

PRE-ABLATION LOCAL IMPEDANCE IS PREDICTIVE OF LESION FORMATION IN PATIENTS WITH PAROXYSMAL ATRIAL FIBRILLATION: RESULTS OF THE LOCALIZE CLINICAL TRIAL

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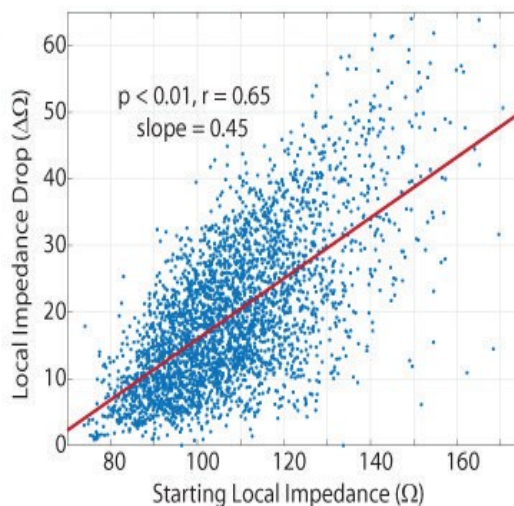
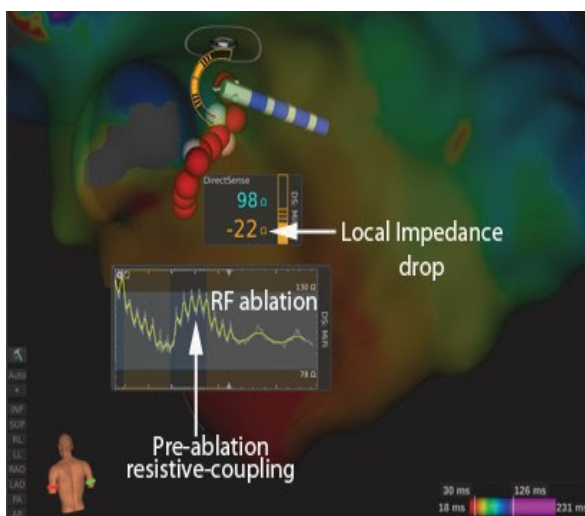
Background: Resistive myocardial heating by radiofrequency (RF) current is influenced by tissue type, current shunting to blood, and degree of contact. More resistive coupling prior to RF leads to more resistive heating and improved lesion formation. A local impedance (LI) metric (DIRECTSENSE™, Boston Scientific) provides pre-ablation resistive coupling data that may predict lesion formation (Fig. Left).

Objective: To evaluate pre-ablation impedance on acute lesion formation, as measured by LI drop, during PVI in patients with pAF.

Methods: In a multicenter trial, LA electroanatomical maps were created and blood pool LI was recorded at de novo PVI performed with point-by-point ablation while blinded to LI. Starting LI and LI drop were recorded for each lesion. PVI was confirmed with entrance block. The impact of parameters on LI drop was evaluated using linear model Pearson correlation.

Results: Data from 48 patients (blood pool LI: $91 \pm 8 \Omega$) with $n=3,365$ ablations (starting LI: $107 \pm 16 \Omega$, LI drop: $19.3 \pm 11.0 \Omega$) were analyzed. Starting LI was a strong predictor of LI drop ($p < 0.01$, $r = 0.65$, Fig. Right). Each 2Ω increase in starting LI was associated with $\sim 1 \Omega$ larger drop. For left PVs, the anterior ridge had the smallest starting LI ($105 \pm 13 \Omega$) and drop ($16.6 \pm 8.6 \Omega$), with a 51% first pass gap rate. For right PVs, the posterior carina had the smallest starting LI ($103 \pm 14 \Omega$) and drop ($14.6 \pm 10.5 \Omega$), with a 28% first pass gap rate. Lower blood pool LI was also significantly associated with smaller LI drops ($p < 0.01$, $r = 0.50$), suggesting more power was lost to less resistive blood.

Conclusion: Blood pool and pre-ablation LI are predictive of acute lesion formation, as measured by LI drop, in pAF patients.



Heart Rhythm. 2020; 17(5, Supplement):S273.