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### **PULMONARY VEIN ISOLATION FOR ATRIAL FIBRILLATION. RESULTS WITH A NEW BIDIRECTIONAL BALLOON OF CRYOTHERAPY**

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Radiofrequency ablation of AF is associated with a risk of pulmonary vein (PV) stenosis, oeso-atrial fistula and formation of thrombus. Cryotherapy energy seems not associated with these risks. We report the results obtained with a new bi-directional balloon of cryotherapy in the electrical insulation of the PV.

**Patients and methods:** Fifty patients (H=39,  $57 \pm 1$  years) underwent an isolation of the PV for a paroxysmal (n=34) or persistent (n=16) AF resistant to antiarrhythmic therapy. The balloons (Arctic Front, CryoCath) were introduced after transeptal puncture and positioned thanks to a directional guiding catheter 15Fr (Cathflex). The diameter of the balloon (23 or 28 mm) was chosen according to the maximal size of the PV. The electrical isolation of the veins was verified with a circular catheter in the PV before and after the cryotherapy. The kinetic of the diaphragm was systematically verified during the cryotherapy in the right superior PV by pacing the right phrenic nerve. Additional irrigated RF ablation was used to close the residual gaps, if necessary.

**Results:** The size of the balloon was 23 mm for 17 patients and 27 mm for 33 patients. The left superior, left inferior, right superior and right inferior PV were isolated by the cryotherapy alone in respectively 64%, 52%, 87% and 47% of the cases with durations of cryoablation of  $10 \pm 4$ ,  $9 \pm 4$ ,  $8 \pm 3$  and  $7 \pm 3$  min. Additional irrigated RF ablation was necessary for 42 patients with an average time of RF by patient of  $5.6 \pm 9$  min. The balloon was present in the left atrium during  $71 \pm 17$  min by patient. A transient paralysis of the right phrenic nerve was observed in 7 cases.

**Conclusion:** Electrical isolation was obtained with the new bi directional balloon of cryotherapy alone in 50 to 80 % of the PV according to their location. A limited additional RF ablation allowed the isolation of all the PVs but one. An attention must be paid to the kinetic of the right diaphragmatic dome during the isolation of right superior PV.