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## Collateral nervous damages after cryoballoon pulmonary vein Isolation

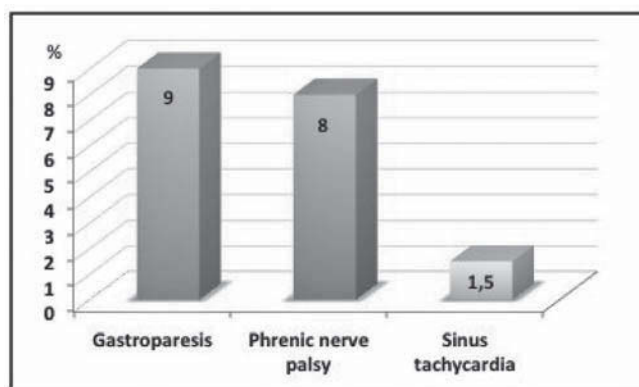
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**Background:** Various types of complications have been reported after atrial fibrillation (AF) ablation using radiofrequency energy but those have not been well defined when using cryoballoon ablation technique. The objective of this prospective study was to assess types, incidence and outcome of complications after cryoballoon pulmonary venous isolation (PVI) for AF.

**Methods:** This prospective monocentric study included 66 FA consecutive patients (39 males, age 57+/-11 years) who underwent cryoballoon PVI for symptomatic paroxysmal AF. Phrenic nerve integrity was assessed by pacing from the superior vena cava during isolation of the right PVs. Before discharge, all patients were subjected to 24-hour Holter electrocardiograms, echocardiography, and esophagogastroduodenoscopy (EGD). Cardiac MRI was scheduled between 1 and 3 months post-procedure. At a mean follow up of 3.7±1.7 months after ablation, patients underwent clinical review and 24 hour Holter electrocardiograms.

**Results:** The mean number of balloon cryoapplications was 10.0±2.1 per patient and 2.5±1.0 per vein. A 28 mm cryoballoon was used in 49 patients (74%) and a 23 mm cryoballoon in the 17 remaining patients (26%). Nine patients experienced complications attributed to collateral nervous damage (14%): Asymptomatic gastroparesis was observed in 6 pts (9%), transient phrenic nerve palsy (PNP) in 5 (8%), and symptomatic inappropriate sinus tachycardia requiring beta blocker treatment in 1 (1.5%). Neither cryoballoon related-esophageal ulceration nor PV stenosis was observed.

**Conclusion:** Gastroparesis, PNP and sinus tachycardia could be observed in a significant number of cases after cryoballoon ablation of AF. These complications are likely due to cryo-induced damages of nervous structures surrounding the heart.



Nervous complications after cryoballoon ablation of AF (%)

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## Remote magnetic navigation in catheter ablation of persistent atrial fibrillation

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**Introduction:** Efficacy of magnetic navigation for ablation of paroxysmal atrial fibrillation (AF) has been shown. However data are sparse in patients (pts) with persistent AF.

**Aims:** We report our experience using Magnetic Navigation System (MNS) (Niobe, Stereotaxis) for catheter ablation of persistent AF.

**Methods:** Nineteen consecutive symptomatic pts (18 male, age 60,4±1,9 y) with drug-resistant AF underwent ablation with an irrigated tip catheter, in combination with a three dimensional electroanatomical mapping system (Carto RMT). Ablation strategy consisted in wide area circumferential pulmonary vein (PV) ablation with validation for electrical PV disconnection by a circular mapping catheter, followed by complex fractionated atrial electrograms (CFAE) ablation, linear lesions and non PV foci ablation as required. After discharge, pts were scheduled for repeated visits, ECGs and holter recordings at 3 and 6 months (mth).

**Results:** AF history was 5,5 y and mean duration of the ongoing AF episode was 11 mth. Median left atrial (LA) size was 48,5 mm (28 cm<sup>2</sup>). All pts underwent successful PV isolation, 74% linear lesions (LA roof line and/or mitral isthmus line), 79% CFAE ablation and 28% non PV foci ablation. Procedure duration was 215±50 min, fluoroscopy time 13±5 min (dose 849±534 mGy) and radiofrequency delivery duration 30±12 min. There was no major complication. At 3 mth follow-up freedom from documented AF was achieved in 35% of pts. After 1.8 procedures/pt and a median 6 mths follow-up, 14 (73,7%) of 19 pts were in sinus rhythm.

**Conclusions:** Catheter ablation of persistent AF is effective and can be safely performed using MNS. Efficacy is comparable to that reported with the classic manual technique. Operator radioprotection and comfort are major advantages in this type of lengthy procedure.

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## Predictive value of sleep apnea syndrome on efficacy of atrial fibrillation ablation (3A study)

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**Background:** The association of atrial fibrillation (AF) and sleep apnea syndrome (SAS) is well established. The aim of this prospective study was to estimate the relation between presence of SAS and outcome of first AF ablation.

**Methods and results:** 49 patients (Pts) with symptomatic drug resistant AF (71% paroxysmal) were included prospectively. All underwent clinical evaluation, Berlin Questionnaire (BQ), transthoracic echocardiogram, and overnight polygraphic study (OPS) before pulmonary vein isolation (with possible lines/defragmentation in persistent forms). SAS were classified according to the apnea-hypopnea index (AHI, significant if >15). Follow-up consisted of 3 months(M) visits and 24 h Holter at M6. Pts with AHI >15 underwent a new OPS at M6. Any episode of AF or flutter >30 seconds was considered a recurrence. OPS showed SAS in 12 pts (25%, 6 obstructive). Seventeen pts had a high risk by BQ (42,8%). In SAS group, age (65,7 vs 60,7, p=0.01) body mass index (27,3 vs 25,5, p=0.04) and LA diameter (45 vs 41 mm, p=0.019) were higher whereas ejection fraction was lower (49% vs 63%, p=0.001). At M6, 29% of the SAS group are AF free versus 78% in the other group. With multivariate analysis, SAS was the only independent predictor of ablation failure (OR=7.33).

**Conclusion:** SAS was a powerful independent predictor for first AF ablation failure.

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## Prevalence of atrial fibrillation in an elderly contemporary French cohort: the three city study-COVADIS

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**Background:** Atrial fibrillation (AF) is a major public health concern worldwide. Prior studies have established that key risk factors for the development of AF include, age, hypertension, coronary artery disease (CAD), heart failure,

and valvular heart disease. However, there have been few studies on the risk for development of AF in an elderly cohort, taking into account ECG variables.

**Aims:** We aimed to evaluate the clinical and ECG predictors of prevalent AF in a large population-based prospective cohort study. The clinical and ECG workups were realized at admission and after 4 years of follow-up.

**Methods:** The study is part of the Three City Study (COVADIS), which included subjects aged 65 years and above and not institutionalised. The prevalence of AF at baseline was assessed in 4234 patients.

**Results:** The overall prevalence was 2.33%. Based on multivariable analyses, the HR was 2.08 [95% CI: 1.07-4.54],  $p=0.03$  for male gender. Age above 75 years was associated with an increase of AF prevalence (HR 1.92 [95% CI: 1.24-2.97],  $p=0.003$ ) as well as history of stroke (HR=2.90 [95% CI: 1.15-6.56],  $p=0.02$ ), history of AF (HR, 2.74 [95% CI: 1.12-6.20],  $p=0.02$ ). None of the other classical clinical risk factors was associated with AF prevalence. Q waves and ST segment depression on the baseline ECG were associated with an increased prevalence of AF: HR, 2.70 [95% CI: 2.13-6.44],  $p<0.001$  and HR, 12.6 [95% CI: 6.56-23.8],  $p<0.001$ , respectively.

**Conclusion:** In a contemporary cohort of elderly subjects, ECG variables suggesting CAD, history of previous AF, history of stroke, age and gender were predictors of AF prevalence.

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### Management of recent onset atrial fibrillation in the RHYTHM-AF study: a survey of French cardioversion practice

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**Purpose:** The prevalence of atrial fibrillation (AF) is increasing worldwide, affecting 4.5 million people in the European Union, and up to 1 million people in France. Yet, cardioversion practices (CV) are not well documented. The RHYTHM-AF international observational study aimed to describe regional patient populations and CV practices.

**Methods:** Consecutive adult candidates for CV with documented recent AF were enrolled from hospitals in 10 countries. Information on French patients was collected between September 2010 and April 2011 in 25 centers. Descriptive statistics were used to document patient characteristics and CV practices.

**Results:** Among the first 492 French enrolled patients, mean age was 69 years, 65% were male, 57% were hypertensive, 16% diabetic and 16% presented with a history of chronic heart failure while a quarter (26%) showed heart failure symptoms. Transthoracic and transesophageal echocardiography were available in 70% and 30% of patients, respectively.

Over half (56%) of all patients underwent an attempt at CV; and the majority of them (80%) underwent electrical CV. The remaining 20% underwent pharmacological CV, most (81%) using amiodarone IV. At hospital discharge, the median length of stay was 46 hours (IQR: 26-84) for electrical CV and 203 hours (IQR: 91-409) for pharmacological CV. Also at discharge, 73% of patients were in normal sinus rhythm, 92% were prescribed anticoagulation drugs, and 63% anti-arrhythmic drugs. Adverse events occurred in 3% of patients and in-hospital mortality was 0.6%.

**Conclusions:** In France, observations suggest that current cardiology ward management of recent onset AF involves attempted CV in just over half of patients considered for CV. Among those cardioverted, treatment is oriented towards electrical CV, with a median length of in-hospital stay of 2 days. While electrical CV seems to be the preferred option of French cardiologists, amiodarone IV is nonetheless their first pharmacological treatment choice.

**Table – Results**

	Total	Cardioverted	No CV
<b>Total (N (%))</b>	492 (100%)	277 (56%)	215 (44%)
<b>I<sup>±</sup> detected AF</b>	169 (36%)	92 (33%)	77 (40%)
<b>Paroxysmal AF</b>	94 (20%)	39 (14%)	55 (28%)
<b>Persistent AF</b>	144 (31%)	97 (35%)	47 (24%)
<b>CHADS2 score (mean, (SD))</b>	1.3 (1.1)	1.4 (1.1)	1.1 (1.0)
<b>Mode of Cardioversion</b>			
	Total	PhCV	ECV
<b>Total (N (%))</b>	492 (100%)	55 (11%)	226 (46%)
<b>LoS, hours (median (IQR))</b>	48 (22-144)	203 (91-409)	46 (26-84)
<b>Time to CV, hours (median (IQR))</b>	21 (16-49)	24 (5-74)	21 (18-46)
		No CV	
<b>Total (N (%))</b>		215 (44%)	

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### Symptoms, functional status, and quality of life in patients with controlled and uncontrolled atrial fibrillation. Data from the cross-sectional REALISE-AF registry

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**Background:** Both rate- and rhythm-control are accepted management strategies for atrial fibrillation (AF). The frequency of success of either strategy and the impact of control on symptomatic status of AF patients have not been described.

**Methods:** RealiseAF was a multicentre, international, observational, cross-sectional survey of patients with any AF history in the previous 12 months, performed in 2009-10 by random sampling of cardiologists and internists. It aimed to describe the characteristics, symptoms, quality of life (QoL), and management patterns of AF patients, and determine the frequency of AF control (defined as sinus rhythm or AF with resting heart rate  $\leq 80$  beats per minute [bpm]).

Findings Of 10546 patients enrolled, 10 523 were eligible for analysis and 9665 evaluable for AF control. AF was controlled in 59.0% of patients (sinus rhythm 26.5%, AF  $\leq 80$  bpm 32.5%), and uncontrolled in 41.0%. Symptom prevalence in the previous 7 days was lower in controlled than uncontrolled AF (55.7% vs 68.4% respectively;  $p<0.001$ ) and similar for patients in sinus rhythm and patients in AF  $\leq 80$  bpm (54.8% vs 56.4%;  $p=0.23$ ). On the day of the visit, AF-related functional impairment (European Heart Rhythm Association Class  $>1$ ) was observed in 67.4% of controlled and 82.1% of uncontrolled AF patients ( $p<0.001$ ). QoL (measured using the EQ-5D tool) was better for patients with controlled versus uncontrolled AF for all measures: visual analog