Methods: We identified all loop recorders implanted from December 2020 to November 2021. We then filtered the patients by sex and obtained the site of implant and resulting R-wave.

Results: Of a total of 118 ILR implants, 4/70 were identified as women with breast implants. 1/4 patients received an ILR in the parasternal position (A) at the 4th intercostal space resulting in a sensed R-wave of 0.4mV. The remaining patients underwent mapping of surface EGMs to guide ILR placement in the horizontal ILR position (B) resulting in an average R-wave from 0.28mV. There were no acute complications reported, however R waves in the 0.2-0.48 mV range were substantially lower than average R waves in the non breast implant population (0.5mV).

Conclusion: Mapping of surface electrograms during ILR procedures in patients with breast implants may provide a safe way to prevent complications and obtain adequate electrograms. Uniform strategies to optimize ILR implantation in patients with breast implants remain a work in progress.

PO-644-08

VIRTUAL ATRIAL FIBRILLATION PATIENT EDUCATION LED BY ALLIED PROFESSIONALS IS PREFERRED BY PATIENTS AND LEADS TO HIGH PARTICIPATION RATES AND IMPROVED VIRTUAL CARE ACCEPTANCE

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Background: Patient education programs are an integral component of care and there is an emerging role for virtual programs led by Allied Professionals to accommodate social distancing restrictions.

Objective: To assess the utilization, acceptance, and benefits of virtual learning for atrial fibrillation patients as well as its impact on virtual care.

Methods: A comprehensive 3-hour virtual symposium on Atrial Fibrillation (AF) via an online video platform was offered to patients and their family members. The program was sponsored by an academic teaching hospital free to patients and was promoted through social media. A total of 314 participants registered and 199 (63%) of registrants participated.

Results: A sample of results from a follow-up survey is shown (Figure 1 and 2). Most respondents were 65 years old (42.4%); Female (71.2%), Caucasian (79.6%), completed graduate school (44.8%) and lived 50+ miles away (61%). Minority populations were under-represented relative to the local population demographics (Black 5%, Hispanic 1.7%). Compared to our prior in person Atrial Fibrillation patient symposium programs, the cost was significantly less - $55/patient for in-person vs. $20/patient for virtual. The majority of respondents (54.5%) indicated that program participation increased the likelihood of participating in a virtual visit.

Conclusion: Virtual learning for Atrial Fibrillation can be successfully offered, with a high enrollment rate and participation at a fraction of the cost of an in-person program. Attendees preferred virtual over in person education. This program influences future acceptance of virtual care. Inclusion of at-risk populations may address potential health inequity and requires further study.

POSTER PO-645:

PO-645-01

SUBTHRESHOLD DELAYED AFTERDEPOLARIZATIONS MEDIATED BY REDUCED TISSUE COUPLING PROVIDE AN IMPORTANT SUBSTRATE FOR UNIDIRECTIONAL BLOCK AND ARRHYTHMOGENESIS IN THE INFARCT BORDER ZONE

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Background: Delayed afterdepolarizations (DADs) caused by spontaneous calcium release (SCR) events have been implicated in arrhythmia formation in the border zone (BZ) of infarcted hearts. DADs may inactivate sodium channels forming a substrate for unidirectional conduction block. The role played by infarct anatomy and altered intracellular coupling in facilitating this phenomenon is not well understood.

Objective: To use computational modelling to investigate the role of anatomical properties of the infarct BZ in creating a substrate for DAD-mediated arrhythmias.

Methods: Detailed post-infarct MRI-derived ventricular porcine data was used to build a computational model. A phenomenological model was used to simulate SCRs in the BZ. Arrhythmia susceptibility was quantified by pacing the model followed by a pause, to see whether DADs would occur, and an extra S2 beat with different coupling intervals (CIs). Tissue
conductivity in the BZ was decreased to investigate the effect of uncoupling on DAD-mediated conduction block.

**Results:** Subthreshold DADs occurring within the infarct BZ inactivated the fast sodium current which led to block of S2 beats. This occurred most readily in narrow isthmus regions where electrotonic load was attenuated by the inexcitable scar. DADs rendered the entire isthmus area refractory establishing a substrate for unidirectional block and reentry (Fig). Reduced tissue coupling further enhanced this mechanism increasing the vulnerable window for reentry initiation (700ms < S2 CI < 900ms).

**Conclusion:** Subthreshold DADs provide a substrate for arrhythmogenesis in the infarct BZ. Tissue uncoupling enhanced the arrhythmogenic risk by increasing the time window of unidirectional block.

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**PO-645-02**

**BIOCHEMICAL EFFECTS OF CATHETER-FREE VENTRICULAR ABLATION WITH PROTON BEAM ABLATION THERAPY IN NORMAL SWINE HEART**

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**Background:** Proton beam therapy has emerged as a promising tool for catheter-free arrhythmia ablation. We previously reported that proton beam lesions become visible in late gadolinium MRI (LGE-MRI) approximately 8 weeks after irradiation. Ablation lesions are also visible in histology; however, the time course of the biochemical changes in these lesions is not yet fully understood.

**Objective:** The purpose of this study was to evaluate the biochemical changes in proton beam ablation lesions 1-40 weeks following proton-beam ablation.

**Methods:** Thirty domestic pigs were radiated with pencil-beam scanned proton therapy using irradiation doses of 30/40Gy to LV targets. At time points from 1 to 40 weeks post-ablation, histological analysis and western blots using fresh tissue samples harvested from the lesion and from outside the treatment zone were performed to assess apoptosis (active caspase-3).

**Results:** Lesions were observed in LGE-MRI approximately 8 weeks following ablation. In histology, no lesions were detected 1,2, or 4 weeks after irradiation, but at 8 weeks, myocytolysis and early collagen deposition were observed. Active caspase-3 was observed in LV myocardium 1,2,4,8,12, and 16 weeks after irradiation. The strongest active caspase-3 signal was observed in the lesion 8 weeks post-irradiation. There was no signal for active caspase-3 in the tissue outside the target zone.

**Conclusion:** Proton beam ablation creates transmural LV lesions which are visible in LGE-MRI and histology. Apoptosis of the ventricular myocardium after proton beam radiation sharply reached its peak 8 weeks after irradiation and continued with a gradual decrease until 16 weeks and disappeared after 20 weeks. The apoptosis effect was confirmed in histology.

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**PO-645-03**

**CHRONIC VAGAL NERVE STIMULATION REDUCES VENTRICULAR ARRHYTHMIAS FOLLOWING MYOCARDIAL INFARCTION**

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**Background:** Myocardial infarction (MI) and its associated sympathoexcitation promote ventricular electrophysiologic heterogeneity and ventricular arrhythmias.

**Objective:** To evaluate whether chronic vagal nerve stimulation (VNS) reduces the inducibility of ventricular arrhythmias following MI.

**Methods:** Yucatan minipigs were divided into chronic MI (n=10) and chronic MI + chronic VNS (n=8) groups. Chronic VNS therapy was applied to the right cervical vagus nerve using implantable pulse generators and titrated to optimal intensity based on heart rate dynamics using telemetry (5Hz, 250 ms, 2.1±0.3 mA, 17.5% duty cycle) in the conscious state. MI was induced by percutaneous microsphere embolization of the left anterior descending coronary artery and VNS therapy was initiated 2 days following MI. Electrophysiologic mapping was performed using a 128-electrode array across the left ventricular scar, border zone, and normal myocardium. Unipolar electrograms were analyzed for activation time, which was defined by the minimum dV/dt in the activation wavefront. Ventricular arrhythmia inducibility was evaluated using extrastimulus pacing with up to 3 extrastimuli.

**Results:** At terminal study, mean activation time across the anterior left ventricle was greater in porcine with MI (42.8±1.8ms) compared to MI + chronic VNS (34.7±2.1ms, p=0.01). Similarly, dispersion of activation was over 1.5-fold greater in MI vs MI + chronic VNS groups (Figure 1A-B, p<0.01). Chronic VNS therapy led to a significant reduction in the inducibility of