

variable analysis with age and gender included, apoptotic MPs were of borderline significance (HR 4.86, 95% CI 0.98–15.1) while the association of monocyte-derived MPs and AF recurrence was non-significant. After hypertension and CHD were also included, monocyte-derived MPs were predictive of AF recurrence (HR 1.37, 95% CI 1.03–1.95). The figure shows example of microflowcytometric detection of apoptotic MPs.

Conclusion: High levels of monocyte-derived and apoptotic MPs predict AF recurrence, which at least in part may be due to involvement of MPs with age, comorbidities and myocardial remodeling.

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P1920

The relative length of late-enhanced gadolinium MRI gaps determines the risk of recurrence of atrial fibrillation after pulmonary vein isolation

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Introduction: Recurrence rate of atrial fibrillation (AF) is high after first pulmonary vein isolation (PVI) and is attributed to gaps in the ablation lines. Complete isolation of pulmonary veins (PV) seems to be important for durable success.

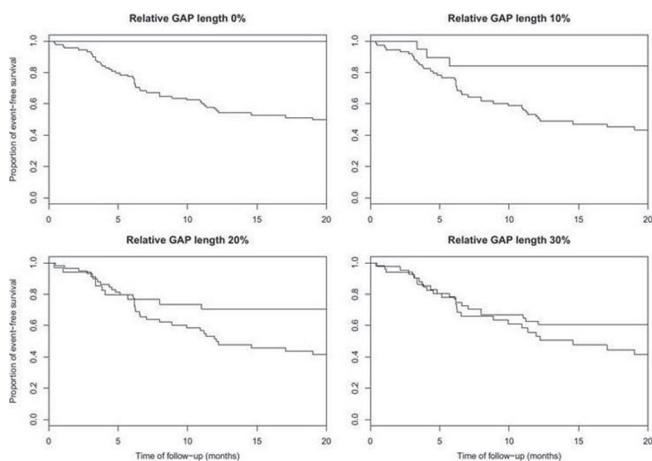
Purpose: To investigate the impact of anatomical gaps as assessed by late gadolinium-enhanced cardiac magnetic resonance (LGE-CMR) on AF recurrence rate after first PVI.

Methods: 107 patients (53±11 yrs, 79% male) underwent circumferential PVI by means of electroanatomical mapping and radiofrequency ablation and were followed for 3, 6 and 12 months and every 12 months thereafter with 24-h-Holter. LGE-CMR was performed 3 months after PVI. Images were processed by ADAS-AF[®] software (Galgo Medical), applying previously established image intensity ratio thresholds. Perimeter of each PV was determined and number and absolute lengths of anatomical gaps measured. Relative gap length was calculated as absolute gap length divided by length of the ablation line. 15 patients had to be excluded because of low quality CMR. A total of 360 PV with 2880 segments in a 2x8-segment model were assessed.

Results: Type of AF was paroxysmal AF (PAF) in 57 (62%) and persistent AF (Pers AF) in 35 (38%) patients. 15 patients (16%) had common trunk of the left PV. Mean follow-up duration was 15±10 months. 36% of patients with paroxysmal AF and 53% of patients with persistent AF had recurrence of AF after one year. In the univariate analysis, CHA₂DS₂-VASc score, AF type and relative gap length were predictive of recurrence. In the multivariate analysis, only relative gap length was significantly associated with recurrence (HR 1.16 (1.02–1.31) per each 10% of gap, p=0.03). Thus, for each 1% percent of relative gap, risk of AF recurrence rises by 1.6%. Figure 1 illustrates how different thresholds for relative gap lengths result in event-free survival curves.

Table 1. Uni- and multivariate analysis of factors associated with recurrence of AF after PVI

	HR (95% CI)	P-value univariate	HR (95% CI)	P-value multivariate
Age at ablation [per year]	1.01 (0.99–1.04)	0.55		
CHA ₂ DS ₂ -VASc score	1.37 (1.02–1.84)	0.03	1.32 (0.99–1.75)	0.06
LA diameter [per mm increase]	1.01 (0.96–1.07)	0.64		
Paroxysmal AF	1.78 (1.01–3.15)	0.04	1.75 (1.00–3.12)	0.05
Duration AF [per month]	1.01 (0.99–1.02)	0.19		
Number of gaps	1.03 (0.98–1.08)	0.31		
Total relative gap length [per 10%]	1.15 (1.02–1.32)	0.02	1.16 (1.02–1.31)	0.02



Kaplan-Meier estimates for AF recurrence

Conclusion: Relative length of anatomical gaps as assessed by LGE-CMR is independently associated with AF recurrence one year after first PVI.

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Clinical determinants of spontaneous conversion to sinus rhythm in patients presenting at the emergency department with atrial fibrillation

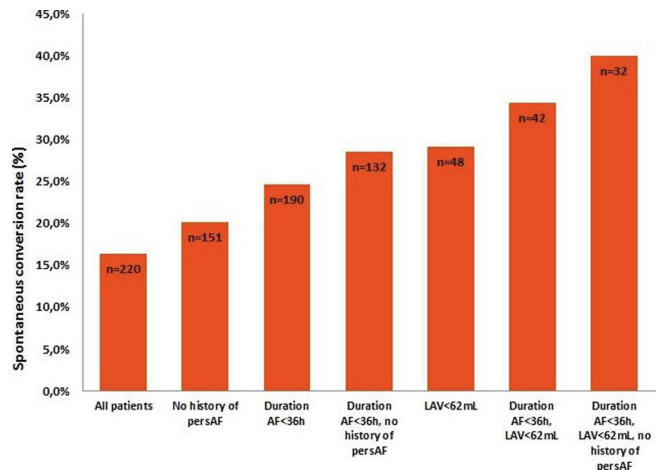
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Background: Spontaneous conversion rates of atrial fibrillation (AF) range from 18%–90% in different reports of acute AF cases, mostly depending on the duration of the observation period after onset.

Objectives: To identify clinical determinants of spontaneous conversion to sinus rhythm (SR) in patients presenting at the Emergency Department (ED) because of AF.

Methods: We conducted a prospective, observational study of patients who visited the ED because of documented AF between July 2014 and December 2016. Clinical characteristics and demographics were compared between patients with and without spontaneous conversion to SR before or at the ED.

Results: We enrolled 1.345 consecutive patients (age 70±12.2 years, 46.4% female). Spontaneous conversion to SR was observed in 220 patients (16.4%). In 45.6% active cardioversion was attempted and the remaining cases received a rate control strategy (37.9%). Compared to patients without spontaneous conversion, patients with spontaneous conversion before or at the ED more often had a duration of AF <36 hours (86.8% vs 51.3%, p<0.001). Left (LA) and right atrial volumes were less (77.5 vs 87.1 mL, p=0.001 and 47.3 vs 56.1 mL, p=0.003 respectively) in those patients who converted spontaneously. Acute heart failure (0.9% vs 8.9%, p<0.001) and a history of persistent AF (3.2% vs 16.8%, p<0.001) were less frequently observed in patients with spontaneous conversion. Logistic regression analysis showed that duration of AF <36 hours (OR 6.2, 95% CI 3.44–11.14, p<0.001), a history of persistent AF (OR 0.3, 95% CI 0.09–0.96, p=0.042) and LA-volume (OR 0.89 per 10 mL, 95% CI 0.82–0.97, p=0.008) were independent determinants of spontaneous conversion to SR. In the subset of patients who were most likely to convert spontaneously, namely those with a shorter duration of AF, no history of persistent AF and a smaller LA-size, the spontaneous conversion rate was as high as 40%.



Conclusion: Independent determinants for spontaneous conversion of AF before or at the ED are a shorter duration of symptoms, smaller LA size and the absence of a history of persistent AF. Early identification of those patients may decrease the number and shorten the duration of visits to the ED and may prevent potentially harmful and unnecessary treatment.

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Prompt cardioversion of atrial fibrillation is associated with better patient outcomes - The FinCV studies

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Background: Electrical cardioversion (CV) is the most important procedure in converting atrial fibrillation (AF) to sinus rhythm in clinical practice. However, the optimal timing of CV in AF remains unknown. We sought to investigate the association between AF episode duration and safety and efficacy outcomes of CV in a multi-center multi-cohort study. The primary end-point was a composite adverse outcome including unsuccessful CV, acute arrhythmic complications, thromboembolic events, mortality and AF recurrence within 30-days follow-up.

Methods and results: A total of 4356 CVs in 2530 AF patients on oral anticoagulation were explored in the FinCV study cohorts 1, 2 and 3. The study population was divided according to the index AF episode duration (<24h, 24h – 48h, 48h