

Concomitant utilization of radiofrequency ablation during atrial fibrillation cryoballoon ablation procedures

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Background: Use of cryoballoon ablation (CBA) for the treatment of atrial fibrillation (AF) has become increasingly common in recent years. While various techniques have been described for use of the cryoballoon to achieve PVI and create selective additional lesion sets, the need for concomitant radiofrequency (RF) ablation in delivering touch-up ablation or non-PVI lesion sets has not been quantified.

Purpose: To quantify the rate of RF ablation catheter use in AF CBA procedures, and to evaluate whether indication for ablation can be used as a predictor of the need for supplementary RF ablation.

Methods: Self-reported data was prospectively collected in AF CBA procedures. Procedural characteristics including concomitant utilization of RF ablation catheters and lesion set delivery were recorded and analyzed. Post-hoc statistical analysis was completed utilizing a two-sample t-test of significance.

Results: Data was collected in a total of 246 AF CBA cases across 44 centers in the USA, Europe, and Japan. Included in the analysis were 170 paroxysmal atrial fibrillation cases (PAF group); 70 PersAF and 6 LsPersAF cases (PersAF group). Utilization rates for RF ablation catheters did not differ between the two groups; 35.9% and 36.8% of cases in PAF and PersAF, respectively ($p = 0.885$). The number of patients in which non-PV lesion sets were delivered also did not differ between groups; 38.2% and 40.8% in PAF and PersAF, respectively ($p = 0.706$). The choice of non-PV lesion sets varied as shown in Table 1. Upon completion of ablation, more patients were in sinus rhythm in the PAF group compared to the PersAF group, but the difference did not reach statistical significance; 88.2% and 78.9%, respectively ($p = 0.057$).

Conclusions: RF ablation catheter utilization rates were similar between groups, suggesting that indication (PAF vs. PersAF) alone is not a good predictor of whether concomitant RF ablation catheter utilization will be required during an AF CBA procedure.

Table 1

Lesion Set	Incidence	
	PAF (n = 170)	PersAF (n = 76)
CTI Line	26.5% (45/170)	15.8% (12/76)
Isolation/Homogenization of Fibrotic Areas	2.9% (5/170)	3.9% (3/76)
CFE	2.9% (5/170)	0.0% (0/76)
Posterior Wall Isolation	1.8% (3/170)	21.1% (16/76)
Roof Line	1.8% (3/170)	7.9% (6/76)
Other	9.4% (16/170)	27.6% (21/76)

Utilization rate of non-PVI lesion sets