

RF Ablation Lesion Assessment System

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Technology description

Unmet Need

Catheter-based cardiac Radio frequency (RF) ablation has become a common treatment for arrhythmias such as atrial fibrillation or ventricular tachycardia. Cardiac ablation requires contiguous transmural lesions to be made between anatomical boundaries. Incomplete ablations are thought to result in a 40-50% recurrence rate in patients undergoing cardiac ablation for treatment of atrial fibrillation. Currently, assessment of lesion effectiveness is conducted by indirect measures. Real-time assessment of tissue depth and transmural lesion formation would allow the operator to adjust ablation parameters to safely deliver and confirm transmural lesions. JHU inventor has created a device which includes an electrode-antenna and method for real-time detection of ablated and non-ablated tissue.

Technical Details

JHU inventor has an RF Ablation Lesion Assessment System which works in the current EP catheter lab settings. The detectable changes between ablated and non-ablated tissue should provide sufficient dielectric contrast to distinguish tissue types and extent of ablation by monitoring time-domain reflection coefficient peaks of the electrode-antenna. Since the measurements are carried out in a wide frequency range, ablated tissue thickness will influence electrical properties characteristics of the electrode-antenna. The System includes an innovative catheter with integrated high-frequency sensing and RF ablation (HFS-RFA) to enable assessing lesion formation during ablation with a single catheter.. The System includes a user interface for easy analysis of the changes in tissue electrical properties and display the progression and rate of lesion formation.

Institution

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