0	6	12	18	24	30	36	42	48
Atrial Pacing	27	19	17	16	16	15	15	14	14	14
Multi-site Pacing	58	57	56	41	32	31	28	25	18	18

— Atrial Pacing      — Multi-site Pacing