Decreased Volume of Left Atrium after Pulmonary Veins and Left Atrial Posterior Wall Isolation in Patients with Persistent Atrial Fibrillation

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Introduction: Although pulmonary vein isolation (PVI) remains as the cornerstone for catheter ablation (CA) of atrial fibrillation (AF), but its efficacy is more variable in persistent than paroxysmal AF, and additional ablation strategies have been used. We have performed complete isolation of the left atrial posterior wall (LAP) and all PVs (box isolation with centerline) with a vertical center line to avoid esophagus (Figure). There has been little information regarding the reverse remodeling by the extensive area isolation including LAP. The aim of this study was to compare the size of left atrium before and after the box isolation with centerline in patients with PerAF.

Methods: We enrolled consecutive 63 patients (43 men; mean age 62 ± 10) with PerAF including 30 with longstanding PerAF (duration of AF from one year to >15 years) from November 2016 and December 2017 at our hospital, who underwent CA using 3D-EAM system with a contact force-sensing ablation catheter.

Result: Except for one patient, complete isolation of LAP including all PVs was achieved in 62 patients (98%). Mean procedure time and RF time were 222 ± 58 min and 3197 ± 1072 sec, respectively. During the mean follow-up of 457 days, 55 patients (87%) remained arrhythmia-free, and a repeated ablation was performed in 8 patients with recurrence. Four patients were excluded from the analysis, due to the lack of follow-up echocardiography. The LA dimension and LA volume index of 6 month after ablation significantly decreased from the pre-ablation (37 ± 5 mm vs. 41±6 mm; P < 0.001, and 50 ± 16 ml/m² vs. 42 ± 8 ml/m²; P < 0.001, respectively).

Conclusion: This study shows that box isolation with posterior centerline can be achieved with a high clinical success rate in patients with persistent AF, and significant reverse remodeling was observed.