ATRIAL FIBRILLATION UPDATE

New Mexico Academy of Family Physicians

February 2026

Sean P Mazer, MD FHRS

Executive Medical Director, Cardiovascular Services, Lovelace Health System

Asst. Professor of Clinical Medicine, University of New Mexico

BIGGEST CHANGES IN EP

- Milestones
  - January 2024- First US PFA system approved
  - October 2024- Approval of Concomitant LAA management and ablation
- Mapping/Ablation energies
- Intraprocedural imaging (ICE only procedures)
- Stroke and Atrial fibrillation- left atrial myopathy
- LAA management/Epicardial vs Endocardial
- LAA leak management

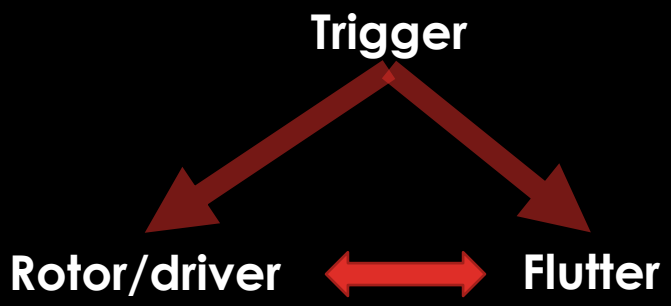
NMHI EP

- 7 EPs, 3 Mid level providers, 2 CRNAs
  - New MD joining this summer from UT Southwestern
  - Operating out of 5 EP labs (HHNM 3, UNM, Santa Fe)
- Full range of procedures including epicardial, extraction and all PFA/LAA modalities
- >2500 procedures annually
- Clinical trials in all major modalities, including single center, multicenter, investigator initiated, NIH guided and industry trials
- First EP fellow in 2026, first advanced fellowship in CV medicine in New Mexico

NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

MODEL FOR ANY ATRIAL FIBRILLATION

- Trigger
  - Thoracic veins
  - Non venous triggers
- Rotor/driver
  - Wavefront collision, functional block, anatomical rotation, scar, crossing fibers
- Flutter
  - Macro-rotor
  - Related to slow conduction/ scar



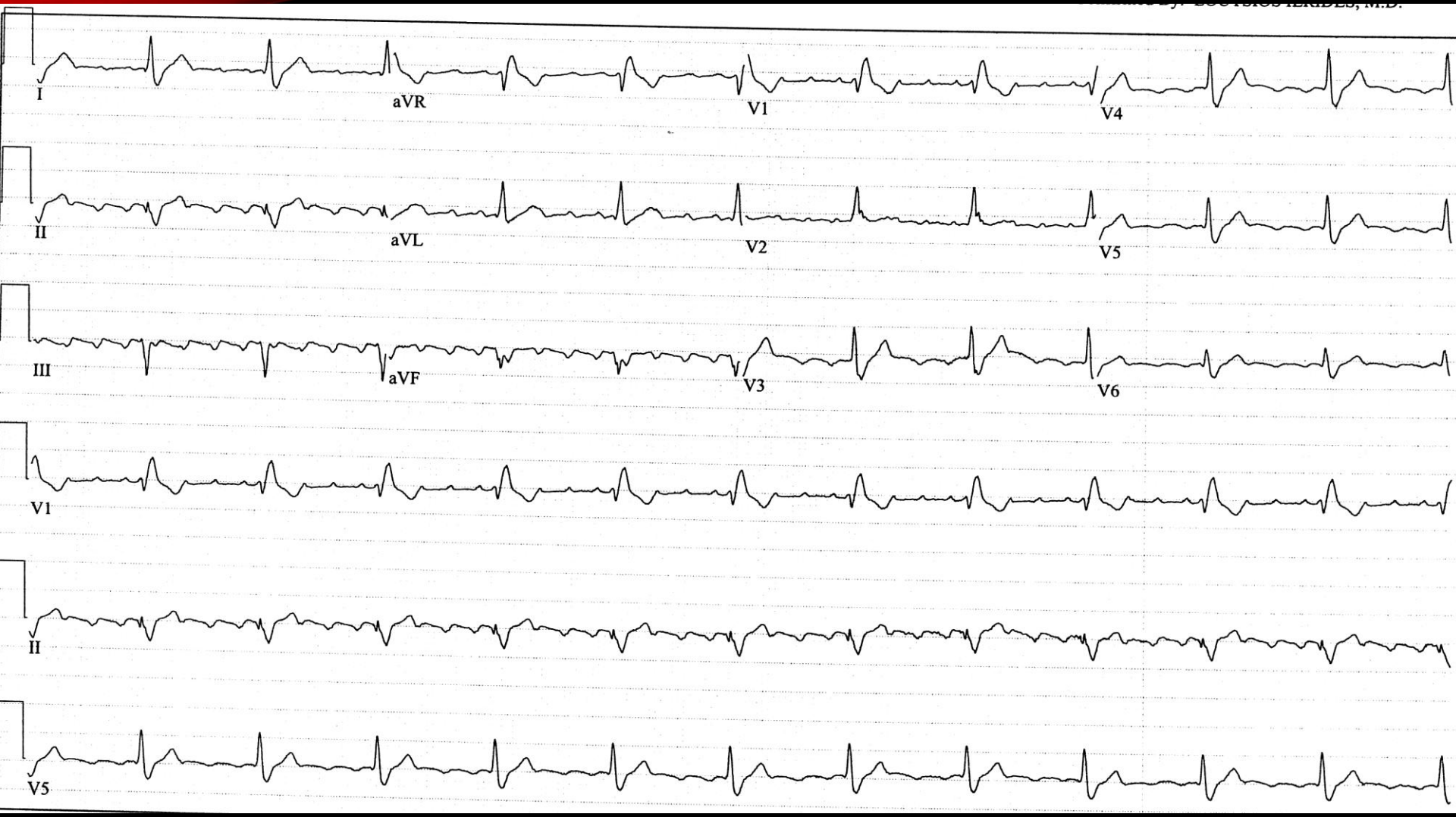
Triggers generate a rapid wavefront which generates a rotor creating fibrillation or a flutter

WHEN IS ATRIAL FIBRILLATION AN EMERGENCY?

- Evidence that it is new onset
- Accompanying another illness
- Symptoms- fainting, shortness of breath, chest pain, dizziness, weight loss or weight gain
- Signs- edema, JVD, abnormal vitals (HR>130 bpm at rest, BP< 100/60

CTI DEP ATRIAL FLUTTER

- Related to atrial fibrillation
- Regular arrhythmia
  - Flutter waves visible (CL 200-280ms)
  - V1- isoelectric component
  - III and aVF- downward continous
  - Difficult to rate control
  - Often sustained until intervention (stable arrhythmia)
- Ablation is curative
- Pulmonary disease (DDimer)
- Sleep apnea



NEW MEXICO
Heart Institute
TRUST US WITH YOUR HEART

RATE CONTROL

- Daytime rate control <110 BPM
- Nighttime rate control <90 BPM
- 60% of patients can achieve this with one drug
  - Beta blockers reserved for CHF, structural heart disease, coronary disease
  - Calcium channel blockers
- 80% of patient can achieve rate control with combination.
- Afib can cause cardiomyopathy by multiple mechanisms but it takes >6 weeks

Mortality and Morbidity in Patients Receiving Encainide, Flecainide, or Placebo — The Cardiac Arrhythmia Suppression Trial

Authors: Debra S. Echt, M.D., Philip R. Liebson, M.D., L. Brent Mitchell, M.D., Robert W. Peters, M.D., Dulce Obias-Manno, R.N., Allan H. Barker, M.D., Daniel Arensberg, M.D., +5, and the CAST Investigators * Author Info & Affiliations

Published March 21, 1991 | N Engl J Med 1991;324:781-788 | DOI: 10.1056/NEJM199103213241201

VOL. 324 NO. 12

- CAST TRIAL
- 1498 patients randomized to encanide, flecanide vs placebo for suppression of PVCs
- 43 patients in the AAD vs 16 in the placebo died from arrhythmia
- Flecainide used in patients with EF >30%, doses 200mg BID twice a day

ANTIARRHYTHMIC DRUGS

- Flecainide

- Propafenone
- Amiodarone
- Dofetilide
- Sotalol

AFIB PROGRESSION

- Paroxysmal atrial fibrillation
  - 15%/year progress to persistent atrial fibrillation
  - More heart disease means more likely to progress
  - Progression generally means more symptoms
- Older, sicker patients move towards more atrial fibrillation.
- Progression is thought to represent progressive fibrosis.

RISK FACTOR MODIFICATION

- Weight loss (BMI threshold 30)
  - Clear signal in multiple trials that structured weight loss leads to dose dependent improvement in afib (>10% 6-fold decrease)
  - GLP1 receptor agonists
    - cohort study 3350 in each arm after catheter ablation BMI>30
    - Reductions in Afib recurrence, CHF, hospitalization (HR 0.75) and CV mortality (HR 0.8) in GLP1 RA treated group
- Sleep apnea
  - CPAP is effective at reducing recurrence post ablation
- Blood pressure control
  - Renin-Angiotensin-Aldosterone antagonism→reduces recurrence
- DMII
  - A1c control reduces recurrence risk

TOXIC EXPOSURES

- Alcohol reduction
  - <2 drinks for men, <1 drink for women (only 1 exposure needed to increase the risk)
  - Abstinence can reduce the risk by as much as 50%
- Cigarette Smoking
  - HR of 1.3 for recurrent atrial fibrillation
- Exercise
  - Moderate exercise is protective
  - >2000 hours of vigorous training increases risk of afib
  - detraining protective
- Caffeine
  - Very little data links caffeine to atrial fibrillation risk

NEW HEART/LOVELACE WEIGHT LOSS CLINIC

- New Heart and Lovelace weight loss clinic at New Heart
  - Exercise, diet and medication based weight loss multimodaility weight loss program
  - Cardiac, pulmonary, oncology, dysautonomia and Parkinson disease exercise and rehabilitation service
- New Heart New You program designed for the cardiac patient needing risk factor modification

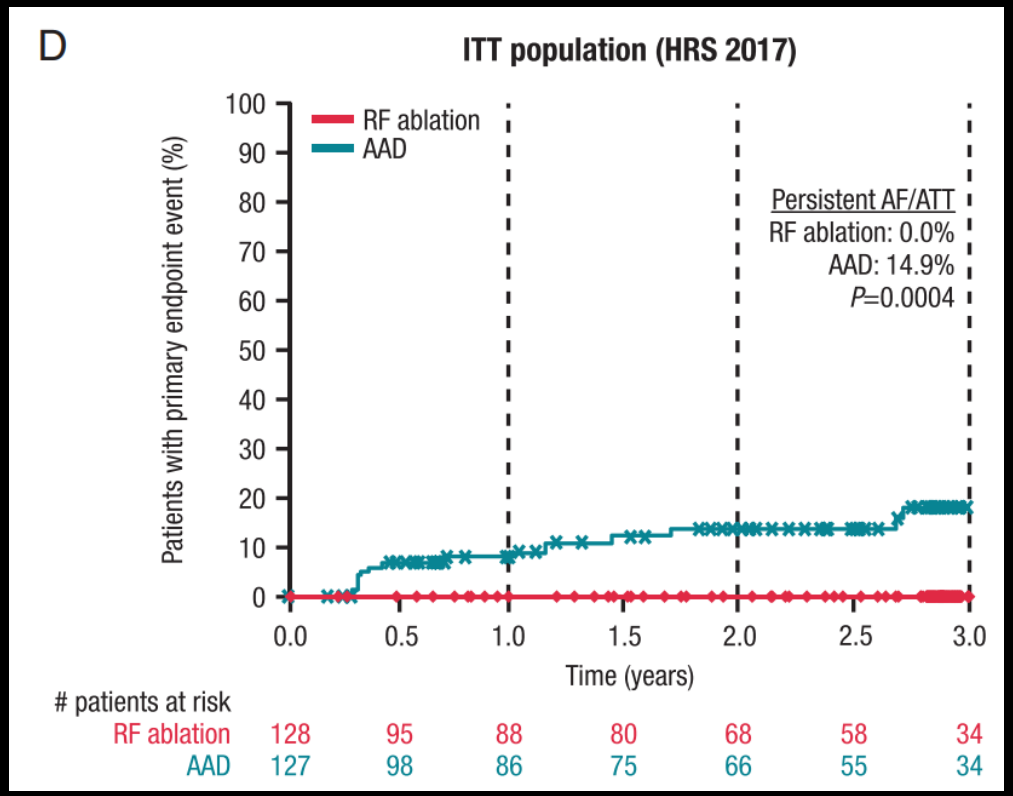
- https://newheartnm.com/

NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

NEW MEXICO
Heart Institute
TRUST US WITH YOUR HEART

EARLY ABLATION

- Attest Trial- drug refractory atrial fibrillation
- Does ablation prevent progression to persistent atrial fibrillation
  - 127 patients in each arm, ablation vs AAD therapy
  - Short f-up ~2-3 years
  - Class I and III AADs both used



NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

WHO IS A GOOD ABLATION CANDIDATE?

- Who is a good ablation candidate?
  - Paroxysmal drug refractory
  - Early persistent <1 year
    - 2a recommendation for ablation
- Exercise related atrial fibrillation
  - Athlete's heart
- Co-existing structural heart disease
  - Amyloidosis (wt TTR or mutant TTR)
  - MR, AS, HOCM, MS, CAD, CHF
- How do we talk about ablation with patients?

CONGESTIVE HEART FAILURE

- Castle Afib
  - EF<35% with NYHA 2-4 symptoms
  - Reduced mortality and hospitalizations
  - Most pronounced in EF <25%

- ATTAC (ablation vs amiodarone)
  - EF<40% NYHA 2-4
  - Ablation reduced recurrences, hospital stays and mortality

- Both Trials Demonstrated Improvements in EF

LESS IDEAL CANDIDATE

- Age
  - Complications increase, efficacy decreases, >85 years
- CKD
  - stage IIIB or IV and ESRD cause extensive LA fibrosis
- COPD and Interstitial lung disease
  - As FEV1 and DLCO <35% risk increases
- Low activity levels, disability due to multiple issues

MULTIPLE ABLATIONS

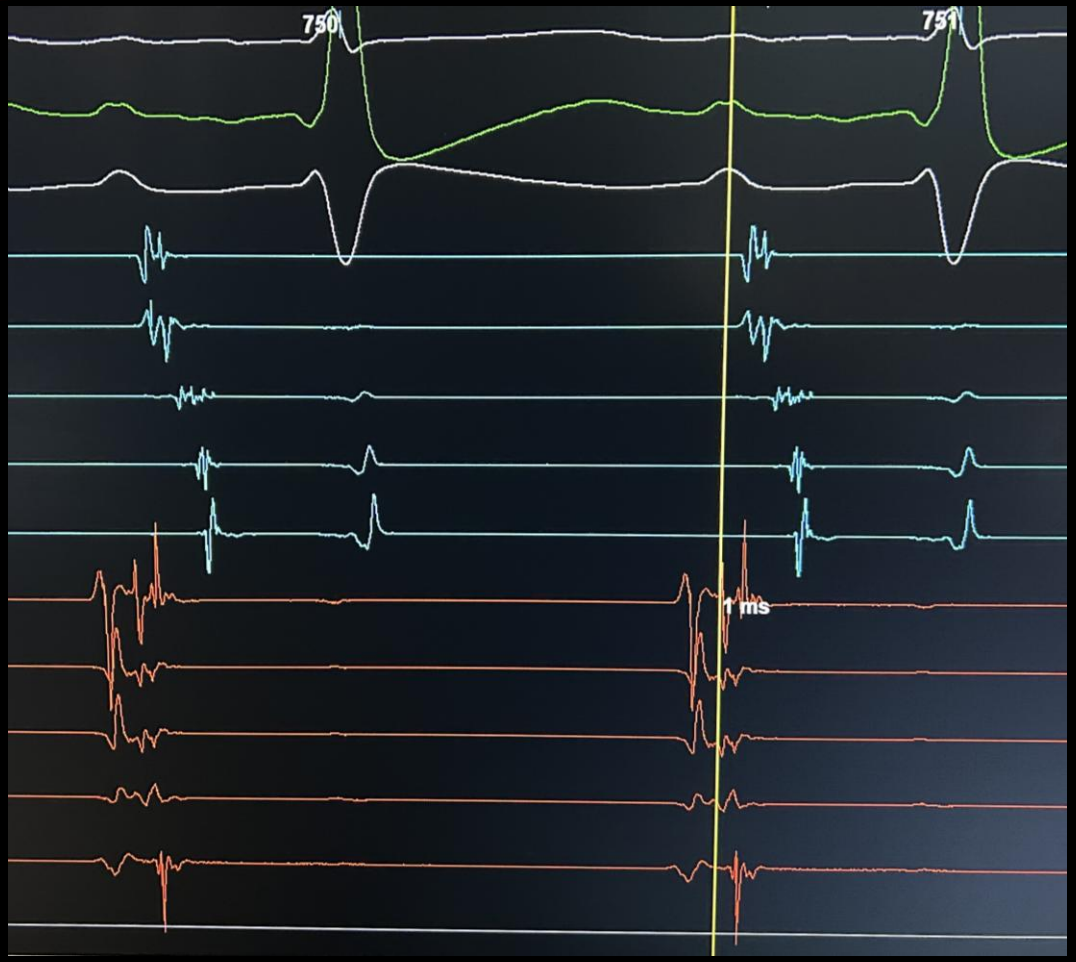
- Ablation is not a "CURE" for atrial fibrillation, it is a management tool best used for symptoms
- Paroxysmal atrial fibrillation
  - 5-10% require re-ablation within 1 year
  - 90% 5 year suppression
- Persistent atrial fibrillation (<1 year duration)
  - 20% require re-ablation within 1 year
  - 85% 5 year suppression
- Persistent atrial fibrillation (>1 year duration)
  - 50% require re-ablation within 1 year
  - 70-80% 5 year suppression
- Patients with Afib should expect recurrence after 10 years

PULSED FIELD ABLATION

- Pulsed field ablation
  - Millisecond to nanosecond pulses of electricity (high voltage short duration)
  - Create nanoscale pores in the cell membrane triggering apoptosis
  - Nerve and blood vessel have higher thresholds
- The absence of thermal injury means lower risk of esophageal and phrenic injury and ablation connected pulmonary vein stenosis
- Shorter procedures (most recent procedures,
  - 7 minute LA dwell time (current ablation >45 minutes)

NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

SVC isolation with PFA

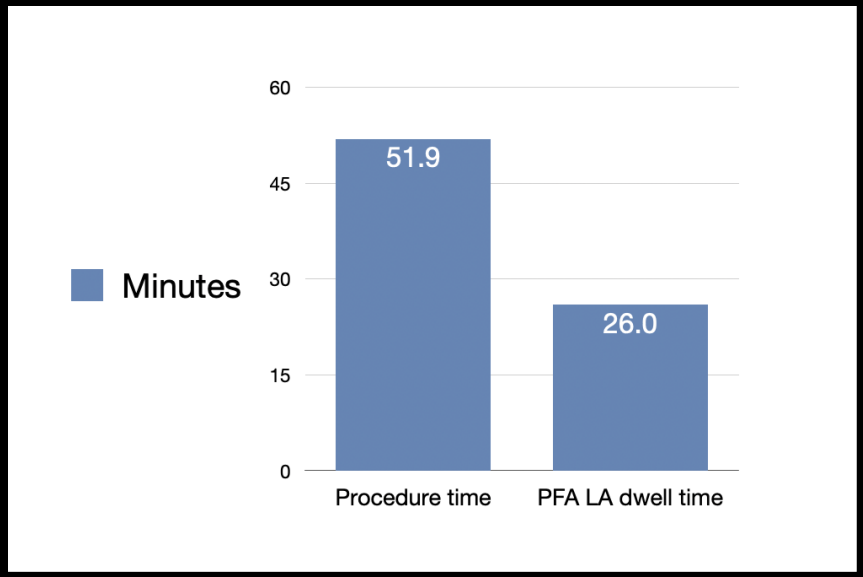


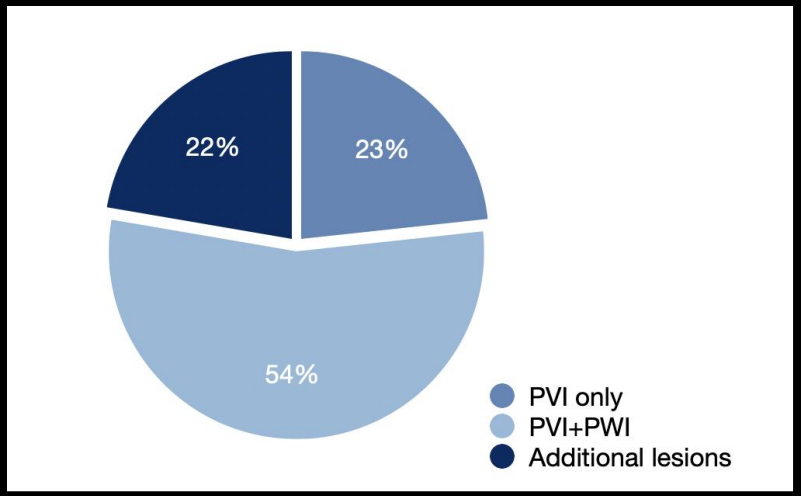
Pre

After single PFA lesion

NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

OUR CENTER'S ICE-GUIDED FARAPULSE™ EXPERIENCE





NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

SURGICAL LAA CLOSURE

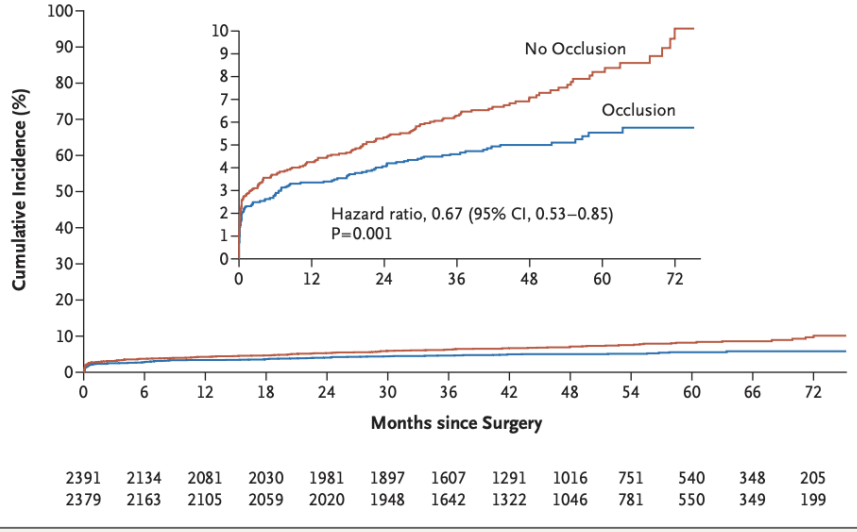
- Observational data from 10000 cardiac surgery patients
- 3800 underwent LAA closure
- LAA closure reduced the stroke risk over a 3 year f-up from ~6% to 4%.
- All cause mortality from 24% to 17%

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JUNE 3, 2021 VOL. 384 NO. 22

Left Atrial Appendage Occlusion during Cardiac Surgery to Prevent Stroke

R.P. Whitlock, E.P. Belley-Cote, D. Paparella, J.S. Healey, K. Brady, M. Sharma, W. Reents, P. Budera, A.J. Baddour, P. Fila, P.J. Devereaux, A. Bogachev-Prokophiev, A. Boening, K.H.T. Teoh, G.I. Tagarakis, M.S. Slaughter, A.G. Royse, S. McGuinness, M. Alings, P.P. Punjabi, C.D. Mazer, R.J. Folkeringa, A. Colli, Á. Avezum, J. Nakamya, K. Balasubramanian, J. Vincent, P. Voisine, A. Lamy, S. Yusuf, and S.J. Connolly, for the LAAOS III Investigators*



No. at Risk													
No Occlusion	2391	2134	2081	2030	1981	1897	1607	1291	1016	751	540	348	205
Occlusion	2379	2163	2105	2059	2020	1948	1642	1322	1046	781	550	349	199

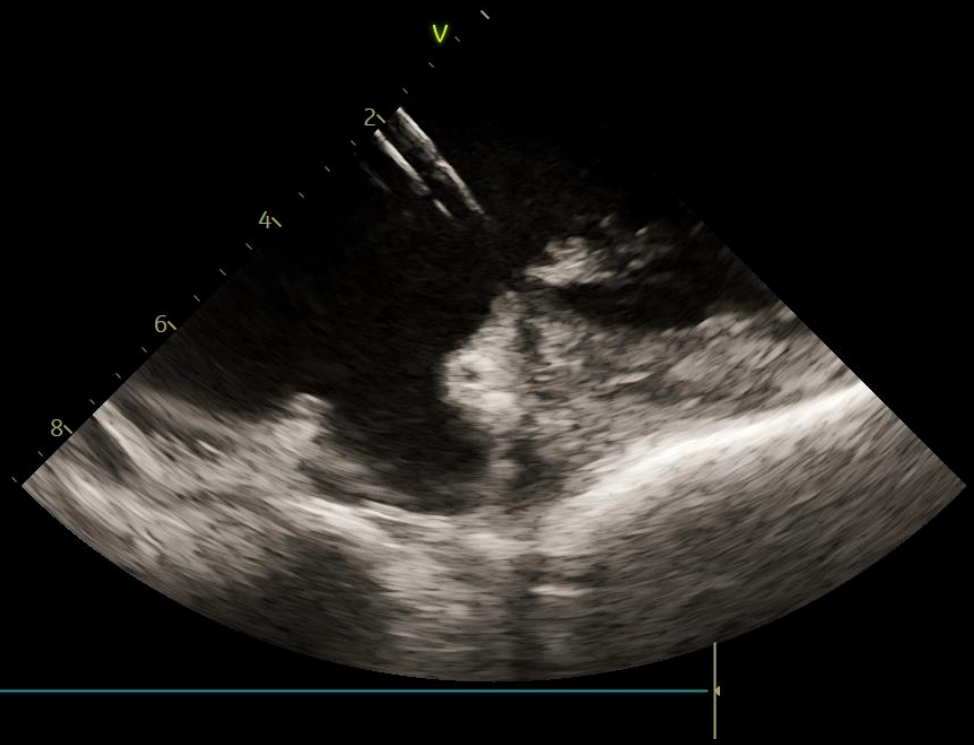
Figure 1. Cumulative Incidence of Stroke or Systemic Arterial Embolism.

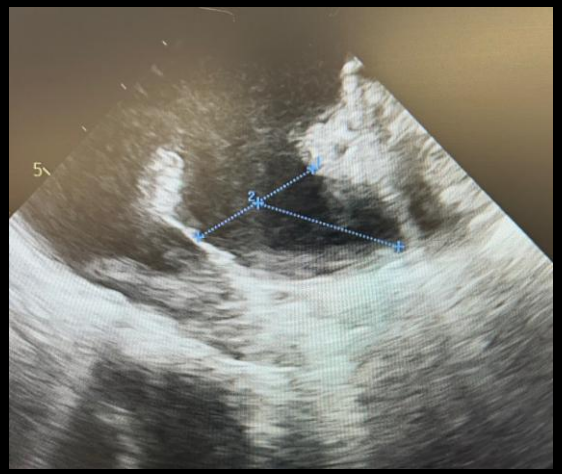
The participants in the occlusion group underwent left atrial appendage occlusion at the time of cardiac surgery for another indication, and those in the no-occlusion did not undergo left atrial appendage occlusion at the time of cardiac surgery; all participants were expected to receive usual care. The inset shows the same data on an enlarged y axis.

- >4800 patients undergoing cardiac surgery
- Afib, CHA_2DS_2-VASC ≥2
- Randomized to LAAC vs. no LAAC
- **All remained on OAC**
- Primary endpoint= stroke or systemic embolization
- Approx. 1/3 received surgical AF ablation

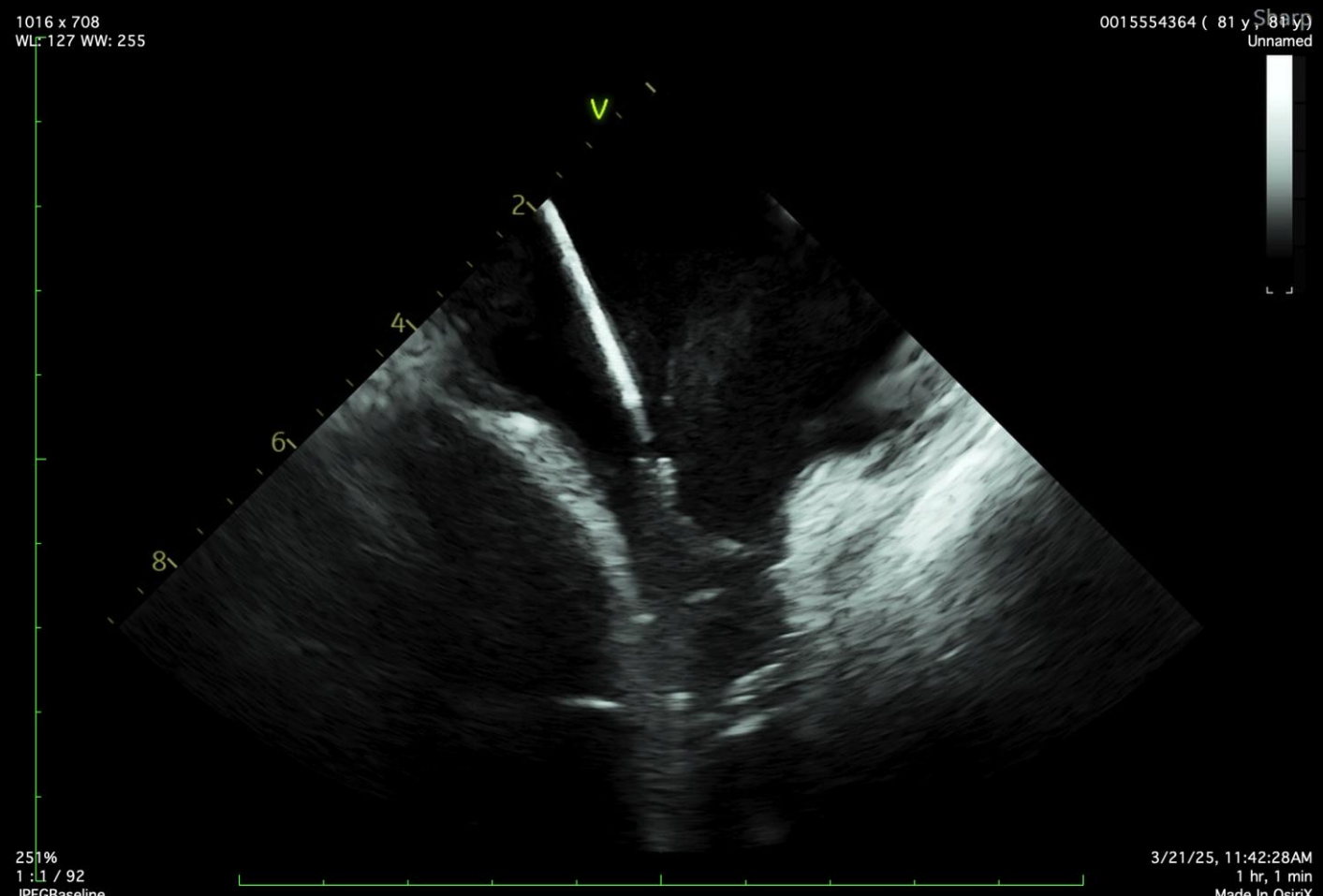
56%- cut-and-sew
15%- closure device (AtriClip)

NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART



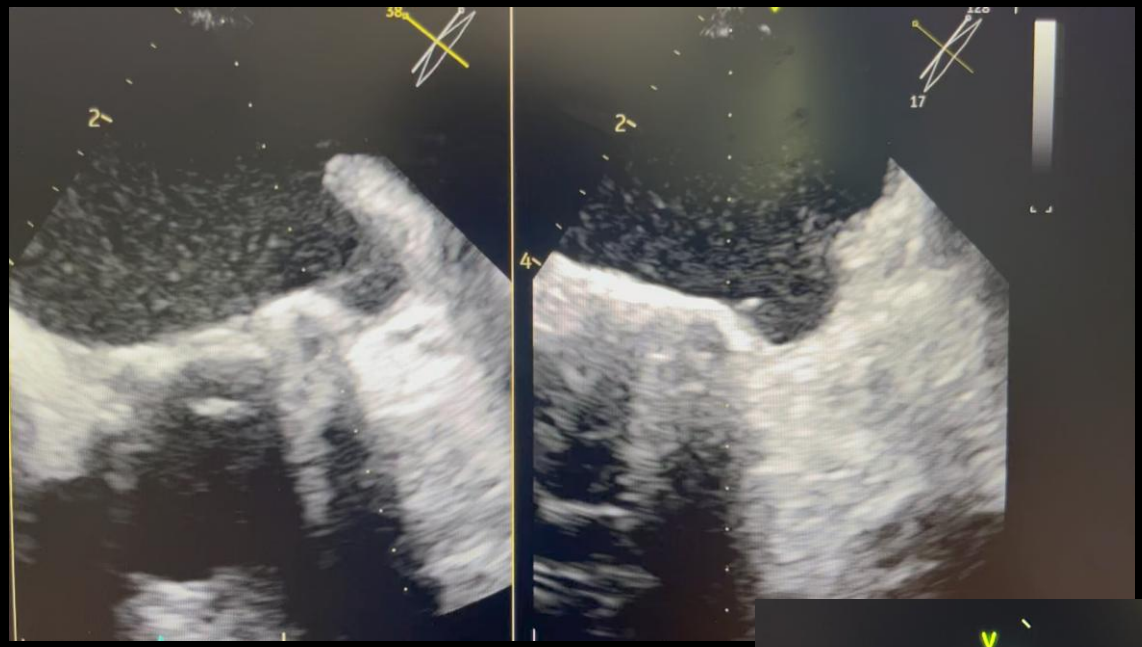


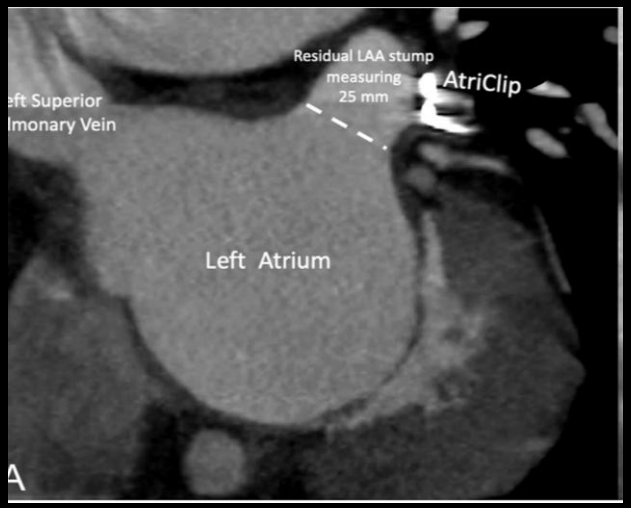
NEW MEXICO
Heart Institute
TRUST US WITH YOUR HEART



NEW MEXICO
Heart Institute
TRUST US WITH YOUR HEART

Epicardial LAAC will leave vestibule seen on imaging

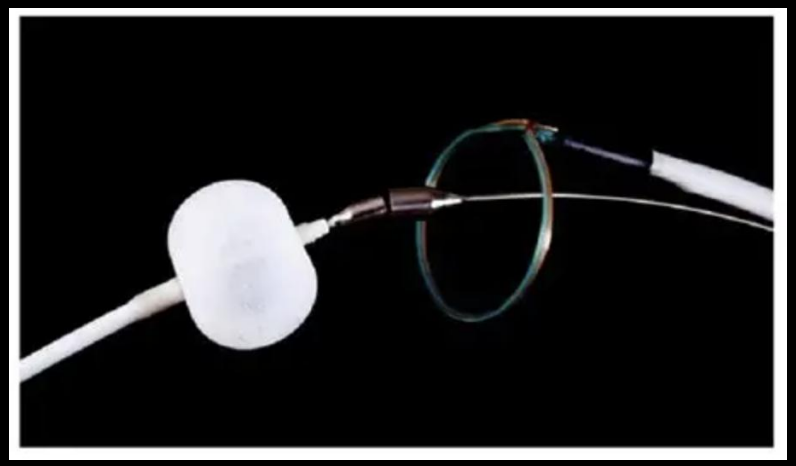




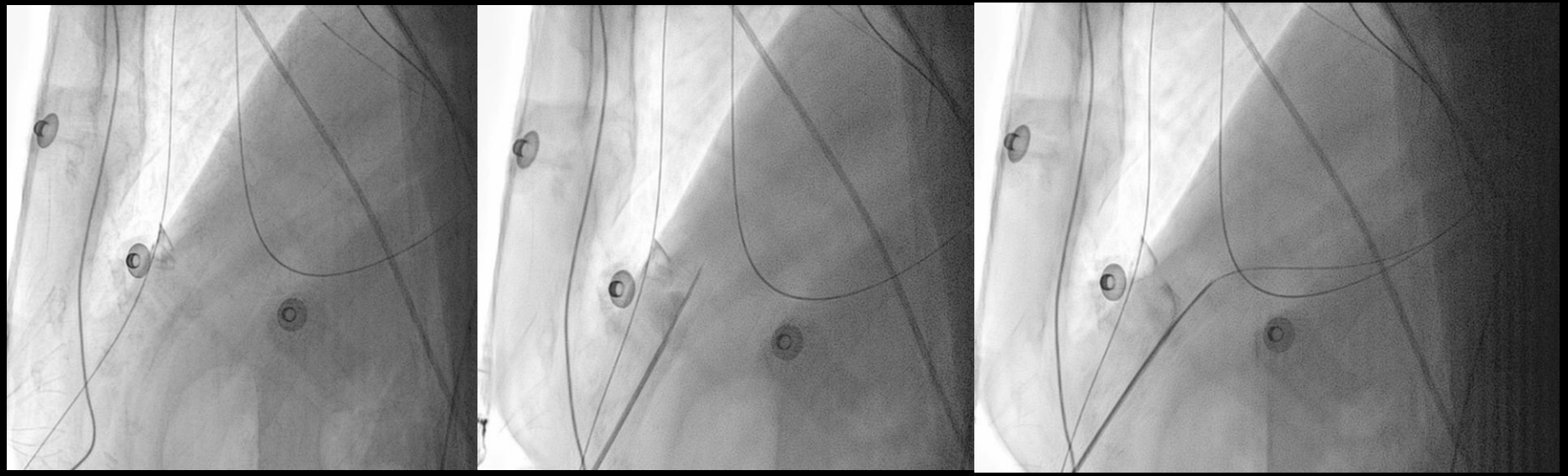
Watchman (Endocardial)

NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

EPICARDIAL LARIAT DEVICE

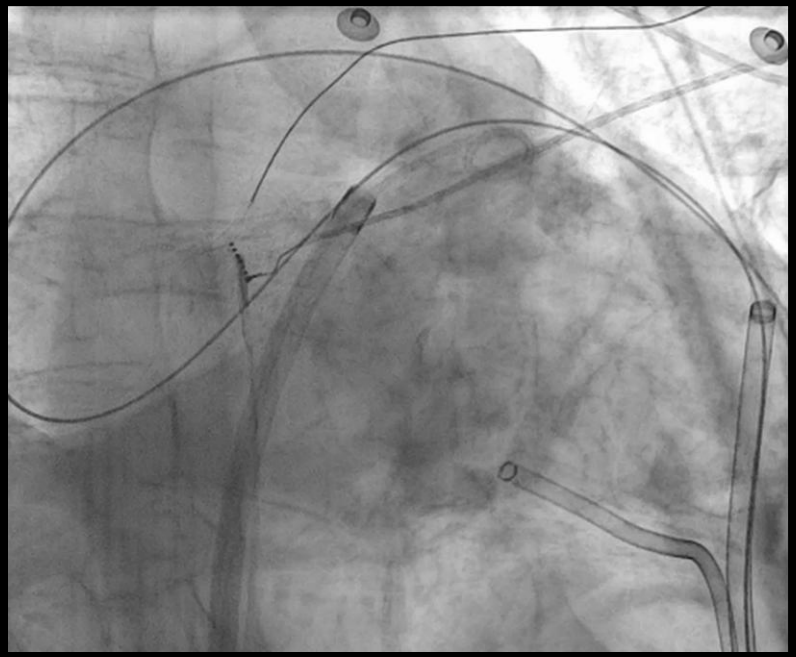


NEW MEXICO
Heart Institute
TRUST US WITH YOUR HEART

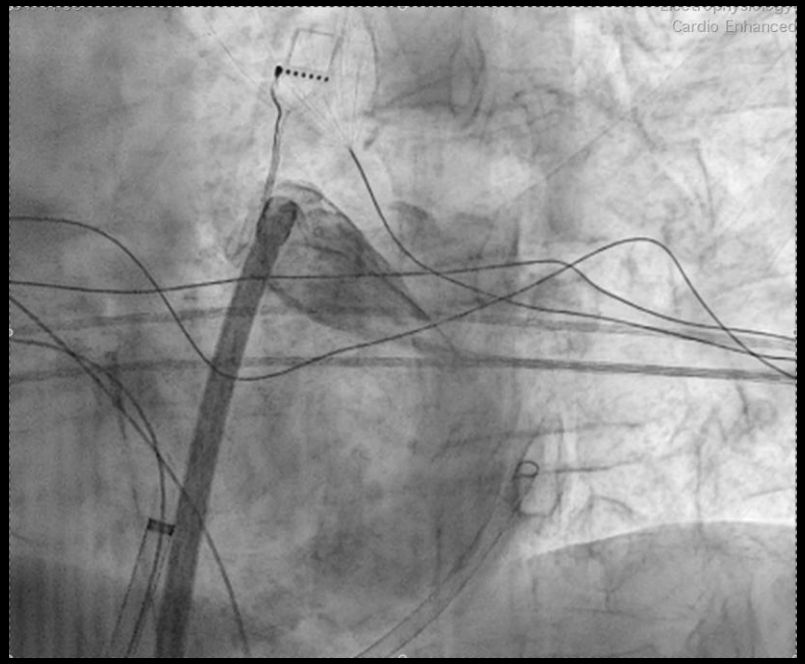


Pericardial access using micro-puncture technique in left lateral position

NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

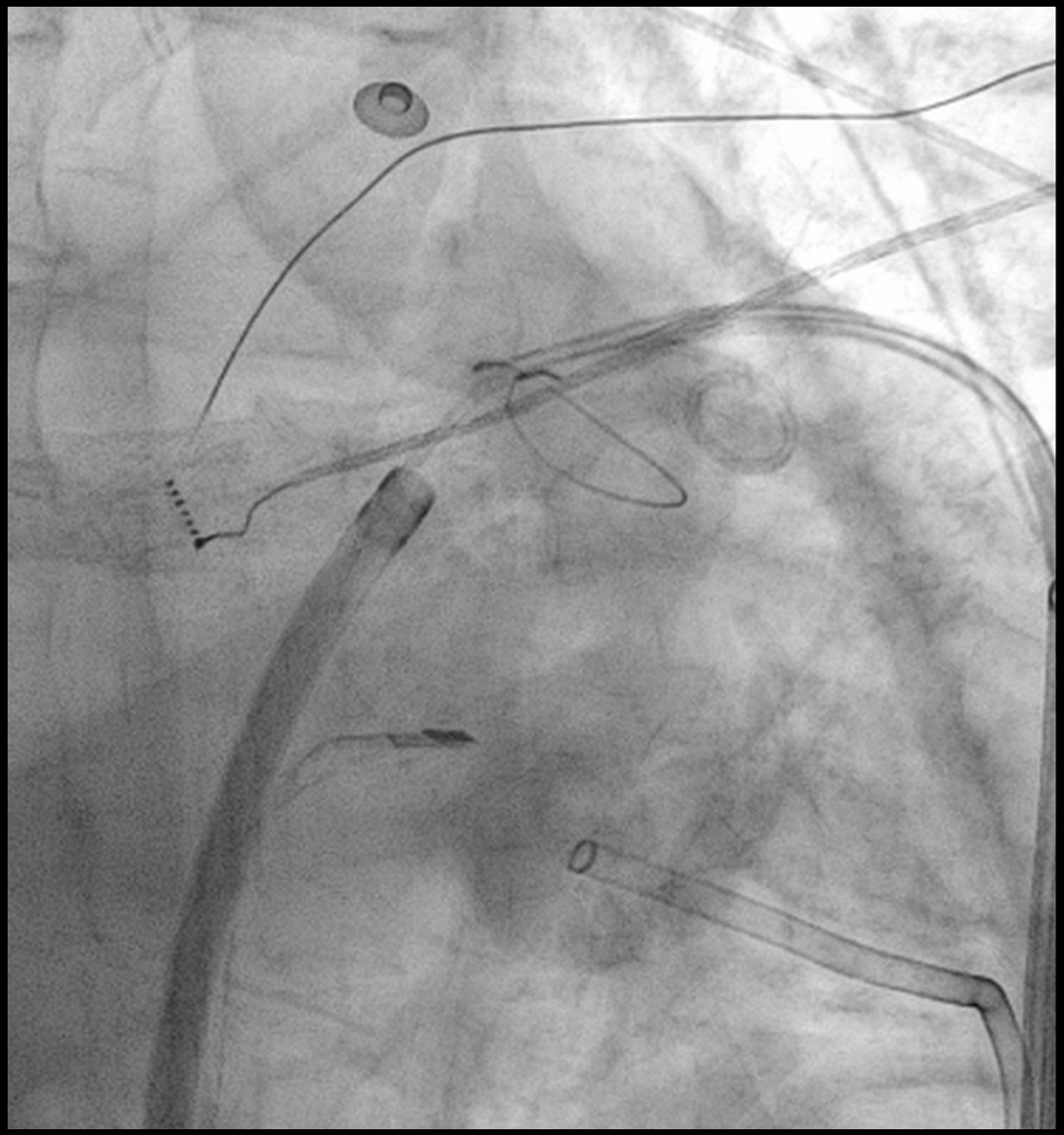


RAO view

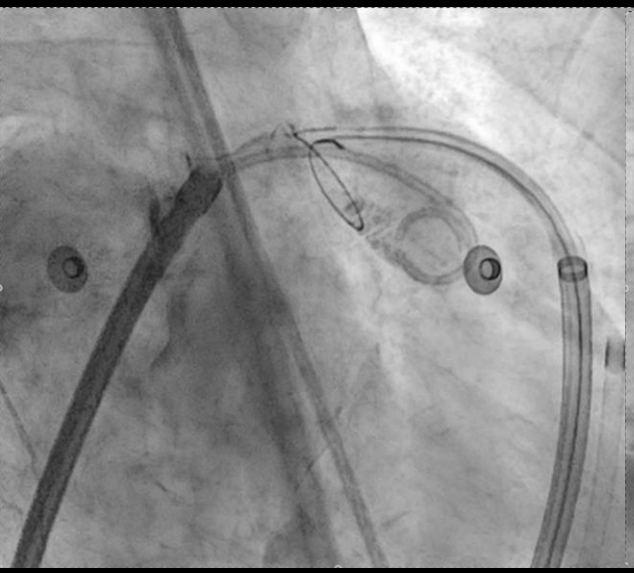
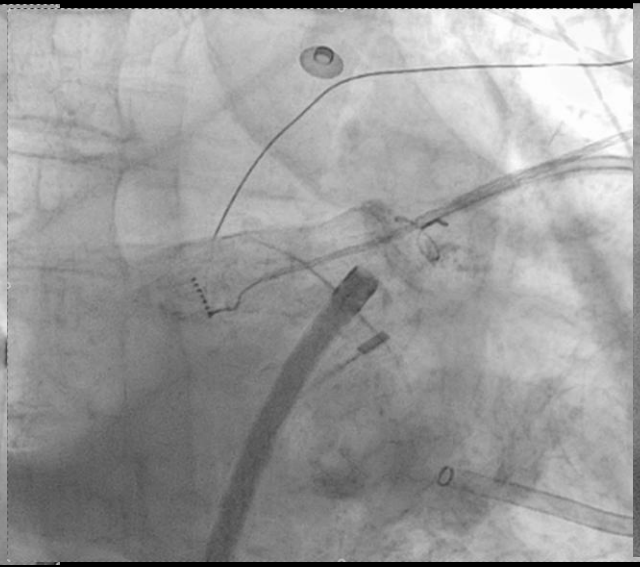
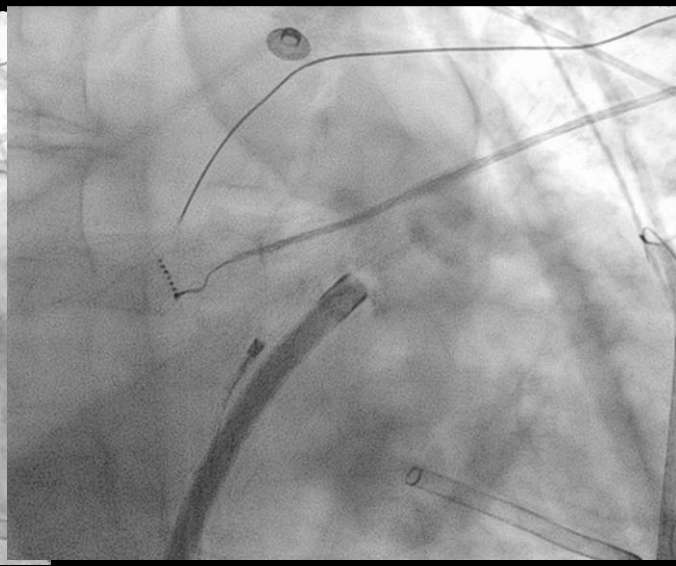


LAO view

NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

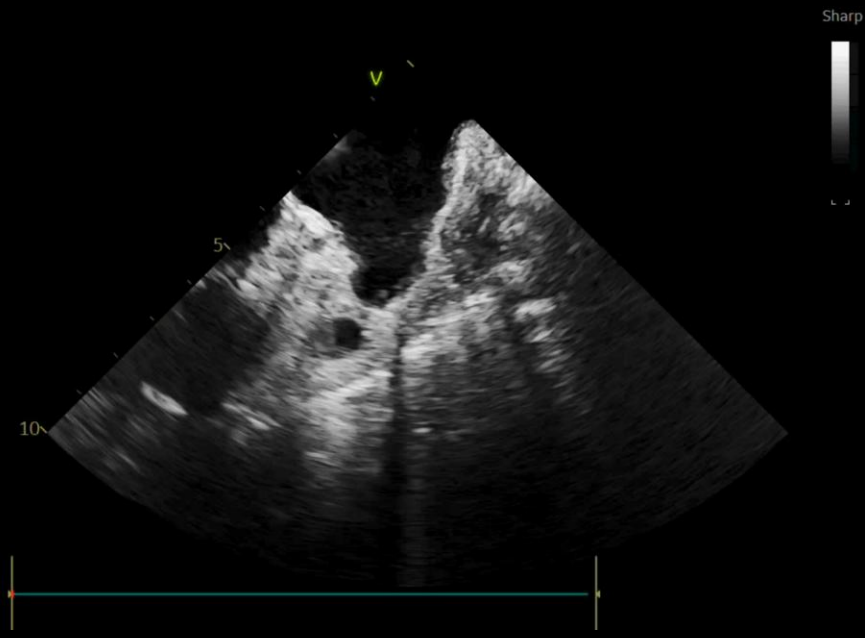


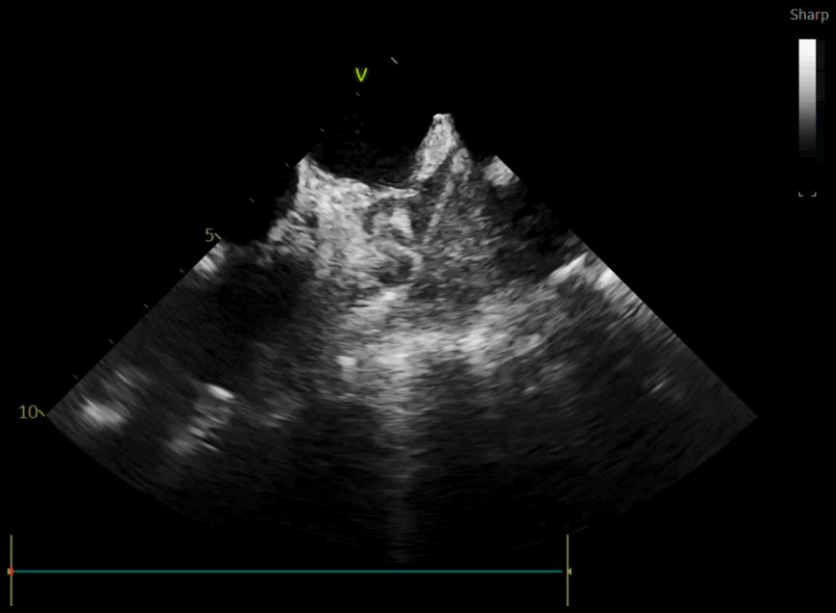
NEW MEXICO
Heart Institute
TRUST US WITH YOUR HEART

NEW MEXICO
Heart Institute
TRUST US WITH YOUR HEART

CONFIRMING CLOSURE ON ICE





NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

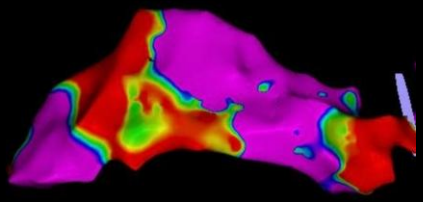
LONGSTANDING PERSISTENT AFIB

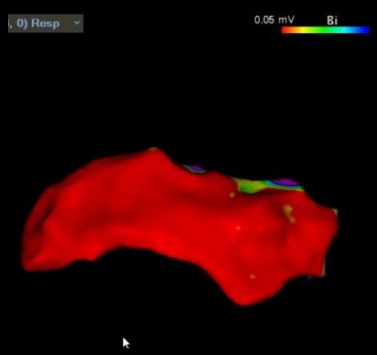
- Standard PVI <50% success rates for ablation
- Empiric ablation strategies PVI + marginal improvements in success
- We have been on a journey to try to find a combination of strategies to solve this
  - Simple, executable with tools available within 1 year
  - Solve the stroke risk issue

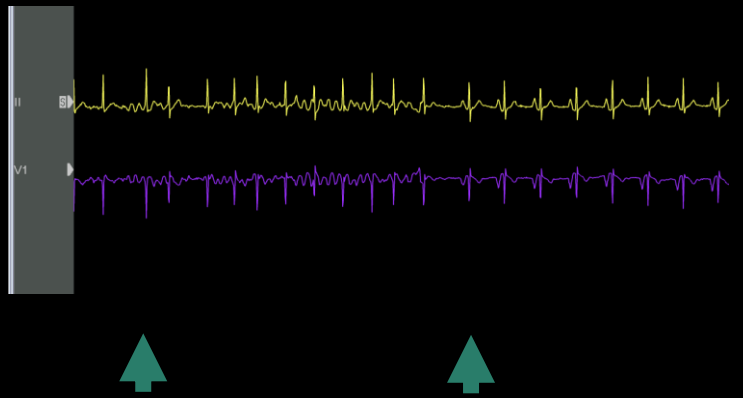
- We believe, epicardial LAA closure, ripple frequency ablation and PFA combined will solve this.

NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

LARIAT OFFERS ELECTRICAL ISOLATION OF LAA

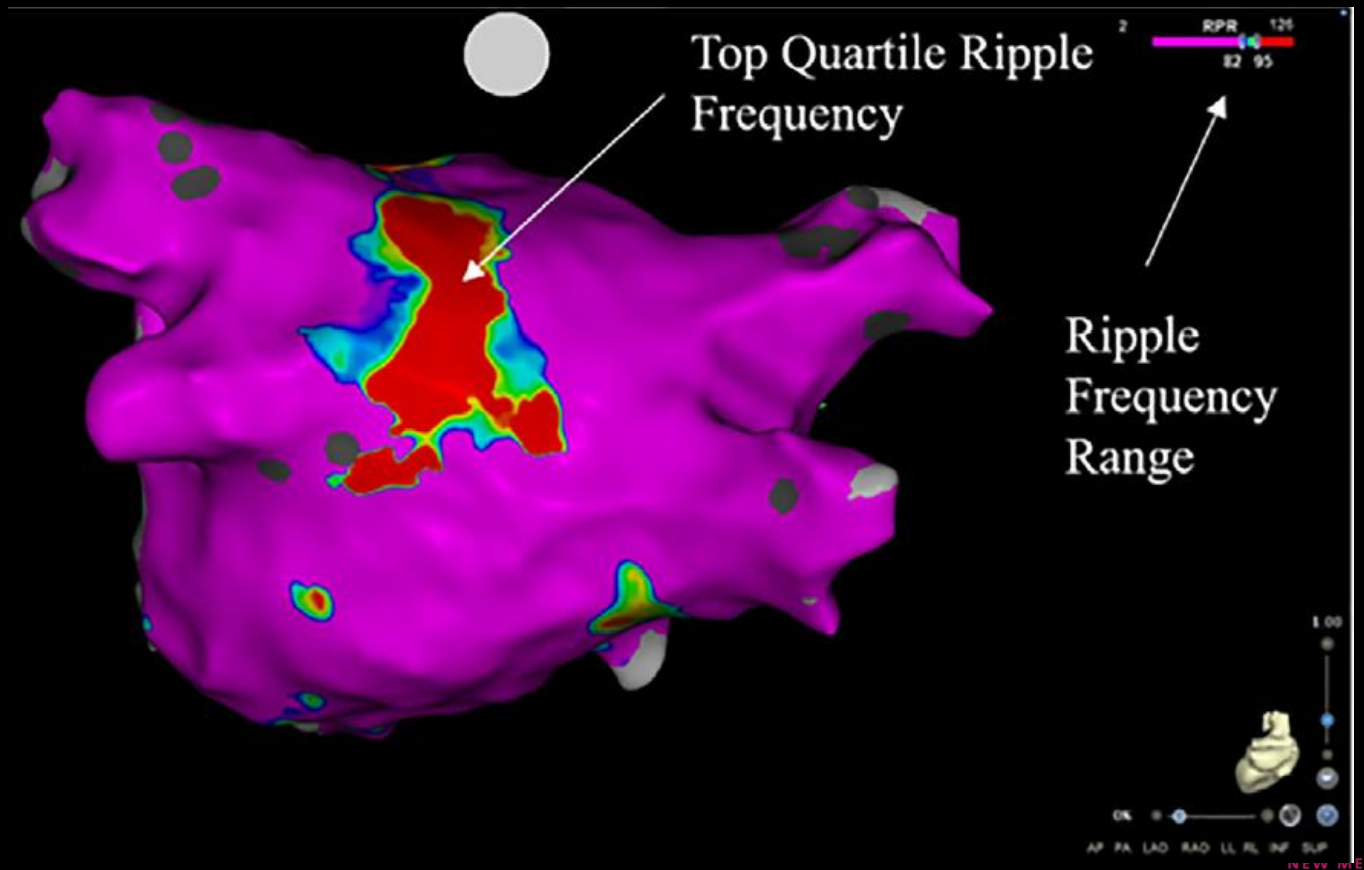






NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

RIPPLE FREQUENCY MAPPING



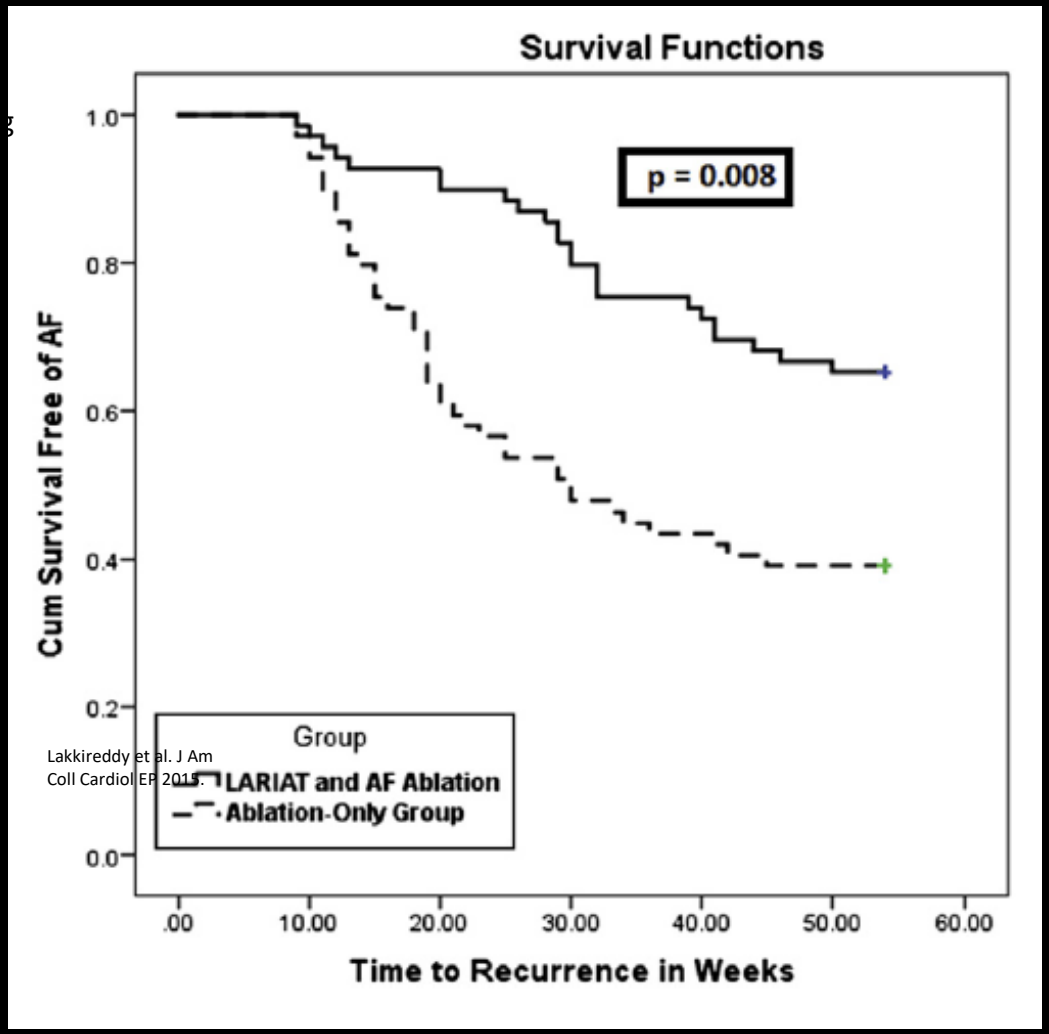
OUTCOME DATA

- Persistent afib
  - 56 ablated using ripple mapping + PVI
  - 108 historical controls ablated with stepwise linear approach
- Ripple mapping led to 98% freedom from Afib vs 82% in the historical control
  - Fewer cardioversions
  - Similar rates of atrial tachycardia
  - Higher long term freedom from afib

J Cardiovasc Electrophysiol. 2019;30:1860-1867.

NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

Freedom from AF after Lariat + AF ablation

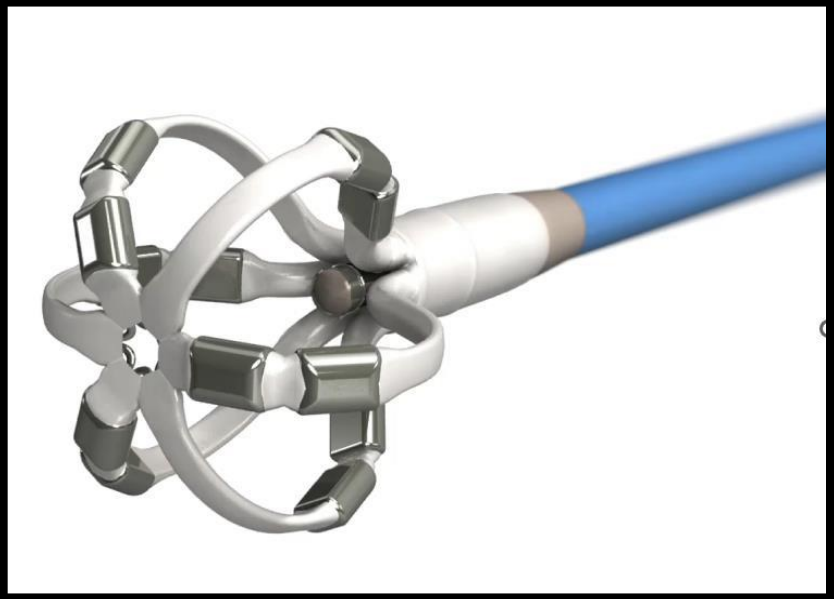


Lakkireddy et al. J Am Coll Cardiol EP 2015.

NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

OMNYPULSE CATHETER

- Manuevers better than traditional solid tip RF catheter
- Larger lesions, customizable lesion sets
- No perforation risk, no esophageal risk, no PV stenosis risk
- Dual energy capable
- Currently in clinical trials



NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

Thank you for inviting me to speak!

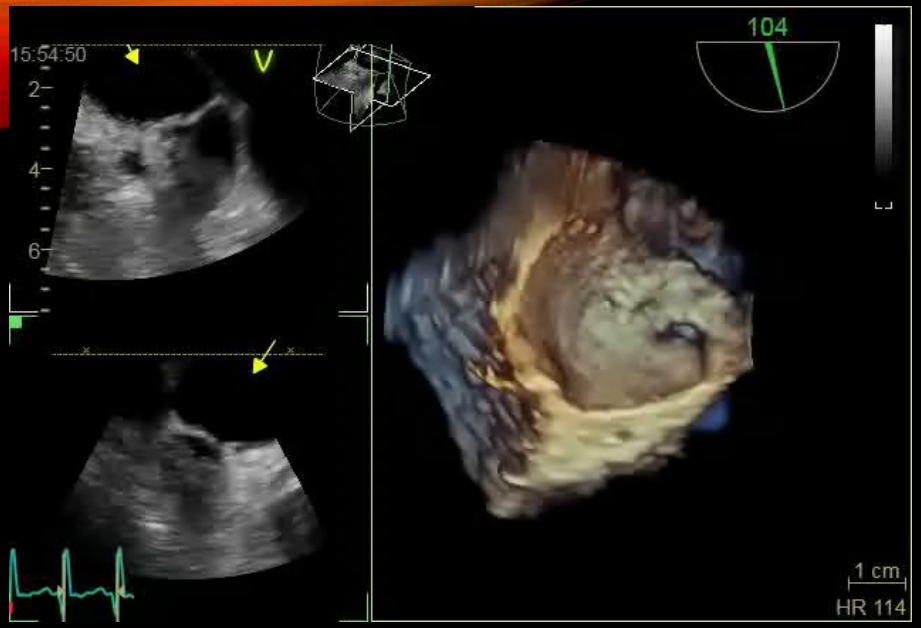
SEAN P MAZER, MD, FHRS

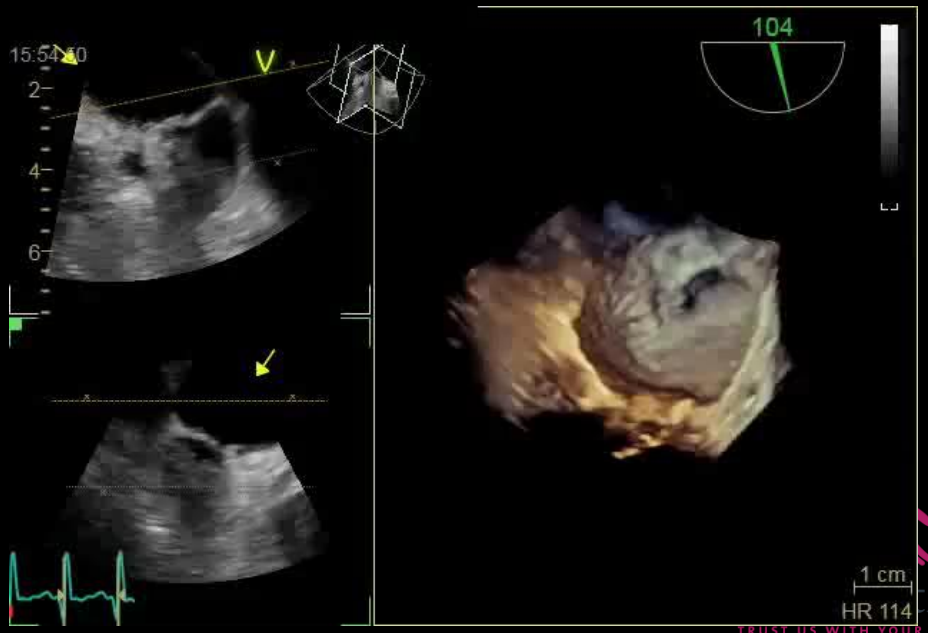
Executive Medical Director, Cardiovascular Service Line, Lovelace Health System

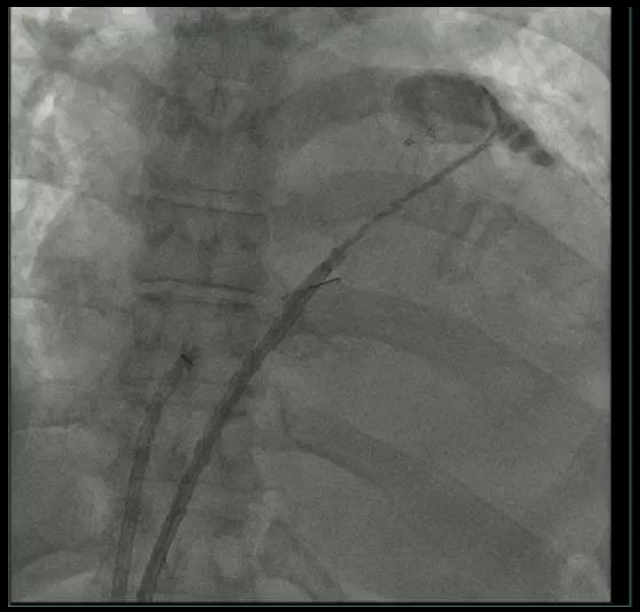
Asst Professor of Clinical Medicine, University of New Mexico

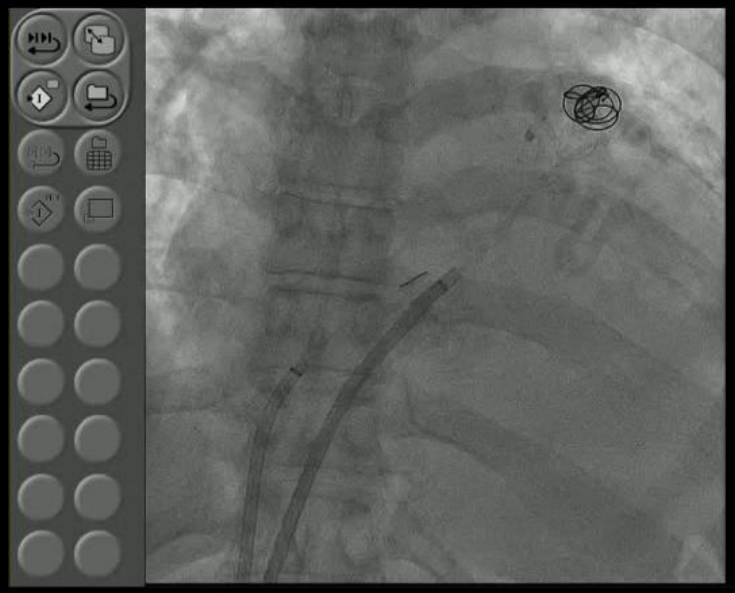
Sean.mazer@lovelace.com, cell 505-401-6224

NEW MEXICO Heart Institute
TRUST US WITH YOUR HEART

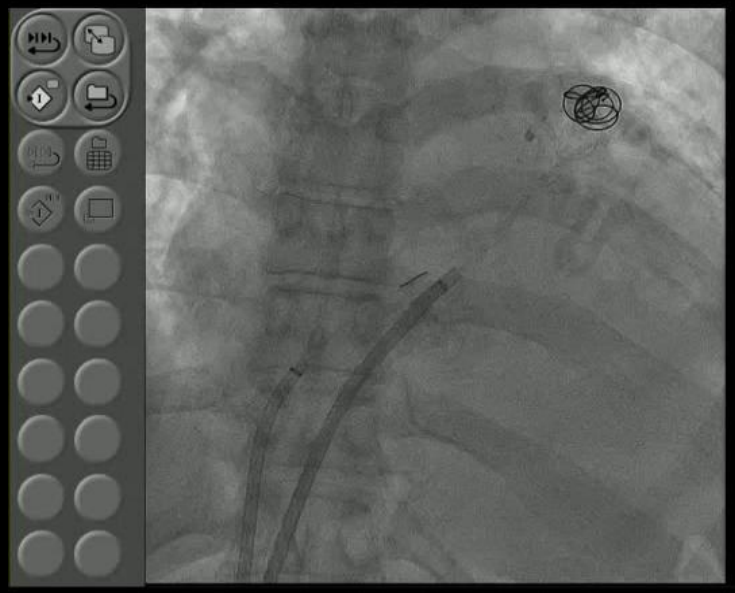






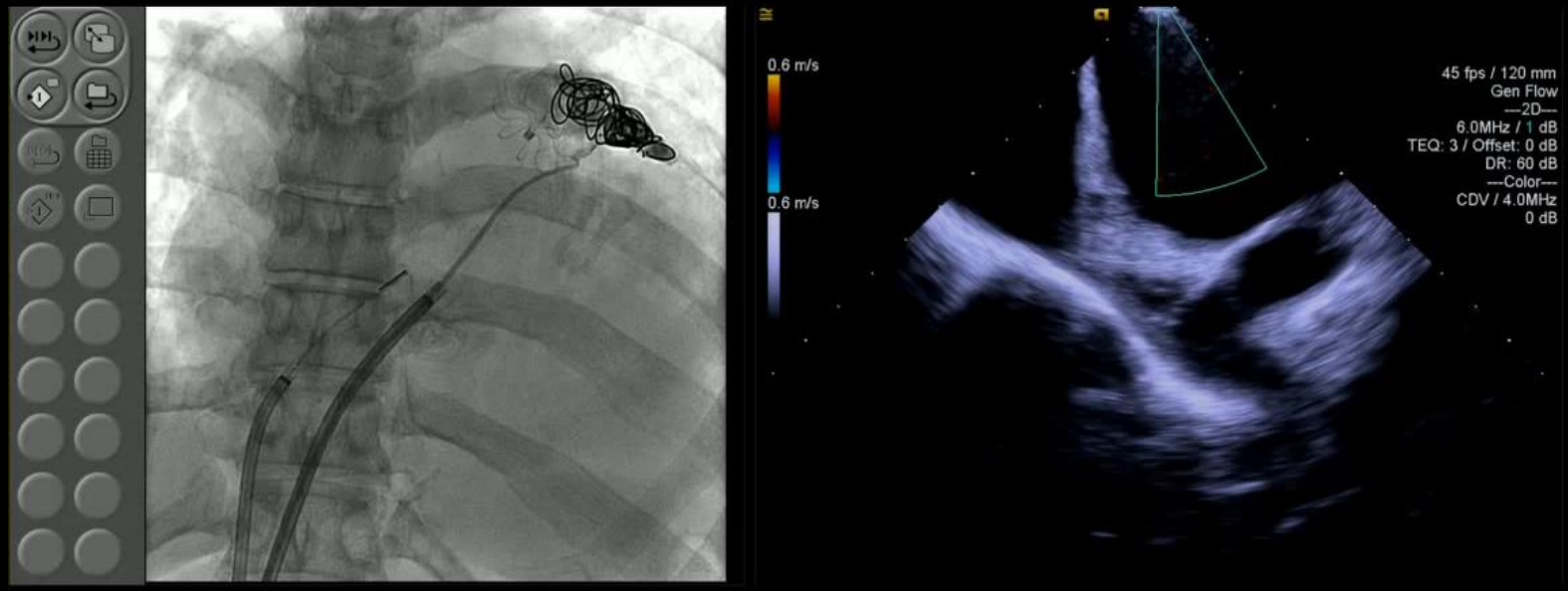


NEW MEXICO
Heart Institute
TRUST US WITH YOUR HEART



NEW MEXICO
Heart Institute
TRUST US WITH YOUR HEART

NEW MEXICO
Heart Institute
TRUST US WITH YOUR HEART



NEW MEXICO
Heart Institute
TRUST US WITH YOUR HEART