EP2_42

Balloon Cryo-Ablation for Pulmonary Veins Isolation in Patients with Atrial Fibrillation

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Objectives:

We report our initial experience using cryo-balloon ablation for atrial fibrillation (Arctic Front, Medtronic, Minneapolis, Minnesota).

Background:

Pulmonary vein (PV) isolation with point-by-point radiofrequency ablation is widely used for the treatment of atrial fibrillation (AF). Cryo-balloon ablation is a relatively simple and safe alternative since PV isolation can be achieved with a single application.

Methods:

Cryo ablation was performed with a 28 mm balloon via a trans-septal approach. All PV's were targeted in patients with AF. Left phrenic pacing was performed during ablation of the right superior PV to avoid phrenic injury. The temperature in the esophagus was measured. The procedure end points were: 1) rate of acute isolation of the targeted PVs and 2) complication rate, including the occurrence of PV stenosis, phrenic nerve palsy or esophageal fistula.

Results:

Between July and November 2012, we performed cryo-ablation with a 28 mm balloon in 9 patients (age 60 ± 8, range 46-68), 5 with drug refractory paroxysmal AF, 3 with persistent AF and 1 with left atrial tachycardia. 30 of 33 PV's (90.3%) were successfully isolated. The right inferior PV was not isolated in 3 patients. Radiation time was 86 ± 29 min, it is expected to drop with the learning curve. Sinus rhythm was maintained in in 77% of patients, however follow up is still too short (93 days, range 9-167). No PV narrowing or right phrenic nerve palsy occurred during cryo-balloon ablation. There were no significant complications. One patient had a mild to moderate amount of pericardial fluid the day after the procedure, which subsided within 48 hours.

Conclusions:

Pulmonary vein isolation with the cryo-balloon technique is feasible and safe. Further follow up is needed to assess the long-term success rate.