Conclusion: An ensemble of features based deep learning CNN was developed that reduced inappropriate AF detection in ICM by over 90% while preserving sensitivity for detection of true AF. For an application specific feature based CNN, a smaller sized custom CNN performed as well as a larger sized established CNN.

PO-620-08

SYSTEMATIC REVIEW AND META ANALYSIS OF CURRENTLY AVAILABLE LEFT ATRIAL APPENDAGE CLOSURE DEVICES

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Background: Recent advancements in management of atrial fibrillation and high risk bleeding patients with devices, are calling for a direct comparison of the left atrial appendage closure (LAAC) devices. This meta analysis compares the available LAAC devices and their success rate in relation to peri device leak at 45 day follow up.

Objective: Atrial fibrillation is the most frequent cardiac arrhythmia affecting 15 - 20% of all ischemic strokes. Oral anticoagulation is used to decrease the risk of stroke but in patients with bleeding and CI of anticoagulation, LAAC is proven to be equally effective as >90% of the thrombi are formed in the left atrial appendage. Most commonly used LAAC devices are Watchman 2.5, Amulet and Watchman FLX. Our aim for this study is primarily focused on peridevice leak rate at 45 day follow up with either TEE or CCTA for each device by pooling data from the available studies till date.

Methods: We searched PubMed, AHA, JACC and Science Direct and article references for randomized controlled trials of patients with LAAC devices and rate of leaks at 45 day follow ups. Clear inclusion and exclusion criteria were established. We identified ten studies eligible for inclusion. We carried out a meta-analysis of the relative odds on the basis of a random-effects model using the Mantel-Haenszel method for the major outcomes of bradycardia. Comprehensive Meta-Analysis Version 3 software was used for analysis.

Results: First Watchman 2.5 VS Watchman FLX data was compared, which favored Watchman FLX. Total 1027 watchman 2.5 and 688 Watchman FLX devices were compared. Next, Amulet vs Watchman 2.5 comparison favored Amulet with total number of devices 1091 and 1027 respectively. Next, Amulet vs Watchman FLX was compared which favored Amulet with total no. of devices 1093 and 688 respectively.

Conclusion: Though, more sample size and RCTs are required to make any strong conclusions, our study has shown Amulet is associated with fewer number of leaks compared to all the available devices at 45 day follow up.

POSTER PO-621:
Featured Posters: CIED, Heart Failure, Provocative Cases at Pod 8
Friday, April 29, 2022
12:30 PM - 2:30 PM

PO-621-01

INTRACARDIAC ELECTROGRAM OF COMMOTIO CORDIS

Peter Hanna MD, PhD and Duc Do MD

Background: Experimental models have identified timing of the trauma-induced premature ventricular contraction with respect to the cardiac cycle as critical to the development of ventricular fibrillation in commotio cordis.

Objective: Report first-in-man intracardiac electrogram of commotio cordis in a person with an implantable cardioverter-defibrillator.

Methods: N/A

Results: A 67 year-old man with nonischemic cardiomyopathy, recovered ejection fraction after biventricular defibrillator implantation, and no history of ventricular arrhythmias was struck by a vehicle while crossing the road and sustained bilateral rib, right femur, and bilateral malleolar fractures. He recalled being struck by the vehicle and felt he may have lost consciousness after impact. Device interrogation showed artifact due to trauma followed by premature ventricular contractions (orange asterisks) and development of ventricular fibrillation (orange bar) status post successful defibrillator shock (arrow) at time of the accident. His troponin level was normal, and cardiac catheterization showed nonobstructive coronary artery disease. On further review of the intracardiac electrogram, ventricular fibrillation was preceded by normal biventricular pacing (first three blue asterisks), 3 seconds of artifact in the far-field channel indicative of trauma-induced dispersion of repolarization of the left ventricle (purple bar) likely corresponding with vehicular impact. The combination of a long-short sequence of a biventricular paced beat (fourth blue asterisk) and premature ventricular contraction (second orange asterisk) and spatial heterogeneity of repolarization initiated ventricular fibrillation.

Conclusion: This is a unique example of commotio cordis in a patient undergoing biventricular pacing who sustained vehicular trauma resulting in ventricular fibrillation captured by intracardiac electrogram and treated successfully by a device shock. This case provides a human correlate to experimental models of commotio cordis by demonstrating the critical timing of premature ventricular contractions in the induction of ventricular fibrillation.

PO-621-02

EXTRACTION OF LEADS ACROSS THE TRICUSPID VALVE DOES NOT SIGNIFICANTLY ALTER TRICUSPID VALVE REGURGITATION

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Background: Pacemaker and defibrillator leads have been implicated in tricuspid valve (TV) dysfunction, but limited data are available regarding the effect of extracting leads across the tricuspid valve on valve function. While there is growing interest in TV intervention, including lead-related dysfunction, the effect of extraction across the valve is not well studied.

Objective: This study analyzed the effect of cardiac lead extraction across the tricuspid valve on tricuspid regurgitation (TR) severity.

Methods: We performed a single center retrospective analysis of consecutive patients referred for extraction from October 2019 to October 2021. TR was graded on a scale of 0 to 3 (0 = none/trivial, 1 = mild, 2 = moderate, 3 = severe) on echocardiogram before and after transvenous lead extraction performed across the TV. Patients were included if they underwent echocardiogram before and after lead extraction (N = 90).

Results: A total of 90 patients (34%, 266 total extractions) underwent an echocardiogram before and after lead extraction of 100 leads across the TV (1.12 +/- 0.73 leads across the TV per patient). Indications for extraction included infection (52), lead dysfunction (18), and TR (5). Extraction tools were used in 60 procedures (31 mechanical, 24 laser, 5 both mechanical and laser). Pre-extraction average TR grade was 1.37 +/- 0.93 and post-extraction average TR grade was 1.37 +/- 1.06 (p = 1.0). Changes in TR are presented in Figure 1. Nineteen patients had worsening of TR, of whom one had worsening by more than one grade. Although the use of extraction tools was associated with a numerically higher rate of worsening TR, the difference was not significant (25.0% vs. 13.3%, p = 0.20). Nineteen patients had improvement of TR, of whom one improved by more than one grade.

Conclusion: In our single center analysis, extraction of leads across the TV did not significantly affect the extent of TR. Although only a subset of patients had paired echocardiograms before and after extraction, patients with clinical concern for worsened TR following extraction were more likely to have echocardiograms performed.