



# 2020 HEART RHYTHM 2020

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## The Influence Of LV Stimulation Site On The Spatial Distribution Of Conduction Slowing: Implications For Substrate Mapping Of Scar-related Ventricular Tachycardia

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### Abstract:

**Background:** The aim of substrate mapping during sinus rhythm is to identify areas of slow conduction that may become isthmus sites during VT. However, the assumption in this methodology is that conduction properties are similar between sinus rhythm and VT, and therefore findings during sinus rhythm are sufficient for guiding ablation

**Objective:** To examine the influence of the direction of LV activation on the location of activation slowing and to correlate these sites with the VT isthmus (NCT04004624).

**Methods:** We conducted a prospective multicenter study (PHYSIO-VT) in patients with infarct-related VT. The LV was mapped in sequence during atrial, right ventricular and left ventricular pacing at a similar cycle length of 600ms. Sites of activation slowing (defined as  $\geq 40$  msec/ 10mm) for each wavefront were targeted for ablation. This sub study analysis examined the spatial relationship between the location of activation slowing determined by LV stimulation from 3 different pacing wavefronts and the VT isthmus determined by activation or entrainment.

**Results:** Eighty-five patients were enrolled into the study. The spatial distribution of activation slowing was influenced by the direction of LV activation with the area of maximal slowing localized to the site in which the wavefront first interacts with the infarct. Mapping during atrial pacing identified only  $66.2\% \pm 8.2\%$  of the entire area of activation slowing as determined by mapping from 3 directions. Furthermore, only 58.3% of VT isthmus sites corresponded to areas of activation slowing identified during atrial pacing. In comparison, 86.1% of VT isthmus sites corresponded to the summated area of activation slowing as identified by LV activation from all 3 wavefronts.

**Conclusion:** The location of activation slowing is dependent on direction of LV activation. Substrate mapping techniques incorporating stimulation from different pacing directions increase the sensitivity for identifying areas of slow conduction that may become isthmus sites during VT.

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Author Disclosure Information:

**J. Sroubek:** Nothing relevant to disclose.

**Category (Complete):** Ablation Techniques

**Keywords (Complete):** V -> Ventricular tachycardia ; A -> Ablation - catheter

**Additional Information (Complete):**

**Presentation Preference:** Oral or Poster

**Proof of Concept/Innovation :** True

**At the conclusion of this presentation, attendees will be able to: (Maximum character limit 250)**

**\*Learning Objective:** : To appreciate that LV substrate activation mapping using multiple pacing wavefronts may increase the sensitivity for identification of VT isthmus.

**Abstract Awards (Complete):**

**Young Investigators Awards (YIA) Competition :** True

**Fellow with the Highest Scoring Abstract Award :** True

**The Eric N. Prystowsky Fellow's Clinical Research Award :** True

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