

BACKGROUND: Pulmonary Vein Antrum Isolation procedure (PVAI) is a widely accepted therapeutic approach in treating Atrial Fibrillation (AF) refractory to medications. AF recurrences may occur in patients post PVAI and have significant clinical and quality of life implications.

METHODS: Baseline and follow up measurements were collected for 884 [580 Paroxysmal AF (PAF) and 304 Non PAF (NPAF)] patients 59.7±10.4 years of age followed for 15.7±15.3 months who underwent a total of 1315 PVI procedures between 2004-2014 at a single Canadian center. ECG and ambulatory monitoring was performed at 1, 3, 6, and 12 months post-PVAI. Recurrences < 3 months post-PVAI were considered Early (ER), while recurrences ≥ 3 months post-PVAI were considered Late (LR). Using Cox proportional hazards regression modeling, we examined relevant predictors of LR post-PVI.

RESULTS: Overall, 48% of patients (40.9% PAF vs. 61.5% NPAF, P=0.0001) experienced ER while 45 % (40.2% PAF vs. 54.3% NPAF, P=0.0001) had LR following the first PVAI procedure. In univariate analyses, ER (HR = 4.87, 95% CI: 3.88-6.12, P = 0.0001), NPAF status (HR = 1.48, 95% CI: 1.21-1.80, P = 0.0001), number of failed anti-arrhythmic drugs(AAD) (HR = 1.25 per drug, 95% CI: 1.15-1.37, P = 0.0001), having failed Amiodarone (HR = 1.62, 95% CI: 1.32-1.97, P = 0.0001), and mean LA size (HR: 1.01, 95% CI: 1.0-1.02, P= 0.01) were significantly associated with LR, whereas in the multivariate model only ER (HR = 4.63, 95% CI: 3.67-5.83, P = 0.0001) and number of failed AAD (HR = 1.11 per drug, 95% CI: 0.99-1.23, P = 0.05) emerged as independent risk factors for LR. Not accounting for ER, only the number of failed AADs (HR=1.22 per drug, 95% CI: 1.05-1.41, P=0.006) and LA size (HR: 1.01, 95% CI: 1.00-1.03, P=0.01) among PAF patients were independently predictive for AF LR.

CONCLUSION: Patients with ER, previous failure of AADs, and NPAF are more likely to experience LR. ER emerged as the strongest independent predictor of LR along with previous failure of AADs. Thus appropriate clinical management post-procedure is crucial in preventing future AF recurrence.

**427
INCREMENTAL BENEFIT OF ABLATION OF COMPLEX FRACTIONATED ATRIAL ELECTROGRAMS FOR ATRIAL FIBRILLATION RHYTHM CONTROL: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS**

O Fadahunsi, T Talabi, A Olowoyeye, A Iluyomade, O Shogbesan, A Donato

Reading, Pennsylvania

BACKGROUND: Recent guidelines from major cardiovascular societies recommend catheter ablation as a reasonable first-line strategy for rhythm control in selected patients with

paroxysmal atrial fibrillation (AF). Pulmonary vein isolation (PVI) is the most common catheter ablation procedure; however, the best procedural techniques are undetermined. Our objective was to assess the incremental benefit of CFAEs ablation for AF rhythm control.

METHODS: Study design was a systematic review and meta-analysis. PubMed, Embase, CENTRAL and Clinicaltrials.gov databases were searched up until February 27, 2015. Included were randomized controlled trials (RCTs) comparing PVI to PVI plus CFAEs ablation (PVI+) with a minimum of three months follow-up. Statistical analysis was performed with RevMan 5.3. For categorical outcomes, summary risk differences (RD) were estimated using the Mantel-Haenszel method. For continuous outcomes, summary mean differences (MD) were estimated using the inverse variance method. All analyses utilized a random effects model and results were presented with 95% confidence intervals. P-value<0.05 was considered significant for all analyses.

RESULTS: Ten studies randomized patients to PVI+ (654) and PVI (433) with follow-up ranging from 3 to 23 months. There was no significant difference in freedom from atrial tachyarrhythmias off antiarrhythmics after a single ablation (primary outcome) between PVI+ and PVI (53% versus 56%, RD: 0.02 [-0.07 to 0.12], p=0.62, I2=59%). See attached image. Findings were not different for any pre-specified subgroup analyses, including paroxysmal versus non-paroxysmal AF, automated versus manual detection of CFAEs, and left atrial versus biatrial ablation. For our secondary outcome, freedom from atrial tachyarrhythmias after multiple ablations (which included six RCTs), there was also no significant difference between PVI+ compared to PVI (63% versus 67%, RD 0.05 [-0.07 to 0.16], p=0.41, I2=63%). PVI+ led to significantly increased procedure time (MD: 49.81 minutes [42.86 to 56.76], p<0.001), fluoroscopy time (MD: 11.55 minutes [8.02 to 15.07], p<0.001) and radiofrequency energy application time (MD: 19.16 minutes, [6.61 to 31.70], p=0.003) compared to PVI. We are not able to comment on safety endpoints due to inconsistent reporting in included RCTs.

CONCLUSION: Additional ablation of CFAEs did not increase freedom from atrial tachyarrhythmias at a minimum of 3 months follow-up, although procedural times were increased. Findings should be interpreted cautiously due to moderate heterogeneity.

