Conclusion: Compared with DSA and TEE guidance, DSA-guided combined procedure could shorten procedural time, while achieve similar periprocedural and long-term feasibility and safety.

PO-638-08

LEFT ATRIAL CHARACTERISTICS FOR PREDICTING ATRIAL FIBRILLATION OCCURRENCE DETECTED USING CONTINUOUS RHYTHM MONITORING IN IMPLANTABLE CARDIOVERTER DEFIBRILLATOR PATIENTS - A CARDIOVASCULAR MAGNETIC RESONANCE STUDY

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Background: Volumetric and functional characteristics of atrial remodeling have been proven to be sensitive measures for predicting development of atrial fibrillation (AF) in the general population. The prevalence of atrial remodeling in patients with an implantable cardioverter defibrillator (ICD) is substantial and identification of predictors of AF occurrence in this patient group is of clinical importance to initiate appropriate preventive therapeutic measures to reduce the risk of related complications.

Objective: The purpose of this study is to assess whether cardiac magnetic resonance imaging (CMR) derived atrial characteristics are associated with AF occurrence in ICD patients.

Methods: This single center retrospective study included 233 patients with a dual chamber ICD or cardiac resynchronization therapy defibrillator (CRT D) who underwent CMR imaging prior to device implantation. None of the patients had a documented history of AF. CMR derived features of LA remodeling were evaluated in all patients. Detection of AF and atrial flutter episodes was based on continuous rhythm monitoring using the implanted device. Subgroup analysis was performed based on etiology of cardiomyopathy (ischemic cardiomyopathy (ICM, n = 128) vs. dilated cardiomyopathy (DCM, n = 83)).

Results: During follow-up, an AF episode was detected in 88 of the 233 (38%) ICD patients. Increased LA volumes (LAVimax; 52.1 ± 18.1 vs 44.9 ± 16.0 P<0.01), lower LA emptying fraction (LAEF) (38.0 ± 12.9% vs 42.7 ± 13.7% P=0.01) and impaired LA strain (15.2 ± 7.8% vs 18.0 ± 9.5% P=0.02) were observed in patients with AF occurrence as compared to patients without AF occurrence. AF was detected in 38% of ICM patients and 35% in DCM patients. DCM patients with newly detected AF showed increased LA volumes and impaired LA function compared to DCM patients without AF whereas these differences were not observed in ICM patients (Figure). LAEF was an independent predictor for AF occurrence in DCM patients (P<0.01).

Conclusion: LA remodeling was associated with AF development in DCM-ICD patients but not ICM-ICD patients, suggesting different mechanisms of AF development in ICM and DCM. Assessment of LA remodeling prior to device implantation might identify patients at risk for AF development who might benefit from additional therapy and closer monitoring.

POSTER PO-639:

PO-639-01

ENHANCED P WAVE RECOGNITION THROUGH RA-XIPHOIDAL LEAD BY HUAWEI WATCH ECG RECORDING

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Background: ECG recording through the Huawei watch’s (GT2 pro ECG edition, Huawei Technology Co., Ltd., Shenzhen, PR China) back electrode on the left wrist and the right index finger on the crown simulates the Einthoven’s bipolar ECG lead I (Huawei Watch Lead I ECG, HWIG), which is not a good trace for arrhythmia diagnosis due to its indistinct P wave in some cases. Therefore, additional smartwatch leads such as right arm-left leg lead, right arm-precordial leads are required to get more accurate ECG information. However, the more watch ECG leads make watch wearers the more difficulty to get the right ECG signals.

Objective: We try to find a simple RA-Xiphoidal Huawei watch ECG lead to record clearer P wave signals and increase the accuracy of arrhythmia diagnosis by the smartwatch.

Methods: Lead RA-Xiphoid Huawei watch ECG (HWXG) is sampled by putting the Huawei watch’s back electrode on the lower sternum close to the xiphoid through the wearer’s right thumb and index finger on the crown. ECGs of standard 12-lead, HWIGs, and HWXGs of 318 patients (male 195, age 48.6±18.9 years) were recorded respectively. ECG signal quality, P wave amplitude were compared between HWIGs
and HWXGs, and the accuracy of arrhythmia diagnosis by Huawei watch ECG was assessed by standard ECG.

**Results:** In 318 Huawei watch ECGs, 9 HWIGs (2.8%) and 2 HWXGs (0.6%) were not qualified for analysis. In 234 cases of sinus rhythm (sinus bradycardia 34, sinus tachycardia 48, NSR 152), the P wave amplitude was 0.05±0.04mV in HWIGs and 0.11±0.03mV in HWXGs (p<0.05). In 34 cases of sinus bradycardia, correct diagnoses were obtained in 26(76.5%) HWIGs and 33 (97.1%) HWXGs (p<0.01). In 18 cases of AV block, correct diagnoses were obtained in 12(66.7%) HWIGs and 17 (94.4%) HWXGs (p<0.01). In 98 cases of tachycardia (sinus tachycardia 48, SVT 10, atrial flutter 9, AFib 29, VT 2), correct diagnoses were obtained in 72 (73.5%) HWIGs and 91 (92.9%) HWXGs (p<0.05). In 36 cases of AFib, correct diagnoses were obtained in 33 (91.7%) HWIGs and 35 (97.2%) HWXGs (p>0.05).

**Conclusion:** P wave recognition and arrhythmia diagnosis accuracy can be increased by RA-Xiphoidal Huawei watch ECG, which is an effective and user-friendly way for smartwatch wearers. We recommend the routine use of RA-Xiphoidal lead to improve the accuracy of arrhythmia diagnosis by the smartwatch.

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**PO-639-02**

**REPOLARISATION GRADIENTS DECREASE AFTER BARIATRIC SURGERY IN OBESE PATIENTS**

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**Background:** Obesity is associated with abnormal ventricular repolarisation and a higher risk of ventricular arrhythmias, which are partly reversed with weight reduction. Despite these observations, the proarrhythmic substrate in obesity and its reversibility has not been studied in-depth.

**Objective:** To study and compare the activation and repolarisation patterns in obese individuals before and after bariatric surgery using electrocardiographic imaging (ECGI).

**Methods:** Seven obese patients (mean age 45 ± 9 years, all female) were prospectively recruited to undergo ECGI before and after bariatric surgery (sleeve gastrectomy or gastric bypass). On each occasion, body surface potentials recorded with 256-electrodes and patient-specific heart-torso geometries acquired by magnetic resonance imaging were used to compute over 2000 ventricular epicardial electrograms. Local epicardial activation time (AT) was calculated as the steepest downslope of the activation complex and local repolarisation time (RT) as the steepest upslope of the T wave (Wyatt method). Activation recovery intervals (ARIs) were calculated as the difference between local AT and RT, and corrected for heart rate using Bazett's formula. Global dispersions of AT, RT and ARIs were calculated as their respective standard deviations. RT gradients (RTG) across the epicardial surface were calculated as the maximum RT difference within 10mm radius divided by the corresponding Euclidean distance.

**Results:** Mean body mass index decreased from 46.6kg/m² to 35.7kg/m² (p<0.001). RTG decreased following weight reduction: mean 34.7ms vs 26.7ms, p=0.031. There were no significant differences in total ventricular AT, RT or ARIs pre- vs post-surgery (AT: 33.0ms vs 31.7ms, p=0.25; RT: 108.2ms vs 102.9ms, p=0.31; ARIs: 243.8ms vs 254.1ms, p=0.16). Similarly, there were no differences in overall dispersion of AT (7.6ms vs 7.4ms, p=0.65), RT (30.1ms vs 30.2ms, p=0.94) or ARIs (36.4ms vs 35.6ms, p=0.63).

**Conclusion:** Bariatric surgery alters local epicardial repolarisation times resulting in a reduction in repolarisation gradients. These findings may partially explain the reversibility of arrhythmic risk following weight loss in obese individuals, and further highlight the importance of aggressive weight reduction treatment in obesity.

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**PO-639-03**

**3D MAPPING FACILITATED, INTRA-CARDIAC ECHOCARDIOGRAPHY (ICE) GUIDED LEFT ATRIAL APPENDAGE OCCLUSION (LAAO) IS FEASIBLE AND SAFE, PROVIDING SIMILAR EFFICACY WITH LESS PERSONNEL THAN TRANSESOPHAGEAL ECHOCARDIOGRAPHY (TEE) GUIDED PROCEDURES**

Iva Minga MD; Mark D. Metzl MD, FHRS; Jonathan Rosenberg MD and Jose Nazari MD, CCDS

**Background:** Left atrial appendage occlusion (LAAO) provides an alternative for stroke prevention in patients with atrial fibrillation who cannot be safely anticoagulated long-term. WATCHMAN FLX placement was described, and is traditionally performed, with transesophageal echocardiography (TEE) guidance under general anesthesia (GA). The implanting physician, echocardiography team, and anesthesia team must all be present, complicating coordination and scheduling. The use of intracardiac echocardiography (ICE) with 3D mapping guidance in place of TEE for LAAO procedures can eliminate the need for additional personnel.

**Objective:** We report on the feasibility and safety of 3D mapping-facilitated, ICE-guided WATCHMAN FLX device implantation and compare to a similar group undergoing TEE-guided implantation over the same time period.