Διαδερμική Θεραπεία Κολπικής Μαρμαρυγής: Αποτελέσματα και Δεδομένα στην Ελλάδα

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Atrial Fibrillation: An Old Acquaintance…

First described by Sir William Harvey in 17th century: observed chaotic motion of atria in open chest animal

ECG findings described in 1909 by Sir Thomas Lewis: “irregular or fibrillatory waves and irregular ventricular response” or “absent atrial activity with grossly irregular ventricular response”
“The history of the recognition of fibrillation of the auricles will impress you with the dimness of our eyes and the opacity of the obstacles which embarrass our vision”

Sir Thomas Lewis
The Maze Procedure

AF Ablation: The Surgical Experience

- Reduction of the atrial tissue mass available for fibrillation is effective in preventing maintenance of AF
- The left atrium plays a dominant role in maintenance and initiation of AF
- Limited lesions placed around pulmonary veins may be as effective as complex ablation schema (maze) and safer

P. Jais et al. Cardiovascular Research 2002
1994: Reproduction of Cox Procedure using Catheter Ablation

The first attempts were made in 1994, by Schwartz in the left atrium…

Swartz JF et al. Circulation 1994
1994: Reproduction of Cox Procedure using Catheter Ablation

...and Haïssaguerre in the right atrium
Technique Extended to Right and Left Atrial Ablation

In 1996 Haïssaguerre modified the procedure extending linear lesions to the left atrium.
A landmark finding: PV Foci Triggering Afib

- The pulmonary veins are an important source of ectopic beats, that they are capable of initiating frequent paroxysms of AF, and that they could be eliminated by treatment with radiofrequency ablation

Circumferential RF lesions are created around the ostia of each PV, with the aim to isolate these veins from the LA while reducing the risk of PV stenosis.

Long term Results for AF Ablation

Long–term Outcomes of Catheter Ablation of Atrial Fibrillation: A Systematic Review and Meta–analysis

A total of 6167 patients were included from 19 studies

Ganesan AN et al. J Am Heart Assoc. 2013
Catheter Ablation vs. AADs for AF

Ablation Versus Antiarrhythmic Therapy: Randomized Trials

Freedom from AF (%)

- Krittayaphong et al. (2003)
- Wazni et al. (2005)
- APAF Pappone et al. (2006)
- Oral et al. (2006)
- Stabile et al. (2006)
- A4 Jais et al. (2008)
- Forleo et al. (2009)
- Wilber et al. (2010)

Catheter Ablation vs. AADs for persistent AF

**SARA study**

- 70.4% of pts were free of sustained episodes of AF in the CA group and 43.7% in the ADT group ($P = 0.002$)

- The proportion of pts free of any recurrence of AF or flutter (lasting >30 s) was higher in the CA than that in the ADT group (60.2% vs. 29.2%; $P < 0.001$)
The incidence of complications has **decreased significantly** since the dawn of AF ablation.

More than 10 years ago, it was around **20%** now the global incidence is less than **6%** and in experienced centres less than **4%**.

AF Ablation in Europe
The Atrial Fibrillation Ablation Pilot Study

A prospective, multicentre, observational registry of consecutive patients undergoing a first AFib ablation procedure in 72 Cardiology Centres of 10 European countries

1410 patients included
19 patients without ablation
1391 patients with Ablation Procedure performed
1 death during the in-hospital phase
1390 patients at discharge
90 lost to Follow-up (6.5%)
1300 patients at 12 months follow-up

Elena Arbelo et al. Eur Heart J 2014
### Baseline characteristics

<table>
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<tr>
<th>Age (years),</th>
<th>TOTAL</th>
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<tr>
<td>median (IQR)</td>
<td>60 (52 - 66)</td>
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<tr>
<td>&gt; 65 years, %</td>
<td>31.3</td>
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<tr>
<td>Females, %</td>
<td>27.9</td>
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</table>

**Underlying disorder**

- Lone atrial fibrillation, %: 38.3
- Hypertension, %: 27.9
- Valvular heart disease, %: 12.3
- Coronary artery disease, %: 3.6
- Dilated cardiomyopathy, %: 3.2
- Hypertrophic cardiomyopathy, %: 2.9
- Chronic heart failure, %: 2.7
- Other cardiac disease, %: 2.4
- Hyperthyroidism, %: 0.7
- Chronic obstructive pulmonary disease, %: 3.5
- Not defined, %: 6.8

<table>
<thead>
<tr>
<th>Type of AFib</th>
<th>TOTAL</th>
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<tr>
<td>Paroxysmal, %</td>
<td>66.8</td>
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<tr>
<td>Persistent, %</td>
<td>27.6</td>
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<td>Permanent, %</td>
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<tr>
<td>Not defined, %</td>
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</table>

**Long-lasting persistent/permanent, %**: 7.3

**Indications for ablation**

- Symptoms, %: 89.9
- Quality of life, %: 73.6
- Desire for drug-free lifestyle, %: 35.3
- Desire for sinus rhythm, %: 39.9
The AFib Ablation Pilot Study: Procedural Data

Elena Arbelo et al. Eur Heart J 2014
The AFib Ablation Pilot Study: Ablation Strategy

Elena Arbelo et al. Eur Heart J 2014
Clinical Symptoms During Follow-up

Follow-up status

- Palpitations: Baseline 85, 12-month FU 33.9
- Fatigue: Baseline 50.2, 12-month FU 12.4
- Dyspnea: Baseline 45.2, 12-month FU 12.7
- Weakness: Baseline 29.8, 12-month FU 6.2
- Dizziness/presyncope: Baseline 16.7, 12-month FU 3.2
- Chest pain: Baseline 12.6, 12-month FU 4.7
- Syncope: Baseline 4.7, 12-month FU 0.6
- Other: Baseline 5.7, 12-month FU 3.8
- None: Baseline 13.2, 12-month FU 54.9

Elena Arbelo et al. Eur Heart J 2014
64.7% of patients were under some kind of anticoagulant treatment
49% of patients were under antiarrhythmic treatment
Outcome of Atrial Fibrillation Ablation

Follow-up status

1300 patients at 12 months follow-up

192 patients with recurrence during blanking period (15.1%)

2 deaths during blanking period

1087 patients with NO recurrence during blanking period (84.9%)

2 deaths between 3 and 12 months after ablation (1 with at least one recurrence)

333 patients with at least one recurrence at 12-month follow-up after the blanking period (26.1%)

4 deaths at 12-month follow-up (1 included in recurrences)

944 patients with NO recurrence at 12-month follow-up (73.7%)

One-year FAILURE in 337 patients (26.3%)

One-year SUCCESS in 944 patients (73.7%)

Elena Arbelo et al. Eur Heart J 2014
AF Ablation in Greece
AF Management in Greece

- MANAGE-AF: 4.6%
- Karampli et al: 5.5%
- EORP-AF: 7.6%
Current Situation in Greece

- 30 Ablation centers/teams (26 hospitals)
  - 8 University
  - 6 NHS
  - 2 Military
  - 2 Semi-Private
  - 8 Private
Radiofrequency Ablation Procedures in Greece
## Demographics

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Various techniques used for AFib Ablation
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<th>AT</th>
<th>AVRT</th>
<th>AVNRT</th>
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Cryoballoon Ablation for AF

AF Cryo Ablation Per Year

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<th>Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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<td>Value</td>
<td>41</td>
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<td>179</td>
<td>312</td>
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Cryoballoon Ablation for AF: Baseline Characteristics

Gender

- M: 79%
- F: 21%

AF type

- Paro (%): 89%
- Pers (%): 11%
Type of Catheters

Cases with 1st and 2nd Gen Balloon

- Gen 1: 44 cases
- Gen 2: 550 cases
Recurrence Rates

- Recurrences: 12%
- No Recurrences: 88%
Heraklion Experience
Heraklion Experience

- RF: 75%
- Paroxysmal (%): 69.3%
- Persistent (%): 26.7%
- Permanent (%): 4%
Heraklion Experience

- Pro time: 130
- Rad time: 25
- Success rate (%): 98
- Relapse rate (%): 11
- compli (%): 0.01
Heraklion Experience

<table>
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<tr>
<th>Method</th>
<th>Cryo</th>
<th>Paroxysmal (%)</th>
<th>Persistent (%)</th>
<th>Pro time</th>
<th>Rad time</th>
<th>Success rate (%)</th>
<th>compli (%)</th>
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<td>72.7</td>
<td>27.3</td>
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<td>98</td>
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Conclusions

- Rhythm control for the long-term management of AF is the initial treatment choice of the majority of cardiologists in Greece.

- The percentage of AF patients undergoing invasive treatment in our country is still low.

- AF ablation procedures are performed with high success and low complication rates.
  - comparable to the European and US standards.
Conclusions

- CA is an important therapeutic modality for AF pts
  - a challenging and complex procedure
- The progress made and the new developments on the horizon are remarkable
- In the late 1980s, few would have predicted that CA of AF would emerge as the most commonly performed ablation procedure in most major hospitals