LONG-TERM SUCCESS LIABILITY AND IMPACT OF BALLOON SIZE STRATEGY ON ANTRAL CRYO ISOLATION OF PULMONARY VEINS

ACC Poster Contributions
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Background: Cryo balloon based antral isolation of the pulmonary veins (pv) is widely used and published in Europe, recently presented in the randomized North American STOP AF trial. In treatment of paroxysmal atrial fibrillation (af) cryo energy is comparable to radiofrequency energy, but may reduce side effects. This study of a very large patient cohort reports on long term success stability and impact of balloon size.

Methods: Pv isolation was performed with best fitting 28/23mm balloon (Arctic Front, Medtronic) or both mostly due to mismatch of small veins freezing 6 minutes twice per vein. Residual potentials were eliminated with additional balloon freezes. Patients (p) were followed every three months (m) with 7 day holter, since one year every six months.

Results: We treated 466 p (158 women, mean age 59±11 years, 442 with paroxysmal af, 24 persistent af, left atrium 43±5 mm, 210 p with lone af, 189 hypertension, 67 mild structural heart disease). With a mean number of 2.4±1 impulses we isolated in 89% all pv with balloon only, in earlier 11% with additional touch up. Out of the last 413 p in 196 i.e. 47% we combined two balloon sizes. Procedure time decreased to 144±33 min and x ray burden to 23±8 min. Phrenic nerve palsy could be reduced to 0.7% (last 280 p). During a follow up of 20±15 m and 1.1 procedures per p of 404 p analyzed after blanking time of 3 m 80% (323 p) were free of af, with one procedure 71%, with left common ostium 79% (30 p). During a follow up of 28.7±13.7 m success rate of 240 p (FU ≥ 1 year) stabilized at 80%, 67% with one procedure. Comparing the long term efficacy of single large with two balloon size strategy we found significant less recurrence of af (20 versus 42%, p = 0.0001) with two balloons, 34 out of 166 versus 47 out of 112 p respectively. The difference between single small and single large was p = 0.023.

Conclusions: Cryo balloon based antral isolation of the pv creates remaining success stability in long term outcome. Due to mismatch of contact area between mostly smaller lower venous antra and a single large balloon the outcome with two balloon strategy seems significantly more efficient. Improvement of balloon shape and cooling power will increase the long term success rate with one balloon only.