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

Ignacio Garcia-Bolao, MD, Armin Luik, MD, Ewen Shepherd, MBChB, Matthew S Sulkin, PhD, Jacob I Laughner, PhD, Elizabeth Duffy, Tobias Oesterlein, PhD, Christian Meyer, FHRs, Pierre Jais, MD, Jossef Duchateau, MD, PhD, Arthur Yue, MA, MD, Waqas Ullah, BS, MB, MBBS and Moloy Das, BS, MBBS, MD, CEPS-A.

Clinica Universitaria De Navarra, Stadtisches Klinikum Karlsruhe, Freeman Hospital, Newcastle Upon Tyne, United Kingdom, Boston Scientific, Saint Paul, MN, Boston Scientific, St Paul, MN, Boston Scientific, University Heart Centre Hamburg, Hamburg, Germany, universite de Bordeaux, Bordeaux, France, CHU Bordeaux, Pessac, France, Southampton University Hospital, Southampton, United Kingdom, St Bartholomew’s Hospital, Hornchurch, United Kingdom

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 ≤6mm. 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 17Ω in anterior segments and 14Ω posteriorly (positive predictive value for block: 98.8% and 98.4%, respectively).

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

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