(non-contrast T1, conventional LGE, dark-blood LGE) 4±2 days post-ablation, and were then sacrificed.

**Results:** A total of 100 and 102 slices were reviewed for conventional LGE and dark blood LGE, respectively. PFA lesions were easily appreciated in healthy myocardium, as characterized by intense LGE enhancement (conventional LGE; Figure 1), but this precluded detection of the endocardial border of the lesion. Dark-blood LGE, on the other hand allowed for definition of the endocardial border of the lesion as well as lesion boundary detection (Figure 1). This appearance was also seen epicardial lesions (Figure 2). These MRI lesions were confirmed on gross necropsy. Within the chronically infarcted scar, the PFA lesions could not be visualized using these MRI pulse sequences.

**Conclusion:** Dark blood LGE sequences provide additional value over conventional LGE imaging for the delineation of PFA lesions in healthy myocardium. Additional work is required to develop and optimize MRI pulse sequences to detect PFA lesions in scarred myocardium.

**PO-624-04**

**ADVANCED TECHNIQUES TO MAXIMIZE TISSUE REACH OF CORONARY VENOUS ETHANOL IN ABLATION-REFRACTORY VENTRICULAR ARRHYTHMIAS**

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**Background:** Venous ethanol infusion can treat ablation-refractory ventricular arrhythmias (VAs). Ethanol tissue delivery can be compromised by collateral flow and technical challenges cannulating intramural veins in complex anatomies.

**Objective:** To develop advanced and multi-balloon approaches to ethanol delivery in complex venous anatomy.

**Methods:** 14 patients referred for initial ablation (n=4) or after failed ablation (n=10) underwent endocardial (n=14), epicardial (n=1), and coronary venous mapping (n=14). 7 patients had left ventricular summit VAs, and 7 had scar-mediated VAs. Double or triple balloons were used in the coronary veins. Advanced strategies for ethanol delivery include use of secondary balloons to (1) block collateral flow in a target vein (2) block collateral flow into a non-target vein (3) cannulate collaterals to reach a target vein that is not easily accessible via its ostium (4) serve as a distal mechanical block to facilitate more proximal vein cannulation and (5) occlude the coronary sinus to allow ostial delivery of ethanol in a branch vessel.

**Results:** Successful ethanol infusion was accomplished in the following target veins: LV annular (n=2), septal (n=6), lateral (n=1), middle cardiac (n=1), anterolateral (n=2) and posterolateral (n=3). At median follow up of 130.5 days, no patients experienced recurrences.

**Conclusion:** Utilization of collaterals between non-target and target veins can facilitate ethanol delivery with the multiple balloon technique. Understanding of CS venous anatomy and advanced approaches to balloon deployment may increase the efficacy of venous ethanol for treatment of VAs.

**PO-624-05**

**MULTI-PROGRAMMABLE COHERENT SINE BURST ELECTROPORATION WAVEFORM FOR ATRIAL AND VENTRICULAR CATHETER ABLATION: A FEASIBILITY STUDY**

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**Background:** Traditional pulsed field ablation (PFA) energy is typically delivered via a square wave. Direct current can cause muscle stimulation (MS) and electrolysis. Circuit designs also limit peak voltage, which may impact the ability to achieve transmurality throughout the atrium and ventricle.

**Objective:** Test the feasibility of using a multi-programmable Coherent Sine burst Electroporation (CSE) waveform to achieve a titratable range of lesion depths that address the variability of tissue thickness within the atrium and ventricle.

**Methods:** A PFA waveform using a sinusoidal delivery has been developed. The CSE waveform is designed to minimize muscle stimulation and increase peak voltage availability. The CSE waveform allows the user to select target voltage, number of sine waves/pulses, delay between pulses, cycle length (= pulse + delay), number of cycles in a burst, and proportion of bipolar to unipolar energy delivered. Three (3) anesthetized swine underwent CSE PFA ablation in the left ventricle (LV) using a test catheter and generator capable of varying the parameters listed above. An accelerometer was secured around the diaphragm to measure MS. Lesions were delivered in discrete locations throughout the LV. An oscilloscope was used to confirm peak energy delivery. Animals were sacrificed 4-8d after ablation. Gross pathological exam and histology was performed. Depth