The successful posterior wall isolation for longstanding persistent atrial fibrillation with only second generation cryoballoon

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Introduction: The second generation cryoballoon ablation (CBA) might be less effective for the patient with the left common pulmonary vein (LCPV) in the previous reports in terms of pulmonary vein isolation (PVI). Posterior wall isolation (PWI) with cryoballoon is effective for the prevention of atrial fibrillation (AF) recurrence due to the durable lesion set. Our report aims to draw attention to the possibility of effectiveness performing PWI with cryoballoon for the LCPV patient.

Methods: Case report: A 68-year-old man with longstanding persistent atrial fibrillation (LSPEF), hypertension and obesity (BMI 28.2) was referred to our facility for the ablation. Computed tomography (CT) prior to the ablation showed LCPV, which diameter and length were at 30mm and 30mm, respectively. In this time, we selected a cryoballoon for the lesion set because of the past experiences with an inadequate radiofrequency energy application onto the posterior wall near the esophagus. At first, we completed PVI with cryoballoon at the distal site of LCPV ostium. Perpendicular linear ablation with cryoballoon at the ostium of LCPV was performed. During CBA, we delivered rapid right ventricular pacing (RVP) at a cycle length between 400ms and 500ms after the plateau phase of balloon temperature when it was higher than -40C. We stopped the RVP when the systolic blood pressure reached below 69 mmHg.

Result: Three cryoballoon applications at the ostium of LCPV were needed with freeze 180 seconds for each application (average nadir temperature: -43C, average RVP cycle length: 460ms). The nadir temperature of the esophagus during CBA revealed at 25C. In addition, CBA for the creation of the PVI in the right side of PV, roof and bottom linear lesions of the left atrium was accomplished. Eventually, successful PWI was achieved in the acute phase. There is no AF recurrence without antiarrhythmic drug treatment after the procedure for 6 months.

Conclusion: The second generation cryoballoon is a safe and effective device for the ablation of LSPEF with LCPV to create the PWI in regards to the recurrence of AF.