Abstract: **P1031**

**Impact of left atrial appendage morphology on the recurrence of atrial fibrillation after cryoballoon ablation: is chicken-wing morphology a predictor of success?**

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**Topic(s):**
Rhythm Control, Catheter Ablation

Citation:

Introduction/Background: Cryoballoon ablation is highly effective to create durable pulmonary vein isolation in symptomatic paroxysmal or persistent AF patients. Treatment strategies for those patients with recurrences after cryoballoon ablation are discussed. The impact of the LAA anatomy on the outcome of cryoballoon pulmonary vein isolation is totally unknown.

Purpose: The objective was to identify predictors of recurrence after cryoballoon pulmonary vein isolation (PVI) with focus on LAA-anatomy.

Methods: We conducted a prospective observational single center study with a blinded retrospective analysis of cardiac computer tomography angiography images. Left atrial (LA), pulmonary vein (PV) and LAA morphology and dimensions were assessed. Clinical and CT imaging derived predictors of atrial arrhythmia recurrence during follow-up were determined by Cox regression. Freedom from AF was evaluated by Kaplan-Meier analysis. Cut-off values were calculated by ROC-analysis.

Results: From 2012 to 2016, in total 1,103 patients underwent second generation cryoballoon PVI. CCTA was available for 725 (65.7%) patients. Of those, 473 (65.2%) were of sufficient quality for LAA measurements and were included. Mean age was 66.3±9.5 years, paroxysmal AF was present in 277 (58.6%) participants. LAA morphology was classified as "windsock", "chicken-wing", "cactus", and "cauliflower" in 244 (51.4%), 98 (20.7%), 59 (12.5%), and 72 (15.2%) patients, respectively. Median follow-up time was 19 (IQR=14) months, symptomatic AF reoccurred in 166 (35.1%) patients. Features of PV anatomy were not predictive. Independent predictors of recurrence were LA volume (HR 1.012; 95% CI, 1.008 to 1.016; p<0.001), female gender (HR 1.648; 95% CI, 1.196 to 2.271; p=0.002) and mitral regurgitation ="II (HR, 2.27; 95% CI 1.189 to 4.333; p=0.013). LAA volume and type of AF were identified as dependent predictors due to strong positive correlation with LA volume. LA volumes =122.7ml (sensitivity: 0.53 and specificity: 0.69, area under the curve=0.63) and LAA volumes =11.25ml (sensitivity: 0.39 and specificity 0.79, area under the curve=0.59) were associated with AF recurrence. There was no significant correlation of recurrence with either "windsock-", "chicken-wing-", "cactus-" or "cauliflower-"morphology (log-rank; p-value=0.596).

Conclusion: LAA volume was strongly correlated to LA volume and is a dependent predictor of recurrence after cryoballoon PVI. Main independent predictors were: LA volume, female gender and mitral regurgitation. LAA morphology does not predict failure of cryoballoon ablation.
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