

# Comparison of Lesion Characteristics between Conventional and High-Power Short-Duration Ablation using Contact Force-Sensing Catheter in Patients with Paroxysmal Atrial Fibrillation

Van Ba\*

Editorial Office, Journal of Coronary Heart Diseases, Belgium

## Abstract

For effective Atrial Fibrillation (AF) ablation, a transmural lesion must be created. In Contact Force-guided (CF) ablation for AF, the differences in lesion characteristics between conventional energy and High-Power Short-Duration (HPSD) settings remained unknown.

**Keywords:** Atrial fibrillation • Voltage • High-power short-duration ablation

## Introduction

In order to effectively ablate Atrial Fibrillation (AF), complete and durable Pulmonary Vein Isolation (PVI) with point-by-point contiguous transmural lesion formation is required. Clinical recurrence is linked to non transmural ablation lesions, which are responsible for reconnecting gaps on PVI lines. Contact Force-guided (CF) ablation for PVI improves clinical results a Force Time Integral (FTI) may indicate effective transmural lesion formation. The thickness of the atrial musculature is connected to the voltage of local bipolar Electrograms (EGMs). A rise in this voltage after linear ablation in the left atrium implies the formation of a conduction gap, whereas a significant reduction in this voltage indicates the formation of a transmural lesion after AF ablation. The acute reconnection rate can be lowered to a fraction of what it is with traditional ablation when using the ablation index as a guide. The lesion features in conventional energy and HPSD settings in CF ablation for PVI, on the other hand, remain unknown. To rule out intracavitary thrombi, all patients underwent transesophageal echocardiography and cardiac computed tomography. Ensite precision was used to produce the left atrial electro anatomical map. The inter-lesion distance was less than 5 mm in both the conventional and HPSD groups. The non-steerable long sheath was used in both the conventional and HPSD groups. The power was set at 30 W in the usual group, with limited ranges of 25 W for the posterior wall near the oesophagus. During RF application, the irrigation flow rate was 17 mL/min to 30 mL/min. Ablation was done on a point-by-point basis. The FTI goal was 400 g s for each point. The power level for the HPSD group was 50 W for the front walls and 40 W for the posterior walls. The ablation time for each location was set to 10 seconds. The contact force at each place was at

least 10 g for performing HPSD ablation. Bipolar EGM voltage was noticed and recorded during ablation. If the bipolar EGM voltage did not match the transmural criterion, further ablation energy was used.

## Discussion

The following were the study's primary findings: The proportion of ideal lesions produced by HPSD ablation was higher than that produced by standard energy settings. In the conventional and HPSD groups, the optimum ablation lesions were predominantly situated at the posterior and anterior borders of the Right PV (RPV), respectively. The effect of FTI on gap generation was negligible if lesions met the voltage reduction criterion. During conventional and HPSD ablation, gap development was linked with reduced voltage reduction.

## Conclusion

The features of ablation lesions were different while employing CF ablation for PVI in conventional and HPSD energy settings. Low voltage drop during PVI was linked to gap creation. HPSD ablation took less time and had a lower recurrence rate than conventional ablation.

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\*Address for Correspondence: Ba V, Editorial Office, Journal of Coronary Heart Diseases, Belgium

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