

Longterm results of multi-electrode pulmonary vein isolation with bipolar/unipolar RF energy for paroxysmal AF

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INTRODUCTION

- PV isolation for AF has varying reported success rates with complex and lengthy procedures
- We evaluated the long term efficacy of a novel ringshaped ablation catheter using alternating unipolar and bipolar RF energy

METHODS

- Consecutive patients treated with the PVAC

Patients

- Symptomatic paroxysmal AF (PAF) or persistent AF (PersAF)
- Failed of at least one class I or III anti-arrhythmic drugs (AAD)
- No significant structural disease on MRI and TTE/TOE

Follow-up

- Follow up 3, 6, and 12 months: ECG and/or 7-day holter
- Class I or III AAD were discouraged after a blanking period of 3 months
- Pulmonary vein (PV) MRI repeated > 6 months in selected patients
- Symptomatic patients: event recording

ENDPOINTS

- Complication: stroke, bleeding, tamponade, hematoma, phrenic nerve damage
- Chronic Success: absence of AF assessed with a 7-day holter, ECG and event recording in the first 12 months post procedure, with exception of the first 3 months blanking period

Table 1 PATIENT CHARACTERISTICS OVERALL

| | | | |
|------------------------------|--------------------------|----------------|-----------------|
| No. of patients | 210 | | |
| Male / Female | 165 / 45 | | |
| Age (years) | 59 9 (26 – 80) | | |
| <u>Procedural experience</u> | | | |
| Procedural time | Total time (min) | 86 | 28 |
| | Fluoroscopy time (min) | 23 | 16 |
| Applications PVAC | 26 7 | | |
| Complications | Procedural | 0/210 | |
| | <u>1st 50</u> | <u>last 50</u> | <u>Decrease</u> |
| □ Procedure time (min) | 97 33 | 82 29 | -15% |
| □ Fluoroscopy time (min) | 26 20 | 25 19 | -4% |
| □ Applications PVAC | 29 7 | 23 7 | -21% |

MULTI-ELECTRODE ABLATION CATHETER

PVAC - Pulmonary Vein Ablation Catheter

- Circular decapolar catheter for pulmonary vein ablation
- 3 mm electrodes and spacing, 25 mm diameter



Procedure

- Mapping and ablation in each PV atrium
- Application: 60 seconds at 60 C
- 4:1 ratio of duty-cycled bipolar to unipolar RF energy
- Maximum power of 8W
- Check PV isolation with Lasso or PVAC

Table 2 FIRST 41 PATIENTS 12 MO FOLLOW UP

| | |
|-------------------------------------|----------------|
| PAF / PersAF | 37 / 4 |
| Male / Female | 34 / 7 |
| Age (years) | 60 9 (34 – 76) |
| Left atrium dimension (mm) | 40 6 (32 – 58) |
| Mitral insufficiency grade 1 - 2 | 22% |
| Direct current cardioversion (DCCV) | 51% |
| Antiarrhythmic drugs | 2 1 |
| Amiodarone (use or used) | 29% |

Table 3 RESULTS

| | | |
|-----------------------------|----------------------------|---------------|
| PV stenosis | Angio and/or MRI | 0/41 |
| Freedom from AF (12 months) | Holter 7-day any recording | 25/33 (76%)* |
| | PAF | 27/41 (66%)^ |
| | PersAF | 26/37 (70%)^^ |
| AF recurrence | REDO | 1/4 (25%)^^^ |
| | - PAF | 2/41 (5%) |
| | - PersAF | 0/37 (0%) |
| | | 2/4 (50%) |

**(7/25),^(4/27),^(4/26),^^(0/1) patients on class I or III AAD

Predictors of failure (12 months)

- History of PersAF (75%) and DCCV (70%)
- AF in blanking period (80%)

CONCLUSION

Multi-electrode catheter approach for PAF and PersAF

- Feasible, efficient, safe

Longterm results in first 41 patients

- Freedom of AF beyond 12 months is promising in patients with PAF without history of cardioversion
- Additional target in PersAF