

LOCAL IMPEDANCE DROP DURING PULMONARY VEIN ISOLATION PREDICTS LATE RECONNECTION IN PATIENTS WITH PAROXYSMAL ATRIAL FIBRILLATION: RESULTS OF THE LOCALIZE CLINICAL TRIAL

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Background: Radiofrequency lesion efficacy is routinely monitored with generator impedance drop. Evaluation of a local impedance (LI) metric (DIRECTSENSE™, Boston Scientific) found LI drop to be highly predictive of effective lesion formation.

Objective: To evaluate whether LI drop during PVI is associated with late PV reconnection (PVr) in patients with paroxysmal AF.

Methods: The multicenter LOCALIZE trial consists of an index PVI procedure and a mandated 3-month follow-up mapping procedure. LA maps were created and ipsilateral PVs were divided into 8 segments. Point-by-point PVI, blinded to LI, was performed and residual gaps were ablated after a 20 min waiting period. At follow-up, late PVr sites were identified on electroanatomical maps. Median LI drop within each segment of the index procedure was calculated offline (Fig. Left).

Results: Forty-one de novo PVI and follow-up procedures were analyzed. At follow-up, blocked segments had significantly larger LI drops (19.2 [14.1-26.7] Ω) than segments with late PVr (12.5 [8.4-16.1] Ω , $p < 0.01$, Fig. Right). In view of wall thickness differences, the association between LI drop and block was further evaluated for anterior/roof and posterior/inferior segments with inter-lesion distance ≤ 6 mm. Anterior block segments had significantly larger LI drops (20.7 [15.9-28.1] Ω) than posterior block segments (16.0 [11.4-24.2] Ω , $p < 0.01$). Optimal LI cutoff values were 17 Ω in anterior segments and 14 Ω posteriorly (positive predictive value for block: 98.8% and 98.4%, respectively).

Conclusion: With inter-lesion spacing of ≤ 6 mm, reaching a LI drop of $\geq 17\Omega$ anteriorly and $\geq 14\Omega$ posteriorly was predictive of durable segment block in de novo PVI.

