

Antral Pulmonary Vein Ablation with Cryo Balloon in Paroxysmal and Persistent Atrial Fibrillation: A Multicenter Trial

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Introduction: In comparison to substrate modification due to radiofrequency encircling of the pulmonary veins (pv) antral isolation with the cryo balloon technique may target pv, the antral substrate and parts of ganglionated plexi. This multicenter trial investigates the efficacy of this technique in paroxysmal and persistent AF.

Methods: 346 patients (p) (293 with paroxysmal, 53 with persistent drug refractory AF, 132 women, median 59 years, LA 40 to 42 mm, 154 hypertension, 58 structural heart disease) were treated with the 23/28 mm balloon (Cryocath, Canada). Every venous antrum was frozen 4 to 6 min twice. Recurrence was defined as single episode of AF longer than 30 sec off drugs after 3 months blanking time during event recording or 7-day holter every 3 months.

Results: 97% of 1360 pv could be isolated with balloon only, 3 - 4 % in combination with touch up technique under Lasso guidance. The median procedure time was 170 min, X-ray burden 40 min. After the blanking period during a median FU of 12 months, 159 (74 %) of 215 p with paroxysmal AF had no relapse in contrast to 12 of 31 (39 %) with persistent AF. We observed two pericardial effusions and 26 right phrenic nerve palsies, 24 with 23 mm balloon. All patients with phrenic nerve palsy recovered completely within one year.

Conclusions: Cryo balloon antral pv isolation in paroxysmal AF is highly effective and safe. To avoid phrenic nerve palsy pacing technique is superior to the observation of diaphragm movement during breathing. In persistent AF cryo technique may not induce substrate modification comparable to wide encircling technique with RF energy. Using large balloons a higher energy transfer for antral tissue debulking may be essential.

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