Objective: We report on the first real-world experience with PVI using PFA for paroxysmal AF.

Methods: Pre and post ablation, phrenic nerve function was assessed. A high-density LA bipolar voltage map was created. All PVs were individually isolated using a steerable sheath and a pentaspline over-the-wire PFA catheter. After ablation, mapping was repeated to assess lesion formation.

Results: In 30 patients (63 years; 47% male), uncomplicated PFA was performed, with all PVs isolated. Procedure time was 116 min. PFA catheter LA dwell time was 29 min. Fluoroscopy time was 26 min. (All values are median). In 1 patient with roof dependent flutter, a roof line was intentionally created. In 2 patients, unintentional bidirectional mitral isthmus block was created. There was no phrenic nerve or esophageal damage. In 1 patient, pericardial drainage after cardiac tamponade was performed. In-hospital stay, and 30-day follow-up were uneventful. After 90 days, 97% of patients were in sinus rhythm. Procedure and ablation times are short. Atrial ablation lines can easily be created. Unintentional ablation of atrial tissue can occur, accurate catheter alignment to the PV ostium and PV axis should be ensured.

Figure: Postero-anterior view of a LA bipolar voltage 3D map. Left panel: pre ablation. Magenta areas in the PVs are conducting (0.5 mV). Right panel: post ablation. Non-magenta (<0.5 mV) and red (<0.1 mV) areas in the PVs are ablated and electrically silent.

POSTER-PO-623:
Featured Posters: Catheter Ablation at Pod 10
Friday, April 29, 2022
12:30 PM - 2:30 PM

PO-623-01
ABLATION STRATEGIES IN PATIENTS WITH CONGENITAL HEART DISEASE AND ATRIAL BAFFLES
Anca Chiriac MD, PhD; Kamal Preet Cheema MD; Malini Madhavan MBBS and Christopher J. McLeod MBChB, PhD, FHRS

Background: Patients with D-Transposition of the Great Arteries (D-TGA) palliated with atrial switch have a high incidence of atrial arrhythmias and pose a particular challenge for ablation.

Objective: We sought to analyze ablation strategies in this population.

Methods: An in-depth analysis of ablation data in patients with D-TGA, atrial baffles, and atrial arrhythmia ablations performed at a large tertiary care institution.

Results: A cohort of 26 patients with D-TGA and atrial switch (73% male; systemic RV EF 35±11%, mean age at first ablation 37.4±7.2 years) underwent a total of 31 procedures, 26 de novo and 5 redo ablations. For patients with no prior intervention (21, 81%), ablation revealed cavotricuspid isthmus dependent flutter (CTI-flutter, 71%), scar-related intra-atrial reentry (IART, 57%), and focal atrial tachycardia (FAT, 9.5%) (Figure A). Patients with prior outside interventions for CTI-flutter (5, 29%) demonstrated conduction across the CTI in 3/5 (60%) cases. However, patients requiring redo ablation after an index ablation at our institution (5, 29%) demonstrated bi-directional block across the CTI and different, new arrhythmia substrates at the next procedure (80% IART, 40% FAT). Intracardiac echocardiography and electroanatomic mapping were used in all contemporary cases. A screw-in atrial lead was used in 4 procedures as a stable fiduciary reference for mapping, as the coronary sinus ostium was inaccessible. Achieving bi-directional block across the CTI often required ablating on both sides of the baffle (retroaortic access, 81%; using a baffle leak, 11.5%; trans-baffle puncture, 7.7%; or using a VSD, 3.8%). Combined approaches were necessary in 23% of patients to reach critical tissue and achieve optimal contact force (Figure B). Irrigated contact force sensing catheters were used, targeting a significant effect on the electrograms and demonstration of bi-directional CTI block (Figure C).

Conclusion: Despite the complex anatomy and atrial reconstruction, cavotricuspid isthmus flutter is still the most common arrhythmia in this population, and bi-directional block often requires additional ablation approaches to reach the target tissue on either side of the baffle. Once CTI block is achieved, further recurrences are due to different, new arrhythmia substrates- IART and FAT.

PO-623-02
OUTCOME OF REPEAT ABLATION FOR PREMATURE VENTRICULAR CONTRACTIONS IN PATIENTS WITH PRIOR ABLATION FAILURE: IMPACT OF ADVANCED TECHNIQUES
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Background: The utility of advanced ablation (investigational needle ablation, epicardial, and simultaneous two site unipolar radiofrequency ablation) for premature ventricular contractions (PVCs) in patients with prior ablation failure is not clear.

Objective: To evaluate long-term outcomes of advanced ablation techniques in patients who failed prior PVC ablation.

Methods: We reviewed 239 consecutive patients who underwent PVC ablation. When standard endocardial ablation with normal or half normal saline failed, we considered an advanced ablation technique. Acute success was defined as abolition of the target
PO-623-03

INTRAMURAL EXTENSION OF THE POST-INFARCTION SUBSTRATE IN PATIENTS UNDERGOING CATHETER ABLATION OF VENTRICULAR TACHYCARDIA: PREVALENCE AND PROGNOSTIC IMPLICATIONS

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Background: Intramural substrate extension (ISE) of the post-infarction subendocardial or transmural scar has been recently documented by cardiac magnetic resonance (CMR) in subsets of patients with ischemic cardiomyopathy (ICM). The prevalence and clinical relevance of ISE in ICM patients undergoing catheter ablation of ventricular tachycardia (VT) is unknown.

Objective: To investigate the prevalence and prognostic implications of ISE in patients with ICM undergoing catheter ablation of VT.

Methods: Out of 375 consecutive patients with ICM who underwent catheter ablation of VT between 2015 and 2021, 68 had pre-procedural CMR and were included in this study. ISE was defined as >5 mm extension of the subendocardial or transmural infarct scar into the LV mid-myocardium and matching the infarct coronary distribution.

Results: A total of 15 (22%) patients had ISE. There were no significant baseline differences between patients with and without ISE (age: 65 ± 11 vs 67 ± 11, p = 0.46; male gender: 93% vs 96%, p = 0.53; LVEF: 33 ± 13% vs 29 ± 11%, p = 0.24; failed anti-arrhythmic drugs: 1.0 ± 0.93 vs 1.21 ± 0.77, p = 0.38). Non-inducibility of any VT at post-procedural programmed stimulation was 50% in patients with ISE and 56% in patients without ISE (p = 0.8). After a median follow-up of 15 months patients with ISE had significantly higher rate of VT recurrence compared to patients without ISE (53% vs 15%, log rank p = 0.006, Figure). At multivariable analysis, after adjustment for age, LVEF, NYHA class, and acute procedural outcomes, ISE remained an independent predictor of VT recurrence (hazard ratio 3.93, 95% confidence interval 1.23 to 12.56, p = 0.021).

Conclusion: In patients with ICM undergoing VT ablation, ISE of the infarct scar is present in 22% of cases and is associated with higher rates of VT recurrence at follow-up.

PO-623-04

EXTENT OF SPATIOTEMPORAL DISPERSION DURING DISPERSION-BASED PERSISTENT ATRIAL FIBRILLATION ABLATION: CORRELATION WITH ACUTE PROCEDURAL OUTCOMES

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Background: Spatiotemporal dispersion has been successfully implemented to target extra-pulmonary veins (PVs) regions during AF ablation. It is unknown, however, whether the extent of atrial dispersion—which may vary from patient to patient—correlates with ablation acute procedural outcomes.

Objective: We aimed at comparing acute procedural outcomes in clusters of patients with low, medium and high spatiotemporal extent of bi-atrial spatiotemporal dispersion.

Methods: Spatiotemporal dispersion maps built with the VX1 software (Volta Medical) were analyzed in 78 consecutive