

Conclusions: PVI is faster using PVAC alone, compared to conventional approach. This is achieved mainly by reducing time to ablation with no difference seen in ablation delivery time. Early outcomes appear comparable to conventional approach.

P4825 Three-terminal impedance analysis to assess catheter tip-to-tissue contact during radiofrequency ablation of atrial fibrillation



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Background: The quality of the catheter tip-to-tissue contact is critical for safety and efficacy of ablation lesion formation. In this study a new method of contact assessment based on the measurement of the local electrical properties at the catheter tip-to-tissue interface was validated in a blinded fashion in the clinical setting of AF catheter ablation.

Methods: Using a 3-terminal circuit model local resistance and reactance between catheter tip and tissue surface were measured and combined in an electrical coupling index (ECI). Twelve patients undergoing AF catheter ablation were included in this study. During the ablation procedure, the catheter was placed in the left atrium at various levels of contact. Blinded to the physician, measurements of electrogram amplitudes, pacing thresholds, and impedances at the catheter tip-to-tissue interface were performed.

Results: As the catheter went from a non-contact location to a contact location, ECI increased from 118 ± 15 to 145 ± 24 ($p < 0.0001$). Similarly electrogram amplitudes increased from 0.14 ± 0.16 to 2.0 ± 1.9 mV ($p < 0.0001$), and pacing thresholds decreased from 13.9 ± 3.1 to 3.1 ± 2.0 mA ($p < 0.0001$). ECI was significantly higher in vascular tissue as compared to trabeculated and smooth myocardium. Patch orientation, operator, body-mass index, or type of atrial fibrillation had no influence on ECI values. On multivariate analysis, ECI improved the clinician's ability to predict "true contact".

Conclusion: Measurement of local impedances between catheter tip and tissue is feasible to reproducibly predict electrical catheter contact in human radiofrequency ablation.

P4826 Efficacy of synchronized paroxysmal supraventricular tachycardia ablation in patients referred for pulmonary veins ablation of atrial fibrillation



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Introduction: Catheter ablation strategies for treatment of atrial fibrillation (AF) have been focused on the role of patho-physiological mechanism (trigger, initiator and perpetuator). Although the pulmonary veins represent the most common sites of atrial fibrillation (AF) triggers, also synchronized paroxysmal supraventricular tachycardia (PSVT) can be associated to AF. It has been observed that ablation of PSVT in adjunction to PV ablation, can be an ideal treatment in patients (pts) with both arrhythmias. The effects of ablation focused only on the triggering PSVT suppression in patients with AF are still not well known.

Aim of the study: to evaluate the prevalence of PSVT in patients referred for ablation of AF; to evaluate the effects of PSVT ablation on AF recurrences.

Methods: one hundred-fifty pts referred for ablation of AF were studied. Fifty pts (33%; mean age 44.5 ± 15.4 years; 38 males) had inducible PSVT during electrophysiologic study. Every patient underwent an ablation procedure targeted only on the PSVT.

Results: Ablation procedure was successful in all patients. No complication occurred. Twenty-five pts underwent slow pathway ablation for atrio-ventricular nodal re-entrant tachycardia (AVNRT); eighteen pts were ablated for a concealed accessory pathway; seven patients underwent ablation for focal atrial ectopic tachycardia (FAT). After a follow-up of 18 ± 11 months no recurrences of PSVT were observed. Four patients (8%; 3 with left-sided accessory pathway, 3 with AVNRT and 2 with FAT) showed a recurrence of at least one episode of paroxysmal AF. Pts with inducible PSVT had less structural heart disease, and were younger than pts without inducible PSVT (interventricular septum thickness: 9.2 ± 1.4 vs 11 ± 1.4 mm, $p < 0.05$; left atrial AP diameter: 35 ± 3.4 vs 44 ± 2.2 mm $p < 0.05$; age 44.5 ± 15.4 vs 57.3 ± 11.2 years, $p < 0.05$). Prevalence of paroxysmal AF was higher in pts with inducible PSVT compared to those without inducible PSVT (91.6% vs 27.4%, $p < 0.05$).

Conclusions: PSVT ablation in young pts with structurally normal heart, showed a preventive effect on the recurrences of AF. Those patients should be selected for more simple ablation procedures tailored on the triggering arrhythmia suppression.

P4827 Acute efficacy and safety of a novel circular multielectrode radiofrequency ablation catheter for pulmonary vein isolation in paroxysmal atrial fibrillation



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Purpose: 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 ± 9.9 yrs, NYHA class 1.3 ± 0.6 , CHADS2 score 1.3 ± 1.2 , LVEF $58.6 \pm 7.2\%$, LA diameter 38.8 ± 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 ± 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.

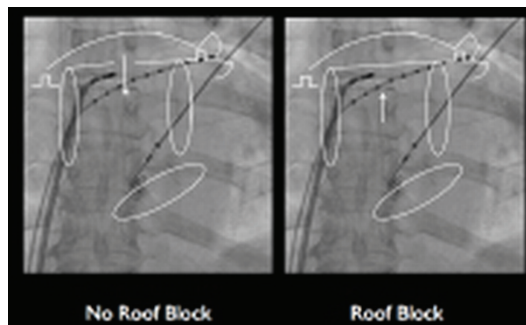
P4828 Assessment of the left atrial roof line in sinus rhythm



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Introduction: Confirmation of electrical block of the cavotricuspid isthmus line and mitral isthmus lines requires pacing manoeuvres next to the line. The left atrial roof line (LARL) (left superior pulmonary vein to the right superior pulmonary vein) occupies a privileged position in that activation of the left atrium preferentially occurs via "Bachmann's Bundle", which just anterior to the line. The present study assessed whether block of the LARL can be assessed in sinus rhythm, avoiding the use of left atrial appendage (LAA) pacing (Figure).

Methods: In 43 patients we mapped the wavefront of activation of the posterior left atrial wall mapped in both sinus rhythm and with pacing from the LAA, and confirmed using the Electroview® mapping system (Bard Electrophysiology). A LARL was performed in 32 patients. Block of the LARL was defined during LAA pacing, with normal activation of the posterior wall going in a high to low direction, and with block of the LARL occurring in a low to high direction. Results In all patients without a roof line activation of the posterior wall was from high to low in both pacing ($109 \text{ms} \pm 48 \text{ms}$ and $126 \text{ms} \pm 59 \text{ms}$, respectively) and sinus rhythm ($87 \text{ms} \pm 46 \text{ms}$ and $107 \pm 44 \text{ms}$ respectively, $p < 0.001$). In patients with confirmed roof line block, activation was low to high in LAA pacing ($145 \pm 49 \text{ms}$ and $185 \text{ms} \pm 54 \text{ms}$ respectively, $p < 0.0001$), and sinus rhythm ($120 \text{ms} \pm 43 \text{ms}$ and $152 \text{ms} \pm 50 \text{ms}$ respectively, $p < 0.0001$).



Assessment of The Left Atrial Roof Line

Conclusions: The left atrial roof line is unique amongst linear lesions in that block can be tested in sinus rhythm, in the presence of normal right atrial conduction and an intact Bachman's Bundle.