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Does termination predict the outcome at long term follow-up in patients with long standing persistent AF? Results from a prospective randomized study

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Introduction: In patients (pts) with long standing persistent (LSP) atrial fibrillation (AF) in addition to pulmonary vein isolation (PVI), extensive substrate ablation (abl) is important to achieve long term success. Whether AF termination (term) during abl should be considered an endpoint is controversial. After PV and posterior wall (PW) PVI was completed in all pts, we investigated if AF term with or without additional abl could influence the outcome.

Methods: This prospective study included 302 consecutive pts with LSP AF undergoing abl for AF and experiencing AF term during abl (defined as conversion to sinus rhythm). After AF term, pts were randomized to verification of PVs and PW isolation plus consolidation of lesions at the site of term (group 1), versus additional abl of non PV trigger before and after challenge with isoproterenol (group 2).

Follow-up was performed in all pts at 3-6 months and every 6 months thereafter.

Results: Group 1 consisted of 158 pts, (62±11, 76% male, LVEF 55±11, LA size 4.62±0.6 cm) while Group 2 consisted of 144 pts (63±10, 74% male, LVEF 56±10, LA size 4.68±0.7 cm). At 31±7 months, 48 (31%) in group 1 and 96 (67%) in group 2 were arrhythmia-free off-AAD (log-rank p =<0.0001). Multivariable analysis showed that term of AF after PVI was associated with significantly higher risk of recurrence (hazard ratio 1.76 (1.1-2.7), p=<0.008). After adjusting for risk factors, group 1 had 2.5 fold risk to experience recurrences (hazard ratio 2.45 (1.75 to 3.46), p=<0.001).

Conclusion: This study highlights the fact that AF termination during ablation does not eliminate the need for additional non-PV trigger ablation and does not predict success at follow-up after a single procedure.

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The COR trial: a randomized study with continuous rhythm monitoring comparing the efficacy of cryoenergy and radiofrequency for pulmonary vein isolation

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Background: This is a randomized, single-center study comparing the efficacy of a simplified strategy of pulmonary vein (PV) cryoablation (C) versus standard PV isolation with open-irrigated radiofrequency (R) catheters.

Methods and results: 50 patients with drug-refractory paroxysmal AF and 4 independent PVs underwent a Reveal XT® implantation and randomization to C or R. Patients allocated to group C, PV ablation was performed using a single ArcCool® balloon (23-28 mm) per patient and two 300-seconds applications per PV. No further applications were delivered for closing residual conduction gaps. Patients allocated to group R underwent PV isolation aiming for bidirectional PV conduction block, using Laso® and Navistar ThermoCool® catheters with the CARTO® system. The primary endpoint of the study (proportion of patients remaining free from AF recurrences ≥2 min without taking antiarrhythmic drugs at the 12th month from ablation) was met by 48% of patients from group C and 68% of patients from group R (OR 0.43 [95% confidence interval, 0.19 to 1.0]; P=0.05).

The difference disappeared after adjustment for the technical result of procedure. In patients who had their 4 PVs blocked at the end of procedure, there was no difference between C and R in the primary end-point (67% versus 68%; P=0.94). See Figure 1.

Conclusions: The initial impedance decrease during RF-application is larger when greater catheter contact is achieved, with findings very consistent between two CF-sensing catheters. Monitoring of the initial impedance decrease is a widely available indicator of catheter contact and may help to improve formation of durable ablation lesions.

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Atrial fibrillation ablation using magnetic navigation: comparison with conventional approach during long term follow up

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Background: Percutaneous bilateral pulmonary vein isolation is recommended for symptomatic drug refractory atrial fibrillation (AF). Different robotic devices are available for this procedure although the long term efficacy is not yet well established. The goal of this observational prospective study is to evaluate the efficacy of pulmonary vein isolation using magnetic navigation compared to a non robotic conventional ablation.

Methods: We studied the 1140 consecutive patients admitted to first AF ablation (same medical team in two centers, one using only magnetic navigation and one using a robotic system) admitted to first AF ablation (same medical team in two centers, one using only magnetic navigation and...
The effect of treating dormant pulmonary vein conduction on the outcome of cryoballoon ablation

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Purpose: Despite improvements in knowledge and devices for surgical treatment of atrial fibrillation (AF), intraoperative assessment of electrical left atrial (LA) isolation during ablation is often missing and when performed, merely consists of entrance and exit block assessment. We sought to evaluate the impact of the adoption of the standard EP end-point (entrance block) following ablation on outcomes.

Methods: One hundred seventy-nine (179) consecutive patients with persistent AF undergoing epicardial surgical AF ablation were assigned to 2 groups according to the ablation end-points performed intraoperatively: Group A (n=68, entrance and exit block) and Group B (n=111, exit block only). Median AF duration (Group A=48 months vs Group B=42 months) and LA diameter (Group A=46.5±7 vs Group B=49.5±7.5) were comparable between the two groups. Age (Group A=62.4±11.2 yrs vs Group B=64.7±8.9 yrs) and female gender (Group A=20.68, 29.4% vs Group B=23/111, 31.5%) were also similar. Long-term rhythm outcome was evaluated by means of 72-hrs ECG-Holter monitoring and/or continuous loop recorders.

Results: In Group A, the ablation procedure was targeted to reach entrance and exit block, which was obtained in 89.7% (61/68) and 100% of patients respectively, while in Group B ablation was limited to achieve exit block only, which was obtained in 98.1% (108/111). At a median follow-up of 15 months, stable restoration of sinus rhythm was achieved in a significantly higher percentage of patients with entrance-exit block: Group A=89.7% (61/68) vs Group B=69.3% (77/111) (p=0.001) but needing lower fluoroscopy time (15±12 min vs 28±17 min: p<0.001). During an average follow up of 32.2±21.6 months, documented recurrence rates were lower in the magnetic navigation group (18.6±12 vs 32.1%, p=0.003). There was no difference regarding antiarrhythmic drug treatment (57.8% vs 55.3%, NS). In multivariate analysis, matching for follow up and clinical variables, left atrial volume (OR 1.91, 95% CI 1.001-1.016; p=0.038) was the strongest predictor of recurrence and magnetic navigation was related to a lower recurrence rate (OR 0.55, 95% CI 0.31 – 0.98; p=0.04).

Conclusions: In our registry of patients submitted to pulmonary vein isolation, magnetic navigation with Stereotaxis® used lower fluoroscopy times and was a more efficient and safer approach when compared to micro-current RF ablation.