multivariate regression adjusting for age, infarct age, and VT circuit tissue volume, iFat remodeling within the VT circuit, but not scar, was a predictor of the amount of DZs ($\beta = 0.355$, $p < 0.05$) and clinical ablations ($\beta = 0.323$, $p < 0.005$) (Fig.B).

**Conclusion:** Post-infarct iFat remodeling creates a critical arrhythmogenic substrate for VT that needs to be prioritized during ablation.

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**CA-531-02**

ABLECTION OF PREMATURE VENTRICULAR CONTRACTIONS: DISSOCIATION BETWEEN ACUTE AND LONG-TERM OUTCOMES

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**Background:** Acute and long-term outcomes after premature ventricular contraction (PVC) ablation may vary with structural heart disease (SHD) and PVC origin.

**Objective:** To compare acute and long-term outcomes after PVC ablation according to SHD and origin.

**Methods:** We reviewed 213 consecutive patients who underwent PVC ablation. Acute success was defined as abolition of the target PVC. Follow-up included 12 lead electrocardiographic, ambulatory monitoring, and symptoms. The origin of PVC was defined by mapping and elimination by ablation.

**Results:** Of 213 patients, 125 (59%) had structural heart disease (SHD) (coronary disease in 42, cardiomyopathy in 64, valve disease in 19). Acute ablation success was achieved in 93% of patients. During long-term follow-up (391 ± 253 days), 20% of patients recurred. After acute failure, late success occurred in 6 of 14 (43%). In patients with SHD, the long-term recurrence rate was higher compared to patients without SHD (26% vs 11%; $p < 0.05$), but the acute ablation success rate was similar (92% vs 95%; $p = 0.31$) (Fig.1). Outcome varied with PVC origin (Fig. 2). Long-term success was greater in patients with outflow tract (RVOT and LVOT) PVCs than for other PVC origins (85% vs 67%; $p = 0.001$) despite similar acute ablation success rates (93% vs 91%; $p = 0.70$). Thirty-seven (17%) patients had PVCs from more than 1 segment. Acute success (96% vs 84%; $p < 0.05$) and long-term outcome (82% vs 68%; $p < 0.05$) were better for patients with PVCs from only one versus multiple segments.

**Conclusion:** In patients with PVCs, the acute effect of ablation predicts the long-term outcome, but with limited accuracy, particularly in patients with structural heart disease and PVCs from multiple origins. Late success after acute failure occasionally occurs.

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**CA-531-03**

FIRST-IN-HUMAN EXPERIENCE WITH ULTRA-LOW TEMPERATURE CRYOABLATION FOR MONOMORPHIC VENTRICULAR TACHYCARDIA

Tom De Potter MD, PhD; Jippe C. Balt MD, PhD; Lucas V.A. Boersma MD, PhD; Frederic Sacher MD, PhD and Atul Verma MD, FhRS

**Abstracts S33**
Background: Ultra-Low Temperature Cryoablation (ULTC) using near-critical nitrogen (-196°C) has been shown to produce durable, contiguous, transmural lesions in ventricles of animal models.

Objective: To evaluate safety and performance of ULTC for ablation of ventricular tachycardias (VTs).

Methods: The CryoCure-VT (NCT04893317) is a multi-center, prospective, single-arm, first-in-human, clinical trial, enrolling patients with recurrent monomorphic VTs of both ischemic (ICM) and non-ischemic (NICM) etiologies scheduled for endocardial ablation who also have implantable defibrillators. The endpoints include acute safety (Major Adverse Events during and up to 30-days post-procedure) and performance (via end-of-procedure VT inducibility), as well as freedom from sustained VT (>30 sec or requiring therapy) during 6-mo follow-up. The mapping and ablation strategies include substrate mapping and/or mapping during VT. All ablations are performed using ULTC delivered by the Adagio Medical (Laguna Hills, CA) VT cryoablation system.

Results: The first six patients (5 ICM/1 NICM), mean age of 63±9 years and mean EF=34±12% underwent VT ablation based on the combination of substrate-based mapping (n=6) and pace mapping (n=4). Mean procedure time was 182±60 minutes. An average of 8.3 lesions (range 1-16) were delivered per patient with mean freeze duration of 3.2 ± 1.2 minutes/lesion, and total freezing time of 27.0 ± 14.8 minutes (range 4-42 minutes). Post-ablation, 2 patients had no inducible VTs, 2 had inducible non-clinical VTs, 1 had elimination of 3 out of 4 clinical VTs, and 1 did not undergo inducement due to hemodynamic instability. A post-procedural ventricular pseudo-aneurysm occurred in one patient with ablation performed in ventricular tissue as thin as 2 mm which resolved 14 days post-procedure without clinical sequela. We will report on an additional 10 patients by the time of HRS.

Conclusion: The first experience using ULTC for VT ablation demonstrates first-in-human feasibility and promise for effectiveness in a broad variety of scar morphologies and ablation strategies, conditional to careful titration of cryogenic energy.

CA-531-04

CANADIAN EXPERIENCE WITH SALINE ENHANCED RADIOFREQUENCY NEEDLE TIP ABLATION FOR VENTRICULAR TACHYCARDIA (SERF VT CANADA TRIAL)

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Background: Endocardial catheter ablation for ventricular tachycardia (VT) may fail because of the inability to deliver transmural lesions. Saline-enhanced radiofrequency (SERF) ablation uses a needle tip catheter which is placed at varying depths into the myocardial tissue and heated saline is injected along with radiofrequency (RF) creating fully transmural lesions. We report the first in-human SERF ablation for VT in Canada.

Objective: The purpose of this study is to describe the prospective outcomes on a series of patients undergoing first-in-human SERF ablation for VT in Canada under an Investigational Testing Authorization.

Methods: Twenty-five patients with ischemic and non-ischemic cardiomyopathy, with recurrent monomorphic drug-refractory VT which had failed a prior catheter ablation underwent SERF ablation in 3 different centers in Canada. After a voltage map, the mapping catheter was replaced with the needle-tipped ablation catheter, which was located perpendicular to the myocardium and extended either 6 or 8 mm into the tissue. Sterile saline solution was infused with a flow rate of 10 ml/min and 60°C and 50 watts of RF was used.

Results: LVEF was 33.3% ± 8.6, mean age was 69.5 ± 6.4 years; 92% were male. From 43 clinical VT induced, 42 were attempted and 266 (SERF lesions were delivered (10.6 ± 4.9 per patient). At the end of the case, 41 VT were non-inducible (98%) and 24 patients (96%) had their VT eliminated. At 6 months follow-up, VT burden was reduced by 87%. Complications included 2 strokes, 2 pericardial effusion and one patient had ischemic bowel and 1 died.

Conclusion: SERF ablation is feasible and permits control of symptomatic monomorphic VT in drug-refractory patients with a prior failed ablation.

ABSTRACT CE-540: New trials in VT management

Saturday, April 30, 2022
8:00 AM - 9:00 AM

CE-540-01

EFFICACY OF BURST VS RAMP ATP FOR SLOW VT

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Background: Anti-tachycardia pacing (ATP) is an established and effective treatment for terminating ventricular tachycardias. While current ICD programming recommendations suggest burst in preference to ramp ATP to improve the termination rate of VT, these guidelines are largely based on trials including VTs with a cycle length <400ms.