

Comparison of cryoballoon ablation versus radiofrequency ablation of pulmonary veins in paroxysmal atrial fibrillation

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Introduction: Ablation of pulmonary veins (PV) is an established therapeutic option for patients with symptomatic drug-refractory paroxysmal atrial fibrillation (pAF). Radiofrequency (RF) is currently the most widespread energy source for PV ablation. Cryoballoon (CB) technique as alternative has evolved recently.

Methods: In a case-control setting, we compared 20 patients (pts) with pAF that underwent PV ablation with CB technique to 20 pts matched for duration of AF, LVEF and atrial size that underwent RF ablation. In case of persistent electrical potentials after CB ablation, a conventional cryocatheter was used for additional segmental ablation. All pts performed daily event recording for 3 months after ablation. Ablation parameters, success rate and quality of life were compared.

Results: The ablation results are shown in Table 1. The success rate, defined as freedom from AF after 3 months, was 50% in both groups. There was no significant difference between CB and RF ablation duration, fluoroscopy time and quality of life. In 6 pts of the cryo group, a conventional cryocatheter had to be used additionally. In the CB group 3 phrenical nerve palsies occurred that resolved spontaneously after stop of cryo application.

Conclusions: PV ablation with CB-technique seems to be an effective and safe procedure in pts with paroxysmal AF. Procedure and fluoroscopy duration are not longer than in conventional RF ablation. Phrenical nerve palsy seems to be a particular complication of CB ablation of RSPV, but is transient when cryo application is stopped.

Table 1: Comparison of ablation features and clinical outcome

	Cryo overall (n=20)		RF (n=20)	P value (Cryo overall vs. RF)
	CB only (n=14)	CB + conventional cryo catheter (n=6)		
Treated veins	67	11	77	NS
LSPV treated/isolated	18/17	2/2	20/18	NS
LIPV treated/isolated	19/17	1/1	20/20	NS
RSPV treated/isolated	17/17	3/3	20/19	NS
RIPV treated/isolated	13/12	5/5	17/11	NS
Procedure time [min]	166±39	278±50	200±67	NS
Fluoroscopy time [min]	41±13	66±53	55±23	NS
AF recurrence [%]	50% (7 pt)	33% (2 pt)	50% (10 pt)	NS

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