

**PO06-39****ACUTE AND LONG TERM RESULTS OF PULMONARY VEINS ISOLATION WITH THE MESH CATHETER FOR PAROXYSMAL ATRIAL FIBRILLATION ABLATION**

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**Introduction:** Radiofrequency catheter ablation (RFCA) of paroxysmal atrial fibrillation (pAF) is essentially based on the electrical isolation of pulmonary veins (PVs). A novel catheter design (HD Mesh ablator, Bard) combining high-density circumferential mapping and direct radiofrequency (RF) energy delivery has been developed to map and isolate the pulmonary veins (PVs). Its feasibility and efficacy has been previously assessed. The purpose of this study was to confirm the acute effects and verify long term efficacy of PVs isolation by Mesh catheter to treat pAF.

**Methods:** Twenty-four consecutive patients (mean age  $60 \pm 12.15$  years; 18 men) with paroxysmal drug-refractory AF were referred for ablation between november 2007 and june 2008. PVs isolation was attempted with the Mesh ablator, and verified by a circular mapping catheter. If isolation was not successful, it was followed by a conventional ablation approach. The follow-up endpoint was absence of AF or atypical atrial flutter (Afl) recurrence after 2 months of blanking period.

**Results:** A total of 89 PVs including seven veins with left common ostium were targeted. Successful deployment of the Mesh was achieved in all but five veins (94.4 %). Using the Mesh catheter for ablation, PV isolation was achieved in 59 (66%) of the 89 PVs. The Mesh-only approach allowed isolation of all veins in 10 (42%) patients. In combination with conventional ablation, successful PV isolation was achieved in 87 (98%) of 89 PVs. No major complications occurred. At a mean follow up of  $8 \pm 2.3$  (range 6-13) months, 19 pts (79%) were free of AF/Afl recurrence. Among the 10 pts with Mesh-only complete success, 8 pts (80%) had no recurrences.

**Conclusions:** PV isolation using the Mesh catheter is feasible and effective and may simplify the current PV isolation procedures. PV isolation could be achieved in 66% of PVs with long term efficacy in 80% of patients.

**PO06-40****ACUTE EFFICACY AND SAFETY OF A NOVEL CIRCULAR MULTIELECTRODE RADIOFREQUENCY ABLATION CATHETER FOR PULMONARY VEIN ISOLATION IN PAROXYSMAL ATRIAL FIBRILLATION**

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**Introduction:** Pulmonary vein isolation (PVI) is the standard ablation strategy in paroxysmal atrial fibrillation (AF). In order to reduce procedure and fluoroscopy times, novel ablation tools have recently been introduced. Aim of the study was to assess the acute efficacy and safety in achieving PVI using a low energy phased radiofrequency circular multielectrode ablation catheter (Pulmonary Vein Ablation Catheter™ [PVAC], Ablation Frontiers, Carlsbad, CA, USA) in patients (pts) with paroxysmal AF.

**Methods:** Consecutive patients with paroxysmal AF referred for

catheter ablation were included in the study. PVI was performed using the PVAC system. PVs were considered isolated by demonstration of entry and exit block during pacing and after adenosine challenge. In case of failure in isolating the vein with the PVAC, a 4 mm irrigated tip catheter was used to complete the isolation.

**Results:** A total of 119 pts (59% males, mean age  $60.5 \pm 9.9$  yrs, NYHA class  $1.3 \pm 0.6$ , CHADS2 score  $1.3 \pm 1.2$ , LVEF  $58.6 \pm 7.2\%$ , LA diameter  $38.8 \pm 5.9$  mm) were included in the analysis. Isolation of the pulmonary veins was achieved in all pts at the end of the procedure. Mean fluoroscopy time was  $36.5 \pm 13.9$  min. In the whole population, PVI was achieved in 78 pts (66%) with PVAC alone. By analyzing the time course of the success rates, a learning curve was evident: variable success rates were recorded in the first 69 pts (overall 55%), whereas the rate of PVI with PVAC alone was higher in the last 50 pts (80%). Only two complications related to the use of the PVAC occurred in our population: 1 self-limiting hemoptysis due to the guidewire wedging into a small PV branch, and 1 PV-stenosis that remained asymptomatic after > 6 months.

**Conclusions:** In our experience PVI using PVAC: 1) is safe, and 2) is acutely effective to achieve PVI once a learning curve phase has been completed.

**PO06-41****A NOVEL CHANGE IN THE BI-ATRIAL SUBSTRATE PROPERTIES IN CHRONIC ATRIAL FIBRILLATION PATIENTS WITH REPEAT ABLATION PROCEDURES**

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**Introduction:** There is a paucity of data regarding the mechanism of maintaining AF in patients with recurrent chronic AF. The aim of this study was to compare the bi-atrial substrate properties in CAF patients during the first procedure and repeat procedure after prior left atrial (LA) ablation.

**Methods:** The study included 70 consecutive patients ( $49 \pm 11$  y/o, 21 male) with chronic AF that underwent mapping and catheter ablation using a 3D NavX system. In the first procedure, a stepwise approach, including pulmonary vein isolation (PVI), LA mitral line, roof line, and continuous fractionated site ablation in the LA were applied. 17 patients (25%) received a repeat ablation due to recurrence of AF with a follow-up period of  $6 \pm 4$  months. The bi-atrial substrate properties including the complex fractionated atrial electrograms (CFEs; based on fractionated intervals, FIs) and a frequency analysis (based on dominant frequencies, DF) in the first procedure and repeat procedures were analyzed.

**Results:** In the Table, the mean DF in the LA/PV decreased, and was associated with an increase in the intra-LA DF gradient. However, the LA-to-RA DF gradient was reversed in the repeat procedure. The mean FI in the LA increased, with limited continuous fractionation sites in the repeat procedures. However, the fractionation in the RA/CS did not change.

**Conclusions:** The first time ablation procedure has modified the LA substrate with an increase of FI and decrease of CFAE area, but the reverse of LA-RA DF gradient may indicate different mechanism in the recurrent chronic AF.