

# Effect of Extra Lesions on AF burden of Continuously Monitored Patients Undergoing Single-Procedure Catheter Ablation

Javier Saiz-Vivo<sup>1</sup>, Valentina D.A. Corino<sup>2</sup>, Mirko de Melis<sup>3</sup>, and Luca T. Mainardi<sup>2</sup>

<sup>1</sup>Medtronic: Bakken Research Center, Maastricht, Netherlands

<sup>2</sup>Department of Electronics, Information and Bioengineering, Politecnico di Milano, Milan, Italy

## Background

Catheter Ablation (CA), specifically pulmonary vein isolation (PVI) is a well established procedure for patients suffering from Atrial Fibrillation (AF).

The effect of extra lesions on procedural outcome is unclear with studies suggesting there is reduction of AF recurrence. However, these studies relied heavily on 24-hour Holter recordings which have shown to have rather poor subclinical AF detection rates (5.5%) due to its intermittent nature. Furthermore, AF recurrence is considered as an ablation failure and AF burden reduction on the patients is not taken into consideration. Implantable cardiac monitors (ICMs) offer the advantage of continuous monitoring of the patient and offer high AF detection rates.

## Objective

This study aims at evaluating the effect of extra lesions on the success rate of the procedure as well as on the AF burden change achieved on the patients.

## Methods

This retrospective study included 33 patients (67% male;  $57 \pm 12$  years; 26% Non-Paroxysmal AF) which were implanted with the Reveal LINQ, an ICM with AF detection rates of up to 96% that continuously classifies the heart rhythm of the patient analyzing its cardiac cycle and stores the daily AF burden in minutes/day. The ICM was implanted  $134 \pm 97$  days before the ablation procedures, which were classified as PVI or PVI plus extra lesions, and the patients were followed up for  $223 \pm 111$  days.

The patients were also divided into two classes: those with AF recurrence, defined as those with a detected episode outside the 3-months blanking period, and those without.

## Results

Of the 33 patients analyzed, 21 had PVI only and 12 had PVI plus extra lesions. From those with PVI only, 15 (71%) had AF recurrence with

a median burden reduction of 83% out of which 8 (53%) had a burden reduction  $> 80\%$ . From the patients which had PVI plus extra lesions, 10 (83%) had recurrence with a median burden reduction of 84% out of which 6 (60%) had a burden reduction  $> 80\%$ . 6 patients had a median burden increase of 222%, out of which 3 underwent PVI plus extra lesions (median burden increase of 360%) and 3 had PVI only (median burden increase 83%).

Figure 1 shows the AF burden detected in minutes/day for the patients with AF recurrence divided into pre ablation (PRE), blanking period (BP) and post ablation (POST). The markings show those patients that underwent PVI plus extra lesions (EL).

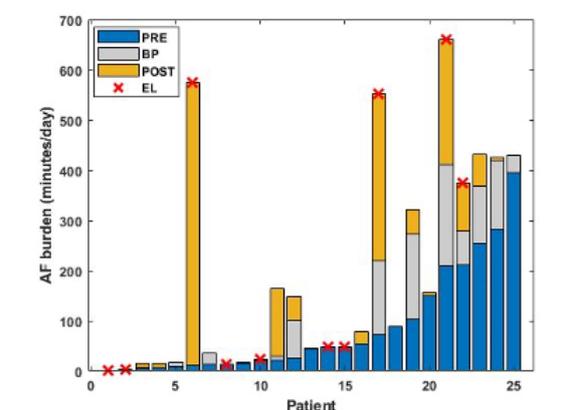


Figure 1: AF burden detected in patients with AF recurrence.

## Discussion

Although a higher proportion of patients with PVI plus extra lesions had AF recurrence, a significant proportion of those with recurrence also had AF burden reduction  $> 80\%$ . Moreover, for a small subgroup of patients in which the AF burden increased after CA, those with PVI plus extra lesions showed a higher increase in AF burden. This indicates that extra lesions could be indeed beneficial to some patients, especially in reducing the AF burden and, in doing so, increasing the quality of life of the patient.