

patients in CB group consisting of 1 persistent phrenic nerve palsy and one arteriovenous fistula. In RF group there was 5 (14.2%) major complications, including 1 tamponade, 2 femoral vein thrombosis and 2 arterial pseudoaneurism ( $p=0.428$ ). There was no difference in outcomes: after the mean follow up of  $11.6\pm 4.7$  months 8 patients (22.8%) experienced recurrence in CB group and 7 (20%) in RF group ( $p=1$ ).

**Conclusion:** When starting AF ablation program in inexperienced centre, it seems that CB offers advantage regarding the shorter procedure and ablation times while the fluoroscopy times and outcomes are comparable to RF ablation. Furthermore, CB might result in lower complication rates.

#### P1101

##### The second generation cryoballoon ablation is safe and useful for paroxysmal atrial fibrillation in super-elderly patients over 80 years: a report from two high-volume centers

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**Background:** The second generation cryoballoon ablation (CBA) was reported to have similar efficacy and safety to radiofrequency catheter ablation (RFCA) for paroxysmal atrial fibrillation (PAF). However, the safety and efficacy of CBA for AF in the elderly, especially in those over 80 years are still unknown.

**Method:** We retrospectively evaluated consecutive 601 patients undergoing CBA for PAF in 2 centers (Kyoto University Hospital and Kobe City General Hospital) from September 2014 to March 2017.

**Result:** Forty seven patients (7.8%) were over 80 years (Super-Elderly group). The prevalence of hypertension and organic heart disease was significantly higher in Super-Elderly as compared with Non-Super-Elderly groups. Left atrial dimension was significantly larger in Super-Elderly ( $39.2\pm 6.1$  vs.  $36.8\pm 6.0$  mm,  $P=0.0091$ ).

The rate of procedural complications including acute gastric dilation, phrenic nerve palsy, cardiac tamponade, and vascular injury was not significantly different between the 2 groups (10.6% vs. 7.0%,  $P=0.39$ ). The rates of early recurrence of atrial-tachyarrhythmias (ATAs) within 90 days were not significantly different between 2 groups (14.9% vs. 17.2%  $P=0.69$ ).

During the mean follow up of 17.2 months, the event-free rates from recurrent ATAs were not significantly different between the 2 groups (85.1% vs. 82.8%,  $P=0.75$ ).

**Conclusion:** CBA for AF with second generation device is safe and useful for patients over 80 years.

#### P1102

##### Frequency of phrenic nerve injury following cryo balloon and radio frequency ablations: a systematic review

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**Introduction:** Cryoballoon ablation (CB) method and Radio frequency catheter ablation (RF) method are the most common methods for treating atrial fibrillation in Electrophysiology (EP) lab. As any interventional procedure, there are complications for CB ablation and RF catheter ablation. In this systematic review, we aim to compare the frequency of phrenic nerve injury (PNI) in both procedures. PNI complication might not resolve with time based on the severity of the damage. For this reason, I am interested into studying this complication.

**Methods:** A systematic review of the literature was performed by searching PubMed, Google scholar, and Science Direct to include in all retrospective studies. Atrial fibrillation (AF) patients (Persistent or paroxysmal) undergoing RF and CB ablation who developed PNI (transient or persistent) are included in this review. We excluded other ablation methods like Ultrasound ablation and laser ablation. Studies included into this review ranged from year 1997 to 2015 within Hospitalization.

**Results:** Seven studies were qualified into this review. Total number of patients in this review is 17,488 patients. Out of 1,512 patients who had CB ablation, 77 patients had PNI, which is 5.1% of them, while out of the 15,976 patients who had RF catheter ablation only 31 patients developed PNI, which is equal to 0.2%. Sample size ranged from 116 to 11,310 patients.

**Conclusion:** we concluded that the frequency of PNI in CB ablation patients is significantly higher than RF catheter ablation patients. So, the RF catheter ablation is much safer than CB ablation with respect to PNI. This systematic review did not focus on other complications that might develop as a result of CB ablation and RF catheter ablation. In addition, selection between CB ablation and RF catheter ablation does not depend only on frequency of PNI

#### P1103

##### Safety and efficacy of repeat cryoablation after index RF ablation: insight from a multicentric observational data collection

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**Background:** Despite the well-known efficacy of pulmonary vein isolation (PVI) in restoring and maintaining sinus rhythm in patients with symptomatic paroxysmal, persistent, and long-standing persistent atrial fibrillation (AF), some patients required more than one procedure to achieve symptom and rhythm control.

**Purpose:** of this analysis was to evaluate long-term safety and efficacy in patients who underwent redo- PVI procedure using Cryoballoon approach after index failed RadioFrequency (RF) PVI.

**Methods:** All patients underwent cryoablation (CB) PVI after an index failed RF were prospectively followed up in 23 Italian cardiology centers. Data were collected prospectively in the framework of the One Shot TO Pulmonary vein isolation (1STOP) ClinicalService® project. Information on procedural complication, acute and long term outcomes were collected during PVI procedure, scheduled and unscheduled hospital visits and phone contacts. Freedom from AF Recurrence was estimated by using the Kaplan-Meier method.

**Results:** One Hundred fifty four patients (mean age  $58 \pm 10$  years, 78% male, left atrial diameter:  $40 \pm 8$  mm) underwent "redo" CB PVI ablation. Of these, 65% suffered from paroxysmal AF, while the remaining 35% from persistent or long-term persistent AF. The mean procedural time was  $104 \pm 39$  minutes, of which 25 minutes were for fluoroscopic evaluations. In the 69% of patients all 4 PVIs were treated, while in the 18% only 3 veins were treated and in the 8% 2 veins. Out of 154 patients, only one patient had an acute complication, a Transient Diaphragmatic Paralysis. Over a mean follow-up of 12 months, 40 AF recurrences occurred in the overall population: 22 (22%) in paroxysmal AF patients and 18 (33%) in Persistent AF patients. Kaplan-Meier freedom from AF recurrence is comparable between paroxysmal and persistent AF (63% in paroxysmal vs. 58% in persistent at 1 year,  $p=0.3$ ). Out of 40 patients with AF recurrence, 6 patients (15%) underwent repeat PVI procedure

**Conclusions:** In our multicenter research, Repeat ablation using cryoballoon technology may be an effective and safe method to treat patients with recurrence of AF after RF PVI. The rate of complications was very low and the efficacy was independent from AF type (paroxysmal, persistent)

#### P1104

##### Impact of early recurrence on the long-term outcome of pulmonary vein isolation: A comparison study between radiofrequency- and cryoenergy with continuous remote monitoring

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**Introduction:** In paroxysmal atrial fibrillation (PAF) comparative data of early recurrence rates of atrial fibrillation (ERAF) following second-generation cryoballoon (CB) and radiofrequency ablation (RF) for pulmonary vein isolation (PVI) are rare. In common practice, the first 3 months after ablation is considered as a blanking period, during which recurrences are often due to a transient inflammation, which do not require prompt intervention. However, the relevance of ERAF of atrial arrhythmias for the long-term outcome is controversial. Moreover, the 'real' incidence of ERAFs is unknown, as many patients experience asymptomatic AF episodes after ablation and it is unknown, if the ablation energy could influence the ERAF. We compare consecutive PAF patients after CB or RF PVI to investigate ERAF with remote monitoring.

**Methods:** Pulmonary vein isolation with CB (Group 1,  $n=20$ ) or RF (Group 2,  $n=28$ ) was performed. In all patients an implantable loop recorder (ILR) (LINQ, Medtronic) with remote monitoring was implanted one day after PVI. Follow-up included permanent remote monitoring and a clinical visit at 3 months postablation or in case of recurrence to evaluate ERAF (AF or AT > 2min).

**Results:** Baseline characteristics were comparable in both groups (group 1 vs. group 2; age,  $64\pm 9$  vs.  $63\pm 10$  years,  $p=0.59$ ; gender female 55% vs. 36%,  $p=0.15$ ; CHA2DS2-VASc score,  $2.5\pm 1.8$  vs.  $2.4\pm 1.4$ ,  $p=0.76$ ; hypertension, 75.0% vs. 64.3%,  $p=0.32$ ; LV-EF,  $62\pm 5$  vs.  $62\pm 4\%$ ,  $p=0.57$ ; LA-diameter  $48\pm 6$  vs.  $45\pm 3$ mm,  $p=0.11$ ). The occurrence of ERAF in both groups were comparable (45.0% vs. 53.6% in group 1 and 2,  $p=0.77$ ). After a mean follow up of 9 months ( $\pm 3$ months) no significant difference in recurrence between group 1 vs. group 2 could be detected (36.8% vs. 15.4%,  $p=0.160$ ). However, in both groups the occurrence ERAF between 45 and 90 days postablation was associated with higher rate of late recurrence, 70.0% of patients with ERAF in this period experience a late recurrence in follow period ( $p=0.001$ ).

**Conclusion:** Based on data of remote cardiac monitoring, ERAF rates in patients with PAF seem to be comparable after cryoballoon or radiofrequency ablation. ERAF between 45 and 90 days postablation was associated with higher rate of late recurrence

#### P1105

##### Is the second generation cryoballoon comparable to the first generation? A retrospective, non-inferiority, cohort study

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**Background:** Long-term outcome data comparing first and second generation cryoballoon (CB) for pulmonary vein isolation (PVI) in large cohorts of patients with paroxysmal atrial fibrillation are lacking.