Redo ablation for atrial fibrillation recurrence post radiofrequency or cryoballoon ablation: a high volume single-centre experience

Ribeiro Da Silva M.; Santos Silva G.; Ribeiro Queiros P.; Teixeira R.; Almeida J.; Fonseca P.; Oliveira M.; Goncalves H.; Rodrigues A.; Primo J.; Fontes Carvalho R.

Hospital Center of Vila Nova de Gaia/Espinho, Vila Nova de Gaia, Portugal

Funding Acknowledgements: Type of funding sources: None.

Introduction: Atrial fibrillation (AF) ablation is a well-established procedure for the treatment of AF. The cornerstone of AF ablation is the complete and durable isolation of pulmonary veins (PV) through radiofrequency (RF) or cryoballoon (CB) ablation. However, PVI durability between RF or CB was not yet established, as reablation strategy and outcomes in patients (pt) undergoing a redo ablation.

Purpose: To compare RF versus CB regarding PVI status, reablation procedure and outcomes in pts undergoing a second procedure.

Methods: Single-centre retrospective study of consecutive pts who underwent a redo between 2016 and 2020. PVI status was assessed during electrophysiologic study with electroanatomic mapping system. Index procedures included second generation CB, conventional RF before 2018 and CLOSE protocol guided RF ablation after 2018. We assessed time-to-redo, number and location of reconnected PVs, procedural characteristics, acute and long-term outcomes between RF and CB index PVI.

Results: Seventy-four (55 RF and 19 CB) pts were included, 68,9% were male, most pts had paroxysmal AF (71,6%) and a mean CHA2DS2-VASc score of 1,14 ± 1,0.

No statistically significant differences were noticed in clinical and echocardiographic characteristics between pts within RF or CB cohorts.

Median time to reablation was significantly longer in the RF cohort (38,6 months ±33,6) compared to CB (17,0 months ±9,5) (p = 0,014). The number of reconnected PV was higher in CB than the RF cohort, although not significant (2,37 ±1,2 vs 1,75 ±1,4;p = 0,080). Right inferior PV was significantly more reconnected in pts within the CB compared to RF group (73,7% vs 45,6%;p = 0,034), without differences in the other PV reconnection rates.

Regarding reablation procedure, all pts were submitted to RF-redo. Fluoroscopy time was shorter for CB than RF cohort (7,4 ±2,9 vs 13,3 ±8,4;p = 0,002). There were no significant differences between the type of reablation (PVI only vs PVI plus other lesions or cavotricuspid isthmus ablation), with no difference in overall acute success.

After the redo procedure, no differences were observed in recurrence rate in the blanking period and after 91 days from reablation. Nevertheless, time-to-recurrence (>91 days) was longer for RF than CB group (13,4 months ±10,7 vs 4,3 months ±1,5;p = 0,016). There were 2 pts in the RF group that were submitted to a third ablation procedure (p = 0,725). There were no differences between groups in the composite of adverse cardiovascular (CV) outcomes (stroke/transient ischemic attack, emergency room visit for AF, hospitalization for AF or CV death); p = 0,715.

Conclusions: After the index procedure, reablation occur later in RF than CB cohort. Although the number of reconnected PV were similar between groups, right inferior PV was significantly more reconnected in pts originally treated with CB. After redo, time-to-recurrence was shorter for CB cohort. Recurrence and composite of adverse CV outcomes were similar.