

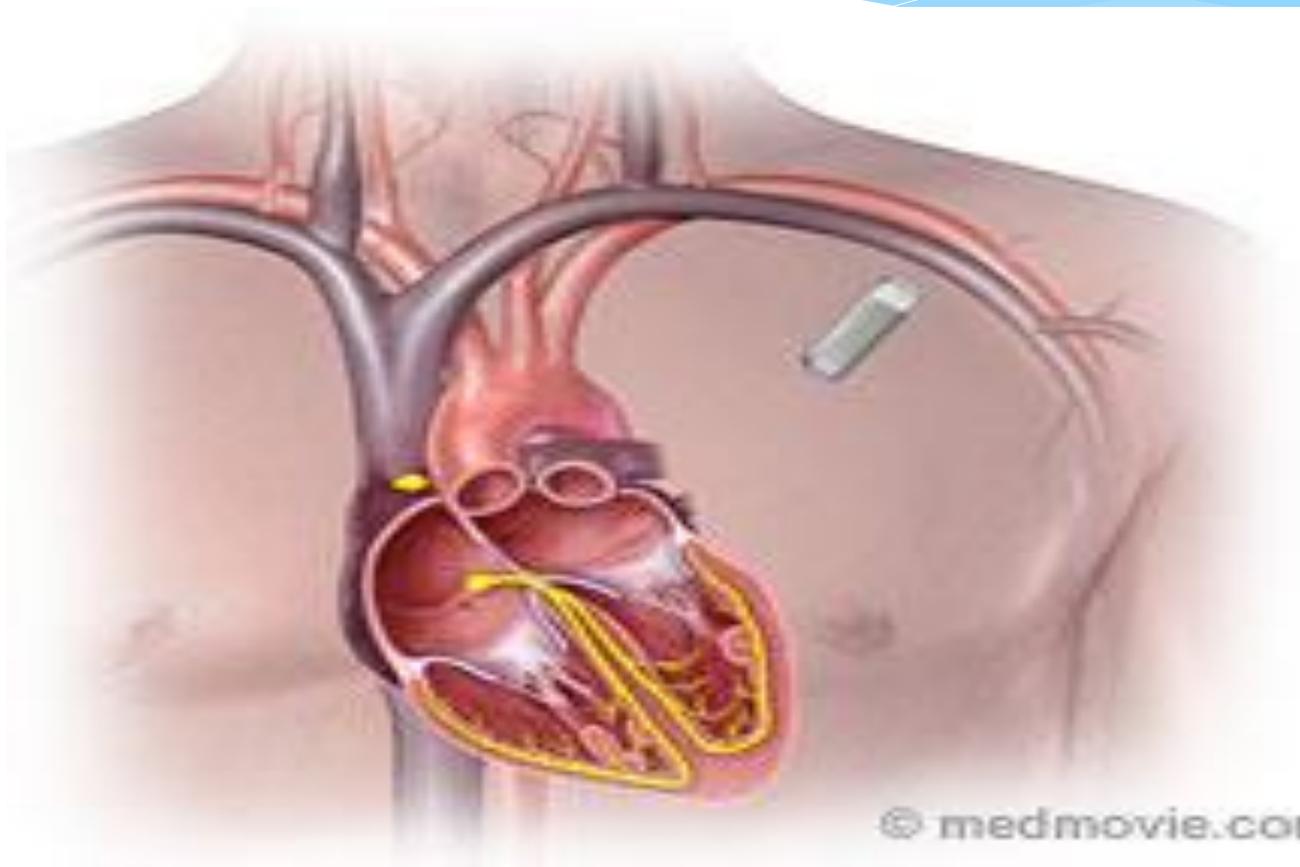
New Cardiac Technologies

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What's New in Cardiac Care?

- * Bigger is not always better: the new smaller Loop recorders
- * First we burned and now we freeze (sometimes!): Cryoablation for Dysrhythmias
- * A look into the inside of coronary arteries: IVUS and FFR how its used
- * Bio absorbable stents: You don't take it to the grave any longer!

Implantable Loop Recorders



Indications

- * Syncope
- * Seizures
- * Palpitations
- * Lightheadedness
- * Dizziness
- * Suspected abnormal heart rhythms

Implant Technique

- * Small incision made to left of breast bone in EP lab or Physicians office under local anesthesia
- * Pocket created under skin, no leads or wires are inserted into heart. New recorders are **INJECTED** into a small nick in the skin

Implant Technique

- * Procedures takes 10-15 minutes
- * Patient goes home same day without restrictions
- * May be instructed to use a handheld “activator” device to use during symptoms

Delivery tool for Reveal



Close-up of the Reveal LINQ ICM delivery tool.



**Not visible in
most
patients!**

Cryoablation

What is it?!

- * A process using extreme cold (cryo) to destroy or damage cardiac tissue
- * Interrupts the electrical pathways that interfere with normal flow of hearts electrical pathway

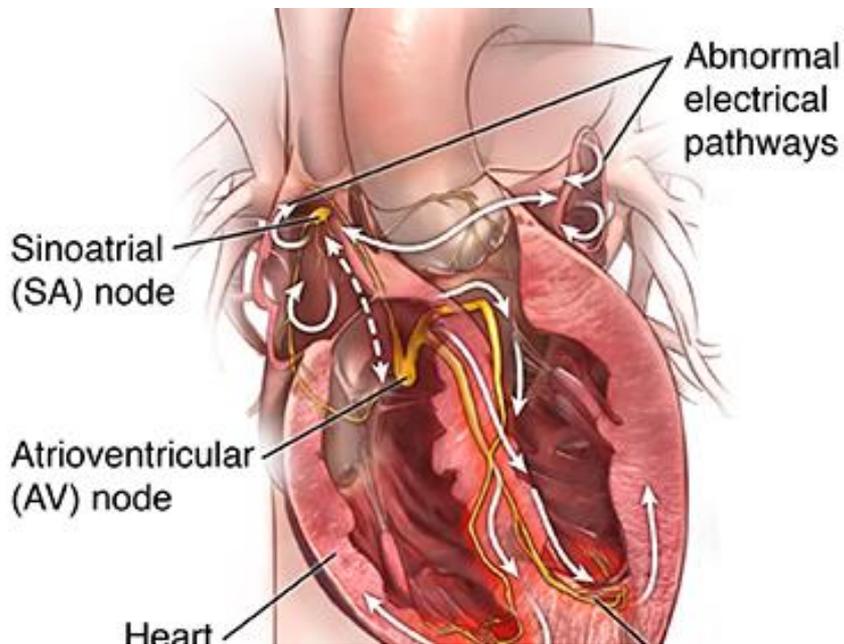
Cryoablation

What is it?!

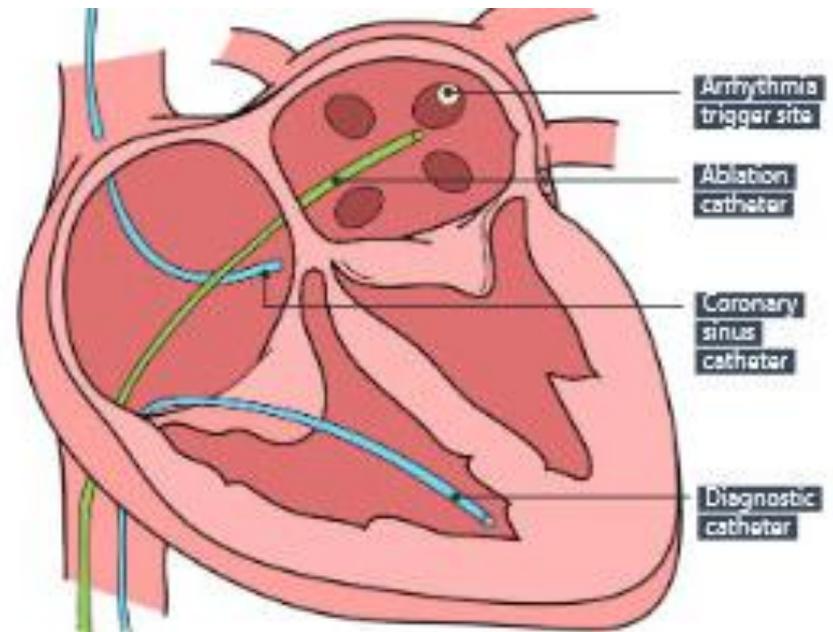
- * A liquid form of nitrous oxide is delivered through a catheter directed by the electrophysiologist to the precise pathway identified
- * The tip of the catheter is as low as -75 degrees C

Its all in the Heart

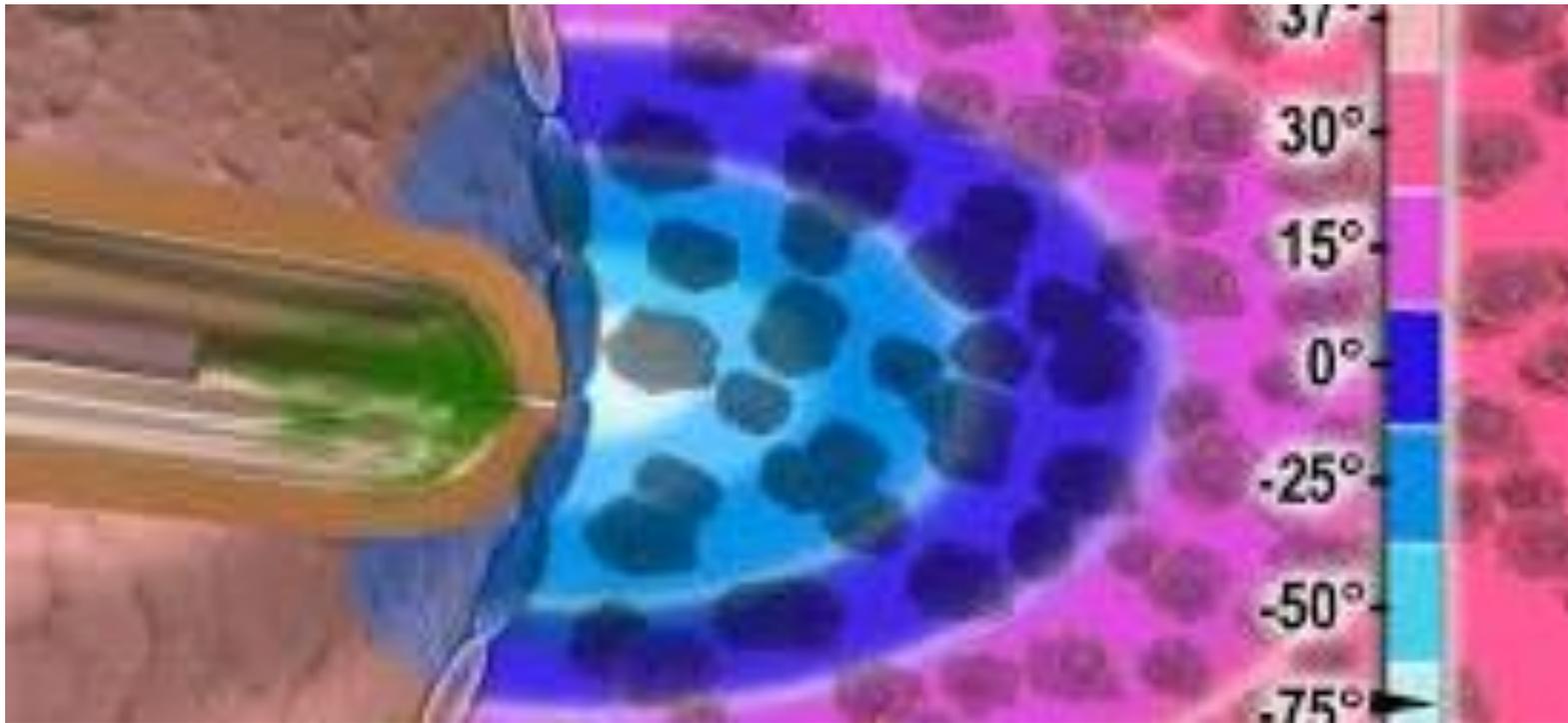
Electrical System



Catheter Placement



Cryoablation



Difference between Cryo and Radiofrequency ablation

- * Cryo uses cold
- * Less likely to cause blood clots
- * Takes several minutes to do a treatment “lesion”
- * Cryomapping can test spot first to determine efficacy, tissue can be rewarmed
- * Minimizes risk of damage to critical structures

Difference between Cryo and Radiofrequency ablation

- * Radiofrequency uses heat
- * Well established success rate
- * Takes 60 seconds to make a “burn”
- * Doesn't allow testing; once tissue burned it stays burned
- * Higher chance of needing permanent pacemaker

Cryoablation uses

- * Atrial arrhythmias including
 - * Atrial fibrillation (only in open heart institutes)
 - * Atrial flutter
 - * AV node reentry tachycardia
 - * All super ventricular tachycardia
 - * Ventricular tachycardia

A look inside coronary arteries

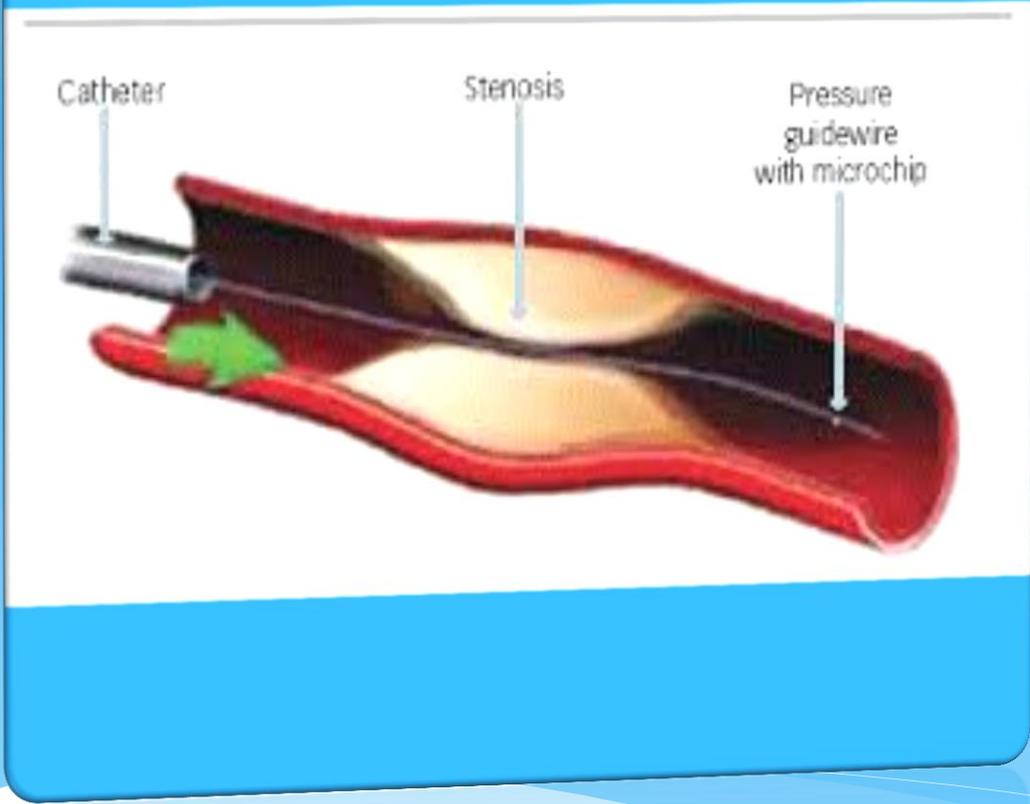
- * FFR-Fractional Flow Reserve
- * IVUS- intravascular ultrasound

FFR

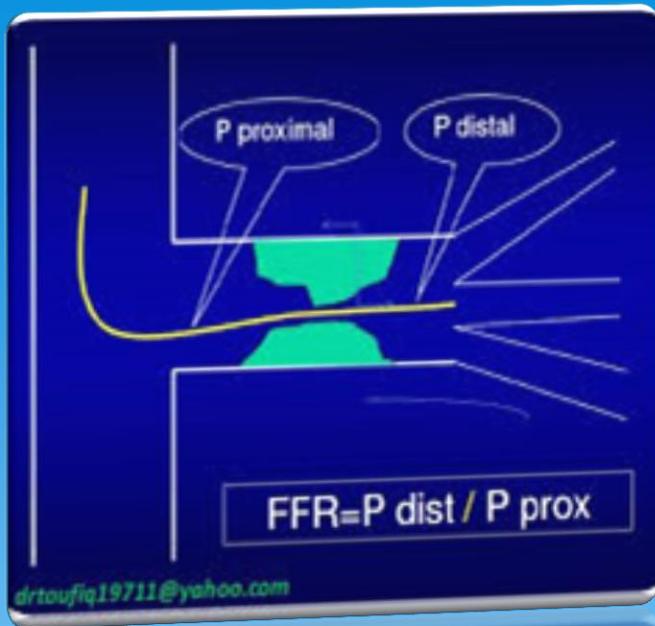
- * Measures blood pressure and flow through a specific part of a coronary artery
- * Helps the Interventional Cardiologist make a decision about whether a stenosis seen on x-ray is significantly obstructing blood flow

FFR (cont.)

- * A FFR measurement of Less than 0.80 corresponds with inducible ischemia and will require intervention
- * Measurements above 0.80 can be treated with medical therapy



FFR



FFR is ratio of maximum blood flow distal to a stenotic lesion to normal maximum flow in the same vessel

Wire is inserted passed the lesion. Tip of wire contains sensor.

Measure the blood flow at “normal” state.

Give adenosine to induce maximal blood flow (similar to stress test)

Measure blood flow at peak hyperemia

Benefits to FFR

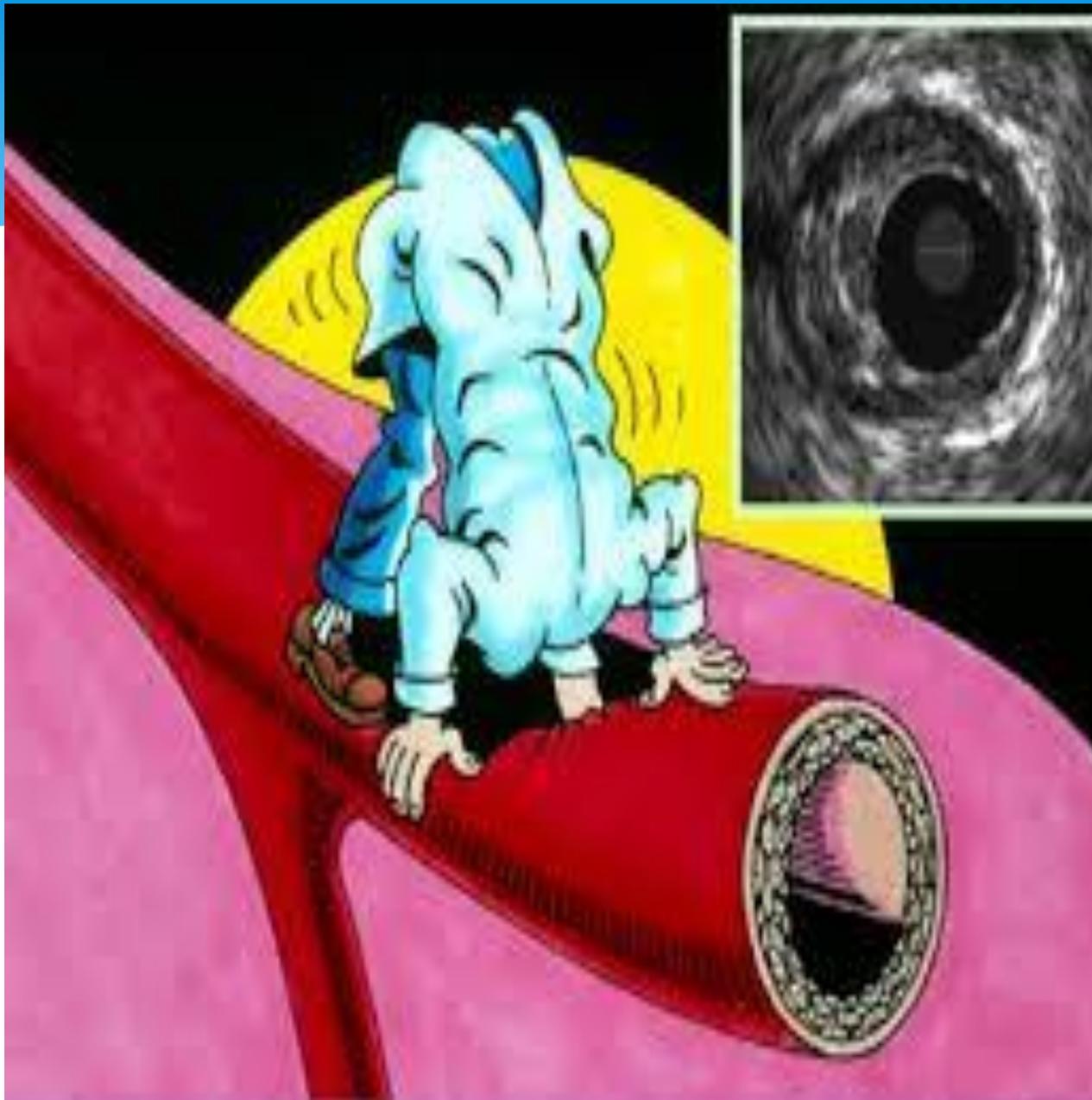
- * Fewer “unnecessary” placement of stents
- * After one year in the FAME study death, nonfatal myocardial infarction and repeat revascularization were lower when using FFR. Hospital stays were slightly shorter (3.4 vs 3.7 days) and procedural costs were less (\$5,332 vs \$6,007)

IVUS

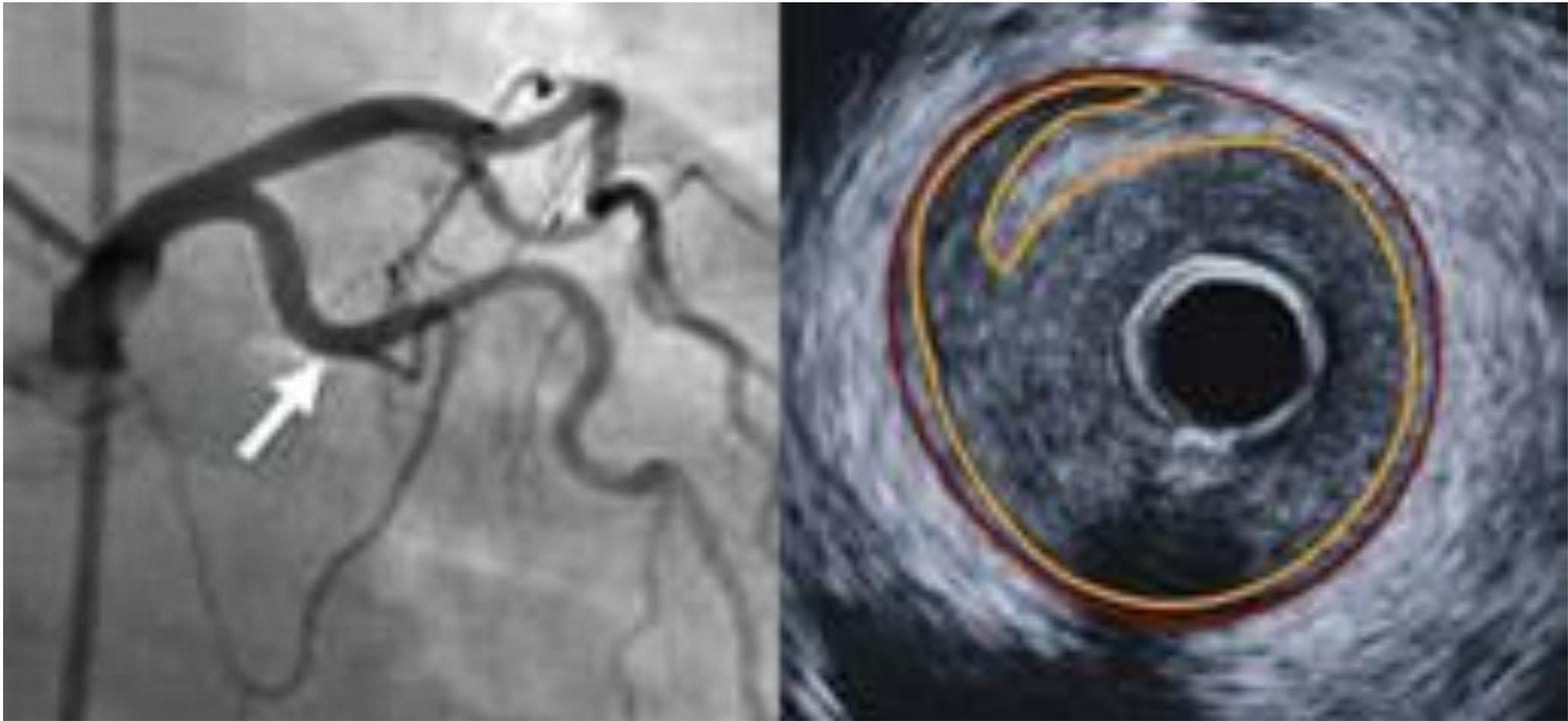
- * Coronary catheter with a miniature ultrasound probe on tip.
- * Used to determine the amount of plaque present on the arterial wall and measure the amount of lumen narrowing.

IVUS (cont.)

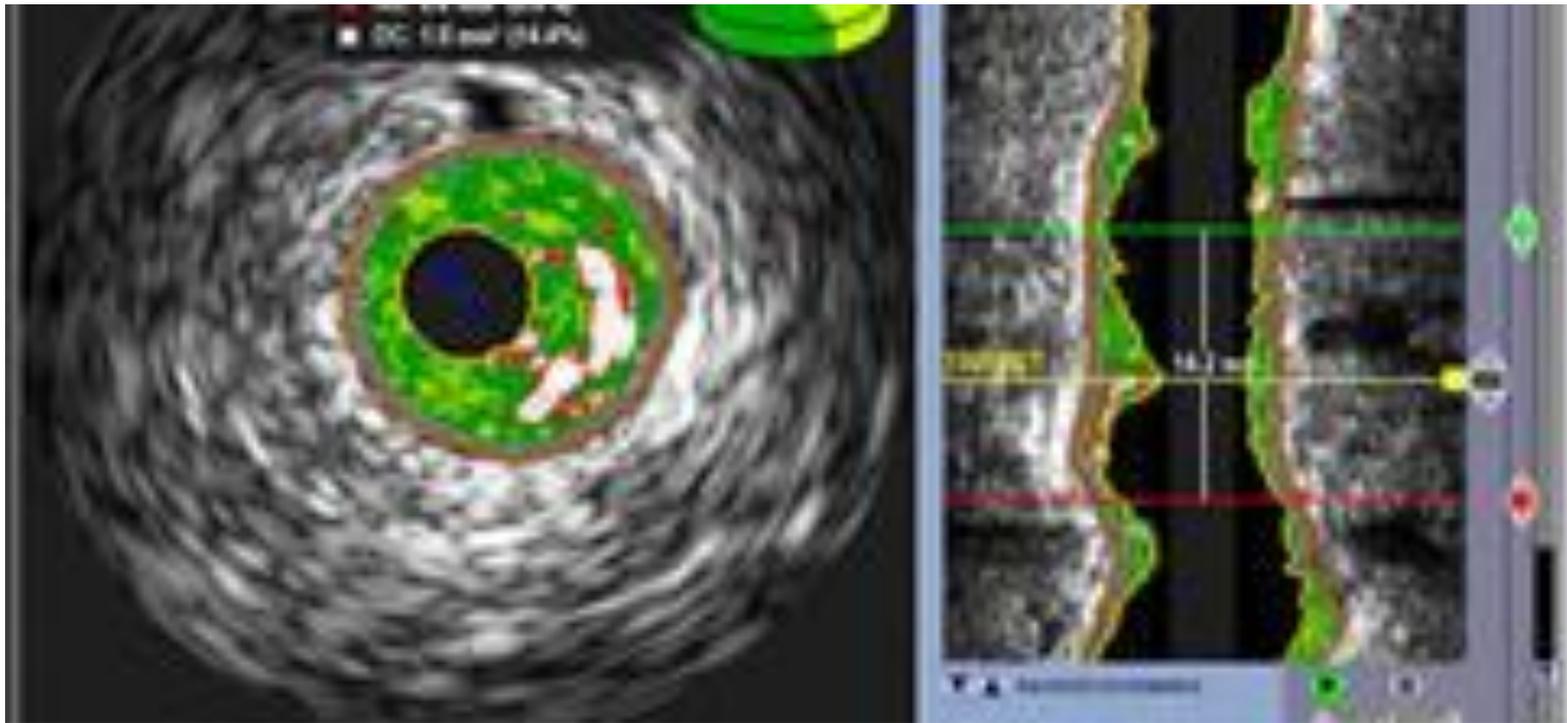
- * IVUS allows interventional cardiologist to “see” the inner wall of the artery and use the information to guide decisions on size and length of stent to be used
- * Post stent deployment shows if all struts are flush against wall to prevent turbulent blood flow



Normal looking circumflex artery by x-ray on left, plaque disruption that caused heart attack on same artery via IVUS imaging on right



Crosssectional image and reconstruction



Bioabsorbable Stents

- * FDA approved use of ABBOTT Absorb GT1 on July 5, 2016
- * Made with polylactic acid, same material used in some absorbable sutures, surgical screws & plates
- * Contraindicated for patients allergic to polylactic acid or everolimus the drug coating, and those who are unable to use long term aspirin and antiplatelet medications such as plavix or brilinta

Abbott Absorb Stent



The Abbott Vascular Absorb BVS

Benefits

- * Bare Metal stents have risk of late thrombus up to years after implantation
- * Bioabsorbable stents absorbed by body over period of 3 years and reduce risk of late thrombus
- * Long term use of dual antiplatelet therapy reduced, less concern about stopping therapy for noncardiac surgery

Benefits (cont.)

- * Easier to use up and coming Cardiac CT and MRI technology, bioabsorbable stents do not obscure the vessel as much as the metal stents
- * Metal stents interfere somewhat with the vessel remodeling that occurs after a heart attack and stenting, Bioabsorbable less likely to interfere with body's own healing

Benefits (cont.)

- * Bioabsorbable stents support vessel for healing and then disappear
- * Metal stents limit the vessels ability to constrict and relax
- * Multiple metal stents in arteries make future coronary bypass grafting more difficult

Risks-We are still studying



THANK YOU!



"WELL I'LL BE...LOOK AT THIS...THERE'S A SONG IN HIS HEART!"