

## Prevalence and predictor factors of persistent pulmonary vein isolation in redo AF ablation procedure

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**Introduction:** Atrial fibrillation (AF) catheter ablation is a well-established procedure for the treatment of AF. The cornerstone of AF ablation is the complete isolation of pulmonary veins (PV). However, persistent PV isolation (PVI) is difficult to accomplish, with PV reconnection rates of > 70%. The factors associated with persistent PVI are still uncertain.

**Purpose:** To assess the PVI status in patients (pts) undergoing a redo ablation and to determinate the predictors associated with persistent PVI.

**Methods:** Consecutive pts who underwent a redo ablation between 2016 and 2020 were identified in a single-centre retrospective study. PVI status was assessed during electrophysiologic study with electroanatomic mapping system. Index procedures included second generation cryoballoon (CB), conventional radiofrequency (RF) before 2018 and CLOSE protocol guided RF ablation after 2018. Persistent PVI was defined by the absence of reconnection of all pulmonary veins.

**Results:** We included 83 pts with a mean age of  $55.9 \pm 11.9$  years; 71,1% (n = 59) were male with a mean CHA2DS2-VASc score of  $1.14 \pm 1.0$ . Seventy-five percent had paroxysmal AF and undergone a redo 35,0 months ( $\pm 30.9$ ) after the index PVI.

Seventeen pts (20,5%) had persistent PVI whereas 66 pts (79,5%) had at least one PV reconnected after the index procedure, with a reconnection rate of 51,8% for right superior and inferior PV, 47,0% for left superior PV and 36,1% for left inferior PV.

No statistically significant differences were noticed between pts with persistent and non-persistent PVI in baseline (clinical and echocardiographic) characteristics.

Regarding index ablation procedure, persistent PVI occurred more frequently in patients who underwent a "CLOSE" protocol-guided index PVI compared to RF pre-2018 and CB (45,5% vs 16,7%; p = 0,043).

Twenty-nine percent of pts with persistent PVI had a "CLOSE" protocol-guided index PVI whereas only 9,1% of non-persistent PVI pts had a "CLOSE" protocol-guided index PVI (p = 0,043).

In this cohort, "CLOSE" protocol-guided index PVI was the only predictor of persistent PVI (odds ratio 4.2, 95% confidence interval 1.1-15.9; p = 0.037).

**Conclusions:** In patients undergoing redo AF ablation procedures, only 20,5% had persistent PVI. "CLOSE" protocol-guided index PVI presented significantly higher rates of persistent PVI. "CLOSE" protocol-guided index PVI was the only predictor for persistent PVI in patients with AF recurrence requiring a redo procedure.