Luigi Di Biase, MD, PhD, FACC, FHRS
Section Head of Electrophysiology at Albert Einstein and Montefiore Hospital, New York, USA;
Associate Professor, Albert Einstein College of Medicine at Montefiore Hospital, New York, USA;
Adjunct Associate Professor, Department of Biomedical Engineering, University of Texas, Austin, Texas, USA;
Senior Researcher, Texas Cardiac Arrhythmia Institute at St. David’s Medical Center, Austin, Texas, USA;
Assistant Prof. Department of Cardiology, University of Foggia, Italy
Email: dibbia@gmail.com

DISCLOSURES
I am a consultant for
✓ Biosense Webster
✓ Sterotaxis
✓ St Jude Medical
I received speaker honoraria/travel from
✓ Atricure
✓ Biotronik
✓ Boston Scientific
✓ Medtronic

BACKGROUND

Several studies have shown that in addition to pulmonary vein (PVs) isolation, other non-PVs areas may be the source of initiation and maintenance of atrial fibrillation in patients.
The most common sites are: the superior vena cava, the ligament of Marshall, the coronary sinus, the crista terminalis, the left atrial posterior wall and the left atrial appendage.

Effect of Empirical Left Atrial Appendage Isolation on Long-term Procedure Outcome in Patients with Long-standing Persistent AF undergoing Ablation: Results from the BELIEF Randomized Trial
ClinicalTrials.gov Identifier: NCT01362738


Texas Cardiac Arrhythmia Institute at St. David’s Medical Center, Austin, Texas, USA;
California Pacific Medical Center, San Francisco, California, USA;
University of Kansas, Kansas City, USA;
Cardiac Arrhythmia Research Centre, Centro Cardiologico Monzino IRCSS, Milan, Italy.

BACKGROUND
Long standing persistent (LSP) atrial fibrillation (AF) is the most challenging type of AF to treat with catheter ablation.

Circulation Left Atrial Appendage: An Underrecognized Trigger Site of Atrial Fibrillation
AIM

We sought to assess whether in patients with Long Standing Persistent AF the EMPIRICAL ELECTRICAL ISOLATION of the left atrial appendage (LAA) in addition to extensive PV antrum and triggers ablation could improve freedom from AF/AT at follow up in a in a multicenter randomized trial.

Study Design

173 Patients Enrolled

18 years, long-standing persistent AF refractory to antiarrhythmic drugs

Randomized 1:1

Standard Ablation +
Empirical LAA isolation
Group 1: n=85

Standard Ablation alone
Group 2: n=88

Follow-up After Index Procedure

Ablation Success Assessed at 12 month

62 Patients underwent a second procedure (27 group 1 and 35 group 2).
LAA isolation was performed in all patients during repeat ablation

Follow-up After Redo

Outcome Assessed at 24 month

Kaplan–Meier curves: single procedure success rate

At the 12 month follow-up, 48(56%) in group 1 and 25 (28%) in group 2 were recurrence-free off-AAD after a single procedure.

(Log-rank p=0.001, unadjusted HR 1.92 [1.3 to 2.9]).

Methods

This was a randomized, parallel-group study assessing whether empirical isolation of the LAA in addition to an extensive standard ablation, could improve the freedom from atrial arrhythmia in LSP AF patients

Power Calculation: The study had 80% power to detect at least 20% difference in success rate (50% to 70%) at 12 month follow-up (using log-rank test), with two-sided Type I error of 0.05.

173 patients were enrolled and randomly assigned (1:1 ratio) to:

- Extensive ablation plus Empirical LAA isolation (group 1, n=85)
- Extended PV antrum and non PV triggers ablation (group 2, n=88)

Patients ≥18 years of age, with LSP AF refractory to antiarrhythmic drugs were included in the study.
The cumulative success after multiple procedures was 65 (76%) in group 1 and 49 (56%) in group 2. 

**Results: Predictor of Recurrence**

- After adjusting for age, gender, LA diameter in Cox multivariate model
  - Isolation of LAA in addition to standard ablation, was associated with 55% reduction in overall recurrence (HR 0.45 [0.26-0.77], p=0.004)

**Results: Trans-esophageal echocardiogram (TEE) after a single procedure in patients undergoing LAA isolation**

- Patients undergoing LAA isolation received TEE at 6 month follow up, irrespective of their underlying rhythm
- Low peak flow velocity (<0.4 m/s) in the LA appendage was observed in 48 patients

**Results: Stroke/TIA and Mortality**

- Stroke/TIA:
  - No stroke or TIA was reported in the empirical LAA isolation group.
  - Four (4.5%) patients had stroke in the standard ablation group (p=0.12). None of them in patients with LAA isolation
  - No deaths occurred during the study period

**Results: Peri-Procedural Complications**

- Complications:
  - One pericardial effusion occurred in each group (p=1.0)
  - One gastrointestinal bleeding was reported in Standard Ablation group (p=0.49)
CONCLUSIONS

- The results of this randomized study show that both after a single and redo procedures in patients with long standing persistent AF, the EMPIRICAL ISOLATION of the LAA improve the long-term freedom from atrial arrhythmias without increasing complications.

- Future studies examining the physiopathology of these findings are necessary.

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University of Foggia, Italy;
Montefiore Hospital, New York, USA;
Albert Einstein College of Medicine at Montefiore Hospital, New York, USA;
Assistant Prof. Department of Cardiology, University of Foggia, Italy
Email: dibbia@gmail.com