

Results: Intraclass correlation coefficients (ICC) of DF and RI were 0.537 and 0.467, respectively (Figure B). When RI >0.2 was defined as significant, there were unacceptable differences from two segments (κ coefficient 0.309). On the other hands, ICC of PF ranged from 0.891 to 0.995 and ICC of CV ranged from 0.791 to 0.918 (Figure C). When a PF with CV <20 was defined as stable PF (sPF), there were excellent agreement between sPF from 20-second and 30-second (κ coefficient 0.822). The presence of the highest sPF from 20-second and 30-second outside the PV was a significant predictor of AF recurrence (HR 2.03, $p=0.03$ and HR 2.49, $p=0.02$, respectively).

Conclusion: Although DF was temporally unstable, PF with low CV, especially from ≥ 20 -second duration, was temporally stable. Electrograms of ≥ 20 -second duration are required to accurately CWTA for AF ablation.

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Comparison of three-dimensional transesophageal echocardiography and magnetic resonance imaging for pulmonary vein imaging prior to catheter ablation of atrial fibrillation: long-term follow-up

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Catheter ablation has become the first line of therapy in patients with symptomatic, recurrent, drug-refractory atrial fibrillation (AF). However, it is still challenging because of the high degree of variability of the pulmonary vein (PV) anatomy. Three-dimensional transesophageal echocardiography (TEE) is a promising new technique for cardiac imaging. Therefore, we have evaluated the usefulness of 3-D TEE for analysing the left atrial anatomy prior to an ablation procedure in comparison to magnetic resonance imaging (MRI).

Methods: In 50 patients, 3-D TEE and cardiac MRI were performed immediately prior to an ablation procedure (paroxysmal AF: 21 patients, persistent AF: 29 patients). The image quality provided by 3-D TEE and by cardiac MRI was compared in all patients. Two different ablation strategies were used. In patients with paroxysmal AF, the cryoablation technique was used. In the other patients, a circumferential pulmonary vein ablation was performed using a three-dimensional mapping system.

Results: A 3-D TEE and a cardiac MRI could be performed successfully in all patients prior to the ablation procedure. Several variations of the PV anatomy could be visualized precisely by 3-D TEE and cardiac MRI (e.g. common PV ostia, accessory PVs, varying diameter of the left atrial appendage and its distance to the left superior PV). The image quality was acceptable in the majority of patients even if AF with rapid ventricular response was present during the examination. The image quality provided by 3-D TEE was acceptable in 47/50 patients (94.0%). The TEE findings correlated well with the PV angiographies performed using cardiac MRI. There was a good correlation with regard to the diameter of the PV ostia assessed by these two imaging techniques. All ablation procedures could be performed successfully (mean number of completely isolated PVs: 3.8 ± 0.4 (cryo group), 3.9 ± 0.4 (radiofrequency catheter ablation group)). At 24-month follow-up, 68.0% of all patients were free from an arrhythmia recurrence (cryo group: 71.4%, Carto group: 65.5%). There were no major complications.

Conclusions: AF ablation procedures can be performed safely and effectively based on prior 3-D TEE imaging. The image quality was acceptable in the vast majority of patients.

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One year continuously monitoring follow up results after single procedure atrial fibrillation ablation using cryoballoon second generation

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Purpose: Aim of this study, present outcome of patients with persistent atrial fibrillation (persAFib) during on one year follow up period after single procedure pulmonary vein isolation using the cryoballoon second generation (CB 2).

Methods and results: To total 120 patients (73 male, 61%; mean age 59.8 ± 13.2 years) with persAFib after undergoing PVI using the CB 2 were implanted insertable cardiac monitor (ICM) Reveal XT, MDT. Follow up was based on diagnostic data from ICM during outpatient clinic visits. Recurrence of atrial tachyarrhythmias was defined as a symptomatic or documented episode >30 sec. Total of 480 pulmonary veins (PVs) were identified and successfully isolated with 1.3 ± 0.3 mean freezes. Mean procedure and fluoroscopy times were 93.1 ± 22.2 and 17.7 ± 5.3 min, respectively. At a mean follow-up of 12 months, freedom from recurrence of atrial tachyarrhythmias after a single procedure was achieved in 71.2% of patients with persAFib. Similar success rates were observed between bonus freeze and single freeze strategies, 72.5 and 69.9%, respectively ($P=0.9$). Multivariate analysis demonstrated that persAF ($P=0.04$) and recurrences during blanking period ($P<0.0001$) were independent predictors of atrial tachyarrhythmias recurrences.

Conclusion: Freedom from any arrhythmias can be achieved in 71.2% of patients after a single ablation of PVs with CB 2 during on one year follow up period in patients with persistent atrial fibrillation. A bonus freeze does not influence the clinical outcome, and reducing the duration of the cryoapplication to 3 min offers excellent results

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Atrial fibrillation catheter ablation in patients with hypertrophic cardiomyopathy: multi-centre experience and application of HCM-Risk SCD score to predict ablation outcome

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Introduction: Atrial fibrillation (AF) represents the most common arrhythmia in hypertrophic cardiomyopathy (HCM) patients. In this population, AF affects long-term prognosis and is often associated with significant deterioration of the clinical status. The maintenance of sinus rhythm is therefore an important therapeutic goal. HCM-Risk SCD is a validated score for stratification of sudden cardiac death risk in HCM. Whether or not it associates with atrial arrhythmia relapse following ablation still remains to be assessed.

Aims: The aim of this study is evaluating the efficacy, safety and predictive factors of AF catheter ablation outcome in HCM patients.

Methods and results: We enrolled 61 consecutive HCM patients undergone AF catheter ablation in two centres. AF was paroxysmal in 56% of the patients and persistent in 44%. The mean number of procedures was 1.9 ± 0.9 per patient. After one or more procedures, the success rate at the 12-months follow-up was 75.9% for paroxysmal AF and 59.1% for persistent AF. In the multivariate analysis, the independent predictive factors for arrhythmia relapse were left atrial area (HR=1.15 per cm^2 , 95% CI 1.06–1.25, $p=0.001$), AF duration (HR=1.36, 95% CI 1.07–1.73, $p=0.011$) and HCM-Risk SCD score (HR=1.18 per point, 1.02–1.36, $p=0.025$). The C-statistic for HCM-Risk SCD score was 0.63 (95% CI 0.47–0.78, $p=0.141$). Periprocedural complications rate was 14%.

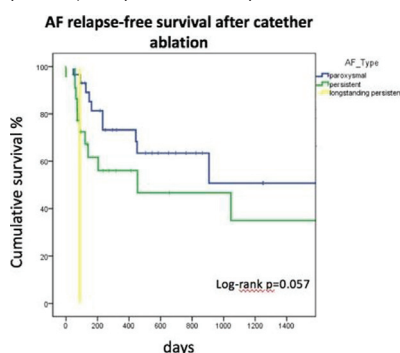


Figure 1

Conclusions: Catheter ablation is an effective procedure in patients with HCM and AF, particularly in those with smaller left atrium size, shorter AF duration and lower HCM-Risk SCD score. However, multiple procedures are often required and the rate of periprocedural complications is higher than in the general population.

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Is gastroparesis after cryoballoon ablation only due to periesophageal vagal nerve injury?

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Background: Gastroparesis (GP) as a complication of atrial fibrillation (AF) ablation is considered to be mainly caused by periesophageal vagal nerve injury. It is unknown whether peristaltic activity declines as a result of inactivated afferent vagal fibers due to damage of cardiac ganglionated plexi by catheter ablation. GP is classified into two types; manifest gastroparesis (MGP) with symptoms such as epigastric discomfort, abdominal pain, and hidden gastroparesis (HGP) characterized by delayed gastric emptying without gastrointestinal symptom. Prevalence of diagnosed MGP and HGP has been reported to be estimated 0.02% and 1.8% of general population, respectively.

Purpose: The objective of this study was to clarify the prevalence of GP in patients after cryoballoon ablation (CBA) and examine the association between alterations in cardiac autonomic tone by CBA and gastroparesis.

Methods: Consecutive 107 (men, 65%; age, 67.7 ± 9.4 years; paroxysmal, 63%) AF patients who underwent CBA and consecutive 120 (men, 68%; age, 62.2 ± 13.8 years) subjects who underwent health examination in our hospital were included. The study was conducted in two parts: (1) compared the frequency of GP between subjects after CBA and general health examination, (2) compared the heart rate in sinus rhythm at rest between before and after CBA in patients undergoing CBA. All CBA were treated with second generation 28mm cryoballoon (CBs). CB temperature was down to a minimum of -60°C and target application time was 180 seconds. Seventeen patients were monitored esophageal temperature with luminal temperature monitoring system (LTMs). All patients recorded a 12-lead electrocardiogram before and the day after CBA and were examined with an esophagogastroduodenoscopy in the next morning after CBA. GP was defined as having some residual food in the stomach after more than 12 hours