A multi-center analysis of clinical outcomes in LSI-guided catheter ablation procedures

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Introduction: Atrial Fibrillation (AF) is the most common cardiac arrhythmia in clinical practice. Due to its fast and chaotic rhythm, the atria cannot contract effectively, resulting in decreased blood flow. AF is a major cause of stroke, heart failure, sudden death, and cardiovascular morbidity. AF is also associated with high rates of hospitalization due to AF management, heart failure, myocardial infarction, and treatment associated complications. Pulmonary vein isolation (PVI) is the cornerstone therapy for AF, but its effectiveness is dependent on the successful isolation of the pulmonary veins (PVs). The LSI Index™ (LSI) is derived from a non-linear algorithm that models the gradual growth of lesion formation and is dependent on contact force, radio frequency (RF) duration and RF current. The EnSite Precision™ cardiac mapping system AutoMark feature allows for automated selection of lesion marking utilizing customizable parameters such as contact force and LSI (in some geographies). This analysis provides the first multi-center analysis of clinical outcomes from LSI-guided ablation procedures in a post-market setting.

Methods: EnSite™ case files and outcomes data were collected from 4 independent centers on over 250 different procedures to treat paroxysmal Atrial Fibrillation using LSI-guided RF catheter ablation. Utilizing data from EnSite AutoMark™ files, correlations between LSI values achieved in different anatomical regions around the left atrium and impedance drop, acute isolation of PVs, long term effectiveness, and safety were examined.

Result: The EnSite AutoMark module software settings, including target values and thresholds for target LSI, contact force, time, power, irrigation rate, and AutoMark spacing, will also be summarized and any statistical correlations with outcomes, particularly safety, will be reported.

Conclusion: The utility of any index score is dependent on its correlation with lesion quality and clinical outcome. This analysis will present the largest multi-center experience to-date on the effectiveness of LSI-guided ablations for the treatment of AF.