without an implanted ICD were analyzed within one year follow-up. **Results:** This study consisted of 102 patients, including 57 without an ICD and 45 with an ICD. Baseline characteristics were similar between groups, with the exception a greater prevalence of diabetes among patients with an ICD (No ICD: 14% vs ICD: 31%; p<0.037). There was no difference in baseline LVEF between groups (No ICD: 28% ± 7% vs ICD: 27% ± 6%; p=0.586). Procedural outcomes for both groups, including arrhythmia-free survival, were similar at 1 year (Figure 1). Patients without an ICD had a greater mean improvement in LVEF compared to patients with an ICD (+17% ± 10% vs +5% ± 10%, respectively; p<0.001). Among patients without an ICD, 33 of 44 (75%) had LVEF >35% at follow-up, including 25 of 31 (81%) with nonischemic cardiomyopathy and 8 of 13 (62%) with ischemic cardiomyopathy. **Conclusion:** Most patients undergoing AF ablation with LVEF ≤ 35% without an implanted ICD experienced improvement in LVEF to >35%, regardless of cardiomyopathy etiology. Patients without an ICD had significantly greater improvement in LVEF compared to patients with an implanted ICD. The role of rhythm-control prior to primary prevention ICD implantation for patients with LVEF ≤ 35% requires further investigation.

**Background:** ‘One-shot’ pulsed field ablations (PFA) catheters that are capable of pulmonary vein isolation are currently being evaluated and can have significant impact on procedural efficiency. However, there is a need for delivering flexible lesions sets as well with PFA, that address more advanced forms of atrial fibrillation and atypical flutters. An 8 Fr catheter (Farapoint, Boston Scientific) capable of delivering focal PFA has been developed to allow for delivery of various lesion sets by using a 3-D mapping system (Boston Scientific). **Objective:** To assess the feasibility and safety of linear ablation along the cavo-tricuspid isthmus (CTI) in healthy swine. **Methods:** Three swine underwent transmembranous venous access under general anesthesia. After creating 3D high density electroanatomic maps, the study PFA catheter was maneuvered to deliver lesions (1.8-2.0 kV/application) along the CTI using a deflectable sheath. Catheter-tip location was tagged to ensure lesion overlap and contiguity. Post-ablation maps were then created to identify lesions and to assess conduction block, following which the animals were humanely sacrificed. Lesion delivery was observed using intracardiac echocardiography. **Results:** The study catheter was maneuvered with electroanatomic map guidance and 3 of 3 (100%) CTI lines were successfully created. The number of applications required to achieve block were 6, 10 and 7, translating to a total PFA time of 13.2 sec, 22 sec and 14.4 sec, respectively. There were no complications and gross necropsy demonstrated wide transmural lesions along the CTI line (Figure). Minimal microbubbles were noted on intracardiac echocardiography. **Conclusion:** The creation of linear lesions using PFA can be achieved with procedural safety and efficiency using a focal catheter compatible with an electroanatomic mapping system.

**Background:** Ablation can be used for both sustained rhythm control and improved quality of life (QoL) in symptomatic atrial fibrillation (AF). Limited studies have suggested young adults may have shortened arrhythmia-free survival near 40-60% depending on follow-up duration and data are lacking regarding QoL benefits. **Objective:** To investigate arrhythmia-free survival and QoL outcomes of young adults undergoing AF ablation using a large prospectively maintained registry for ablation outcomes and automated patient reported outcomes (PRO). **Methods:** All patients undergoing AF ablation (2013-2016) at our center were prospectively enrolled. Patients 50 years of age or younger were included. Arrhythmia recurrences were defined as per established guidelines. For PROs, QoL measures and symptoms were assessed at baseline, 3 months after ablation and every 6 months thereafter. The atrial fibrillation severity score (AFSS) served as the main assessment of QoL. Additional variables included AF status at

**PO-637-03**

**PRECLINICAL FEASIBILITY OF LINEAR ABLATION USING A FOCAL PULSED FIELD ABLATION CATHETER INTEGRATED WITH AN ELECTROANATOMICAL MAPPING SYSTEM**

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**Background:** ‘One-shot’ pulsed field ablations (PFA) catheters that are capable of pulmonary vein isolation are currently being evaluated and can have significant impact on procedural efficiency. However, there is a need for delivering flexible lesions sets as well with PFA, that address more advanced forms of atrial fibrillation and atypical flutters. An 8 Fr catheter (Farapoint, Boston Scientific) capable of delivering focal PFA has been developed to allow for delivery of various lesion sets by using a 3-D mapping system (Boston Scientific). **Objective:** To assess the feasibility and safety of linear ablation along the cavo-tricuspid isthmus (CTI) in healthy swine. **Methods:** Three swine underwent transmembranous venous access under general anesthesia. After creating 3D high density electroanatomic maps, the study PFA catheter was maneuvered to deliver lesions (1.8-2.0 kV/application) along the CTI using a deflectable sheath. Catheter-tip location was tagged to ensure lesion overlap and contiguity. Post-ablation maps were then created to identify lesions and to assess conduction block, following which the animals were humanely sacrificed. Lesion delivery was observed using intracardiac echocardiography. **Results:** The study catheter was maneuvered with electroanatomic map guidance and 3 of 3 (100%) CTI lines were successfully created. The number of applications required to achieve block were 6, 10 and 7, translating to a total PFA time of 13.2 sec, 22 sec and 14.4 sec, respectively. There were no complications and gross necropsy demonstrated wide transmural lesions along the CTI line (Figure). Minimal microbubbles were noted on intracardiac echocardiography. **Conclusion:** The creation of linear lesions using PFA can be achieved with procedural safety and efficiency using a focal catheter compatible with an electroanatomic mapping system.

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time of survey, AF burden as assessed by AF duration and frequency, and healthcare utilization including ER visits and hospitalizations due to AF.

**Results:** A total of 241 young adults (ages 16-50) were included (mean age 43.1 years, 17% female, 40.3% persistent AF). Prior to ablation, 39% of patients reported being in AF at the time of the baseline survey. Upon 1 year of follow-up, 77.2% of patients remained arrhythmia-free (80% in non-structural AF, 68% in structural AF; P<0.0001). Through the PRO survey, 90% of patients reported remarkable improvement in QoL throughout all survey time points up to 5 years post-ablation (P<0.0001). The baseline median AFSS was 14 and improved to between 2 and 4 on all follow-up after ablation (P<0.0001). Patients also reported lower AF burden as measured by duration and frequency, fewer ER visits secondary to AF, and fewer hospitalizations (P<0.0001).

**Conclusion:** Ablation remains an effective rhythm-control strategy in young adults with AF. Young adults also experience significant improvement in QoL and reduction of both AF burden and healthcare utilization secondary to AF.

PO-637-05

**OUTCOMES IN RADIOFREQUENCY ABLATION OF PERSISTENT ATRIAL FIBRILLATION IN PATIENTS WITH NORMAL LEFT ATRIAL ENDOCARDIAL VOLTAGE**

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**Background:** While radiofrequency ablation (RFA) is an established option for patients with persistent atrial fibrillation (PsAF), the ideal ablation strategy remains unknown. In patients with normal left atrial (LA) endocardial voltage on electroanatomical mapping (EAM), the question of whether pulmonary vein isolation (PVI) alone is sufficient remains unclear.

**Objective:** We aim to describe outcomes of RFA for PsAF in patients with normal LA endocardial voltage based on two different ablation strategies.

**Methods:** This is a retrospective analysis of prospectively collected data on patients undergoing RFA for PsAF at a single center from 2017 to 2019. All patients underwent LA endocardial bipolar voltage mapping, and only patients with normal voltage were included in this cohort. Normal bipolar voltage was defined as electrogram amplitude $\geq 0.5$ mV in sinus or $\geq 0.3$ mV in AF. PVI was performed in all patients, and additional lesion sets were performed at the operator's discretion. Procedural data was collected at the time of the procedure. 4- to 7-day Holter monitoring was performed routinely at 6 and 12 months and additionally as needed based on symptoms. Efficacy was assessed at 12 months. The primary outcome was freedom from documented symptomatic AF/AT lasting at least 30 sec after a blanking period of 3 months. The cohort was divided into 2 groups: PVI only (PVI) and PVI plus additional lesion sets (PVI+).

**Results:** 160 patients were included in the PVI group and 70 patients in the PVI+ group. Additional lesions in the PVI+ group needs additional testing prior to being developed as tool for mapping breakout rapidly and determining depth of foci.