

CRYOBALLOON ISOLATION OF PULMONARY VEINS: ACUTE RESULTS AND LONG-TERM FOLLOW-UP

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The technique of substrate modification of the left atrium using radiofrequency energy to treat atrial fibrillation (AF) bears the risk of pulmonary vein (PV) stenoses and fatal esophago-left atrial fistulas. We report on the efficacy and long term follow-up of isolation pulmonary vein ostia and parts of the antrum using a commercially available cryoballoon in a large patient cohort.

Methods: After PV angiography isolation was performed with best fitting 23/28 mm balloon (Arctic Front, Cryocath, Canada). The inflated over the wire balloon excluded the venous ostium and parts of the antrum freezing down to -75° C 6 minutes (M) two times per vein. Lasso mapped rest potentials were eliminated with additional balloon freezes or a 9F Freezor Max catheter. Patients (P) were followed up three monthly with 7-day holter.

Results: 161 P were treated (45 women, mean age 59 ± 10 years, 72 lone AF, 65 arterial hypertension, 24 mild structural heart disease). The mean diameter of the PVs was 18 ± 4 angiographically. We were able to isolate $>90\%$ of the PVs with the balloon only (2.4 ± 0.7 impulses). In the last 55 P all PVs could be isolated with the balloon only. We could reduce the procedure time to 164 ± 49 M with an x-ray burden of 29 ± 9 M. We observed 7 (4%, 6 x 23 mm balloon) phrenic nerve palsies (PNP) which recovered between 3 to 9 months and 3 transient PNP. During a mean follow up of 10.7 and 1.1 procedures per P (12 redos) of 120 P controlled clinically and with serial 7-day holter. 72% (86 P) were free of recurrence. Further 29 showed a marked reduction of AF burden. In the 12 redos performed 77% of the reconducting PVs were initially more proximally isolated with the 28 mm balloon.

Conclusions: Cryoisolation of ostia and antrum of PVs with balloon technique is safe and highly effective in treating paroxysmal AF. Avoidance of PNO is possible with refined use of different balloon diameters and pacing maneuvers. With the safety and efficacy of the cryoballoon technique and early or first line therapy of AF is conceivable.