

Latest Treatments for Irregular Heartbeat

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AFib Feels Like...



...DRUMS
POUNDING
IN MY CHEST.



...THUNDER
RUMBLING
IN MY CHEST.



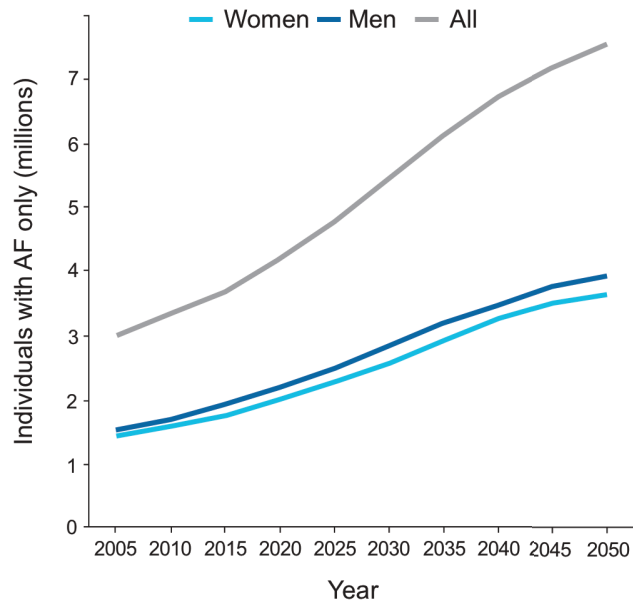
...FISH
FLOPPING
IN MY CHEST.

Atrial Fibrillation (A Fib)

- Normal heart beat 60-120 bpm
- A Fib – Atria (upper chambers) beat at up to 300 bpm

Atrial Fibrillation

- **3.3 million** people in US have A Fib
- Prevalence
 - By age 65 y → **8%**
 - By age 80 y → **25%**
- Increases risk of stroke **5 times**



¹Naccarelli GV, et al. *Am J Cardiol*. December 2009;104(11):1534-1539.
²Miyasaka Y, et al. *Circulation*. July 2006;114(2):119-125.

Types of atrial fibrillation

- Paroxysmal (comes and goes, <7 days)
- Persistent (comes and goes > 7 days)
- Permanent (here to stay)

Risk factors for Afib

- Age > 60 y
- Diabetes
- Heart problems:
 - High blood pressure,
 - Structural heart disease (valves, congenital)
 - Coronary artery disease
 - Congestive heart failure
 - Prior heart surgery

Risk factors for AFib

- Thyroid disease
- Lung disease (COPD, sleep apnea)
- Excessive alcohol use
- Smoking (ARIC study – risk x 2)
- Endurance exercise

Symptoms of A Fib

- >50% patients have no symptoms
- Fatigue/lack of energy (most common) (“old age”)
- Palpitations (irregular/fast/slow)
- Shortness of breath
- Dizziness
- Chest discomfort

A Fib and stroke

- Blood pools
- Blood clots
- Blood clot from heart → brain → interrupt blood flow to brain → stroke
- 15 of 100 strokes caused by Afib
- 3 out of 4 strokes caused by Afib can be prevented

A Fib and Cardiomyopathy

- Untreated A Fib →
- Multiple signals get through AV node →
- Ventricles beat fast
- Heart is a muscle → gets tired
- Cardiomyopathy = weak heart muscle
- Congestive heart failure = symptoms

Diagnosis of A Fib

- EKG (snapshot)
- Long term monitors (Holter, Event, MCOT)
- Echocardiogram (Transthoracic or Transesophageal)

LINQ monitor



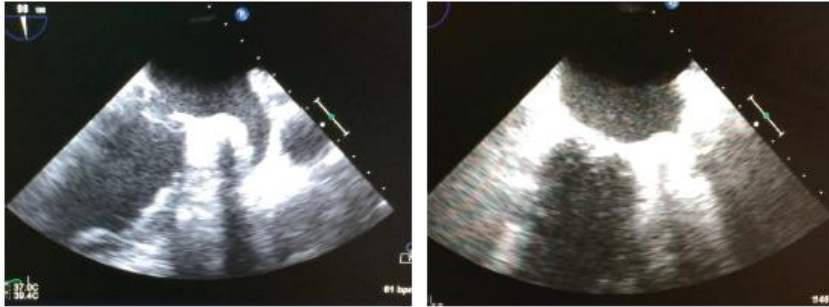
Treatment options for A Fib

- **3 pillars** of treatment
 - Prevent stroke
 - Rate control
 - Rhythm control
- Modify risk factors – **REVERSE AFIB TRIAL**

Prevent stroke

- Warfarin (Coumadin)
- Newer agents – Pradaxa, Xarelto, Eliquis
- Left atrial appendage
 - Remove left atrial appendage surgically (Atriclip)
 - Left atrial appendage occlusion (Watchman)





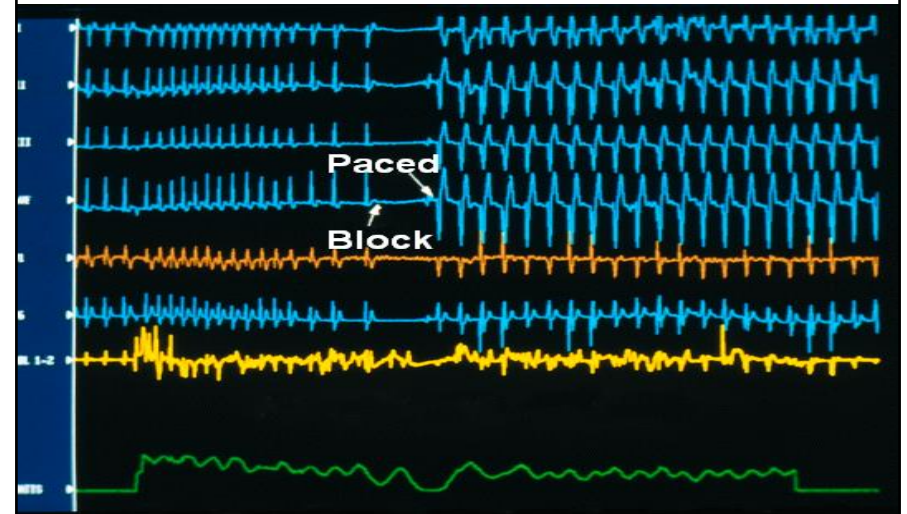
Figures 5A and 5B: Transesophageal echocardiogram images demonstrating exclusion of the left atrial appendage after deployment of the AtriClip.

Rate control

- Drugs
 - Beta blockers
 - Calcium channel blockers
- Pacemaker + AV node ablation

Pacemaker + AV node ablation

- Used for patients with permanent atrial fibrillation with fast heart rates
- Pacemaker placed previously or at time of procedure
- AV node ablation
- Treatment of last resort



Rhythm control

- DC Cardioversion (Effective 100%, 30% normal rhythm at 1 yr)
- Drugs (Effective ~ 40%)
 - Flecainide
 - Propafenone
 - Amiodarone
 - Dofetilide
 - Sotalol

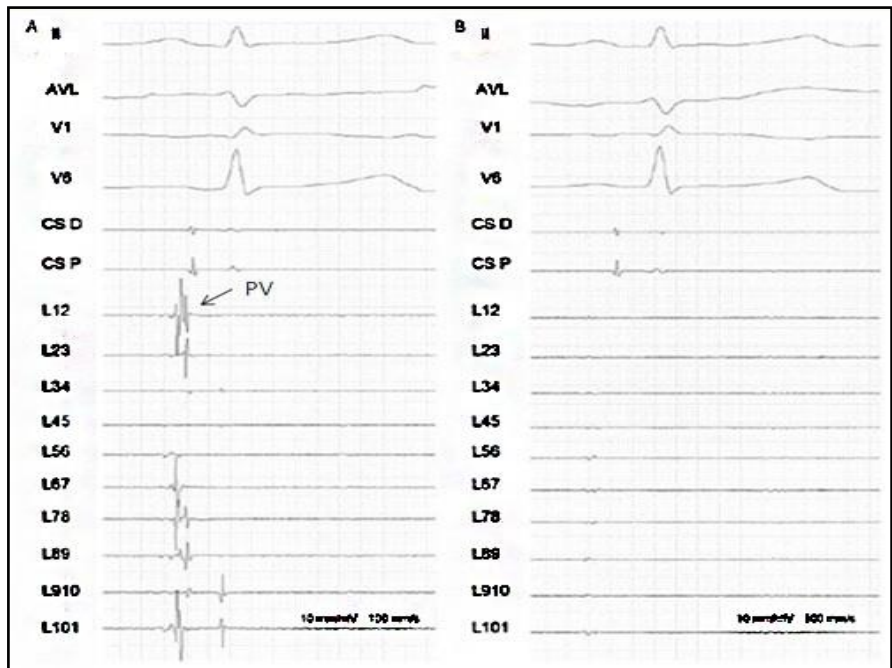
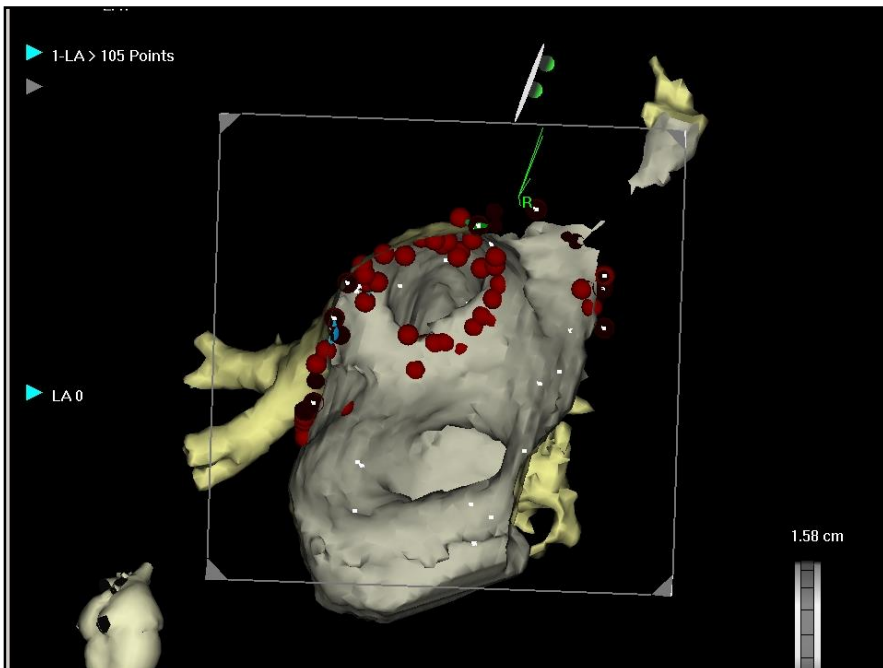
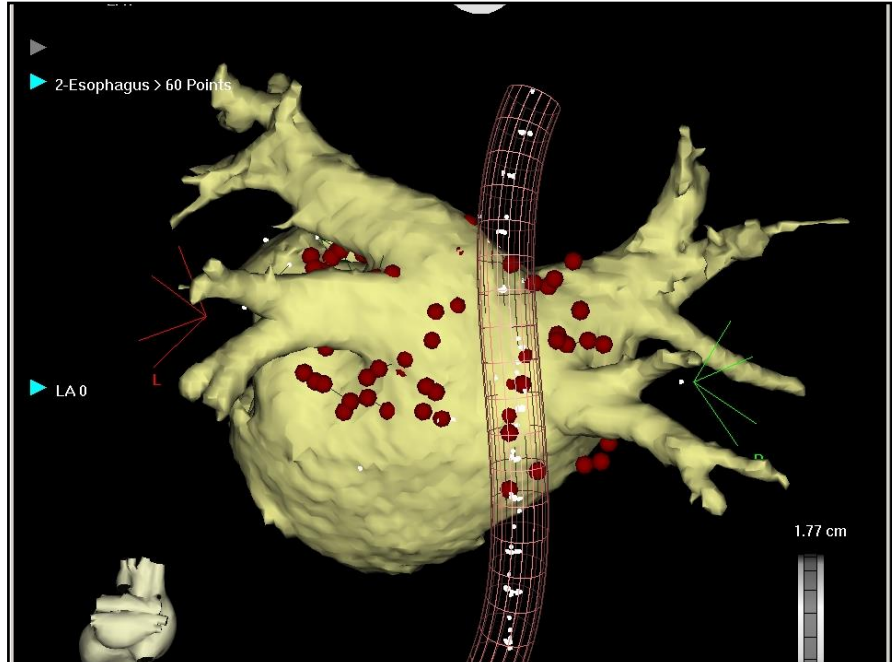
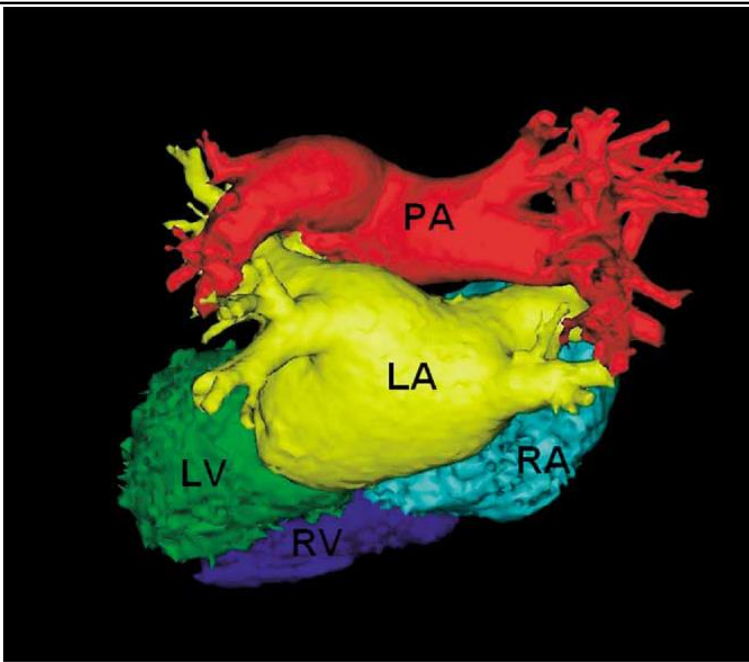
Rhythm control

- Ablation
 - Radiofrequency ablation
 - Cryoballoon ablation
 - Surgical ablation
- Effectiveness based on type of AFIB
- 70-85% success rate for paroxysmal AFIB

- Catheters – narrow, flexible plastic tubes are inserted into veins through a site in the groin.
- Catheters are directed to the heart using fluoroscopy (live X-Rays).
- Once the catheter reaches the heart, electrodes along the catheter gather data and a variety of electrical measurements are made. The data pinpoints the location of the faulty electrical site.

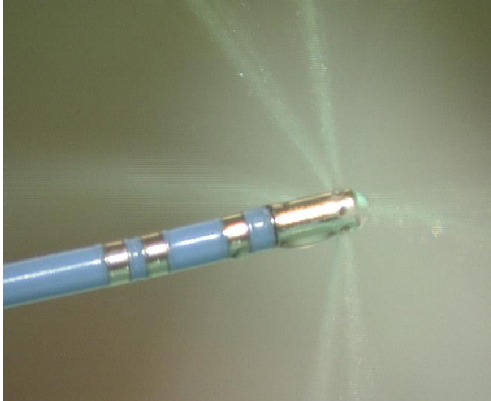
CT integration

- Integration of 3- dimensional CT image with the “GPS like” system.
- Allows anatomically accurate ablation in complex ablation procedures like atrial fibrillation ablation



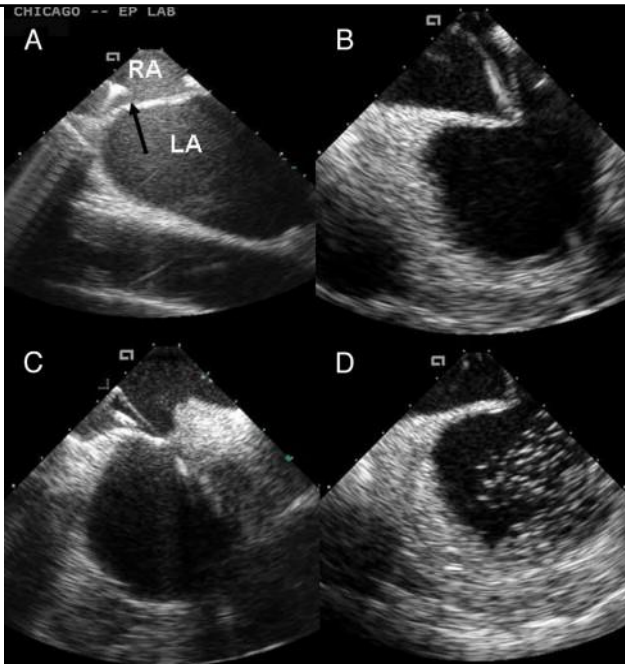
Irrigated ablation catheter

- Allows precise ablation in the left side of the heart while reducing risk of stroke



Intracardiac echo

- Small ultrasound probe placed inside the heart
- Helps direct ablation procedures



Cryo-balloon ablation