

Segmental vs. circumferential ablation of pulmonary veins in patients with paroxysmal AF fibrillation

*Thesis*

**Submitted For Partial Fulfillment Of MD Degree In  
Critical Care Medicine**

*Investigator*

**Ahmed Moustafa Abd El Samad  
MSc.,**

*Supervisors*

**Dr. Hesham El Aassar**

**Professor**

**of Critical Care Medicine**

**Dr. Rania El Hosseiny**

**Professor of**

**Critical care Medicine**

**Dr. Motaz El Halag**

**Lecturer of Critical Care  
Medicine**

**Dr. Ahmed El Damaty**

**Lecturer of Cardiology  
Department**

**Cairo University  
2018**

## **Abstract:**

**Introduction:** Pulmonary vein isolation (PVI) is the cornerstone of catheter ablation techniques for the treatment of paroxysmal atrial fibrillation (PAF), with significantly improved efficacy compared to antiarrhythmic drugs as shown in CABANA trial. However, the question arises in which PAF patients whether the procedure can be limited to PVs only showing potentials (segmental), or it is really necessary to isolate all PV (circumferential). Even though success rates for circumferential pulmonary vein ablation (CPVA) have been reported to be higher (up to 90%), than segmental pulmonary vein ablation (SPVA), most CPVA procedures previously reported included left atrial linear ablation (LALA), additional ablation lesions or lines connecting the mitral valve to the posterior pulmonary veins or along the roof of the left atrium which made bias to these studies.

Thus, we initiated this randomized controlled study to evaluate the efficacy of CPVA versus SPVI in subjects undergoing ablation of paroxysmal atrial fibrillation.

**Methods:** Our study included 31 consecutive patients who underwent their first radiofrequency ablation for paroxysmal AF between March 2015 and March 2017. Patients were randomized for circumferential or segmental ablation on the day of the procedure. We had 2 groups, circumferential (17 patients) and segmental group (14 patients).

**Results:** There was no difference between 2 groups on our primary end point, the recurrence, which was 2 out of 14 patients (14.3%) in segmental ablation group, compared to 3 out of 17 patients (17.6%) who were circumferential ablated. This difference is statistically insignificant ( $p = 1$ ). For other end points, there was also no statistical significant difference between circumferential Vs segmental regarding fluoroscopy time,  $53.47 \pm 8.7$  min Vs  $54.93 \pm 15.02$  min,  $P = 0.738$ , procedure time,  $184.18 \pm 19.28$  min Vs  $191.43 \pm 20$  min  $P = 0.315$ , and even for RF time which was lower in segmental group but did not differ statistically,  $35.71 \pm 5.73$  min Vs  $34.79 \pm 5.29$ , min  $P = 0.649$ .

**Conclusion:** previous studies showed superiority of circumferential pulmonary vein isolation on segmental strategy regarding effectiveness, but in those studies, linear ablations were added to circumferential strategy and done in cases of persistent and paroxysmal AF. In our randomized study, we compared between 2 methods in cases of paroxysmal AF, which showed that segmental ablation is not inferior to circumferential ablation of PVI.

**Keywords:** *Atrial fibrillation, circumferential, paroxysmal, segmental*