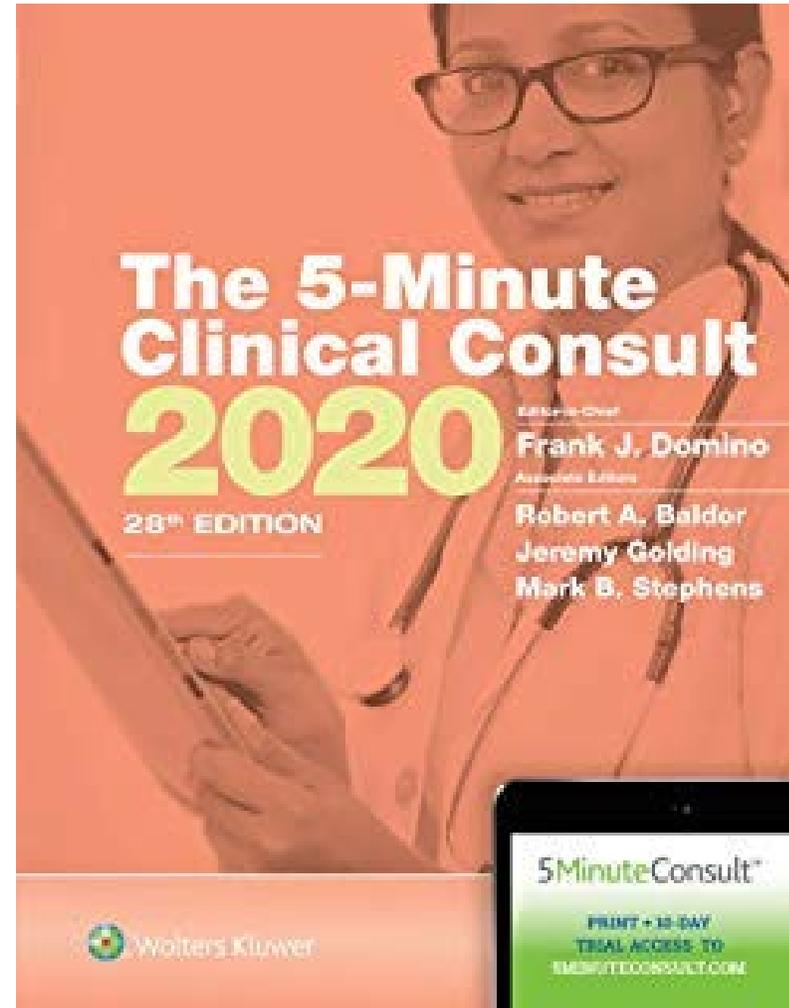


Supraventricular Tachycardia—(1)5 min consult



William L. Discepolo, M.D.
Cardiac Electrophysiology
Pomona Valley Hospital



Disclosures



- **None**

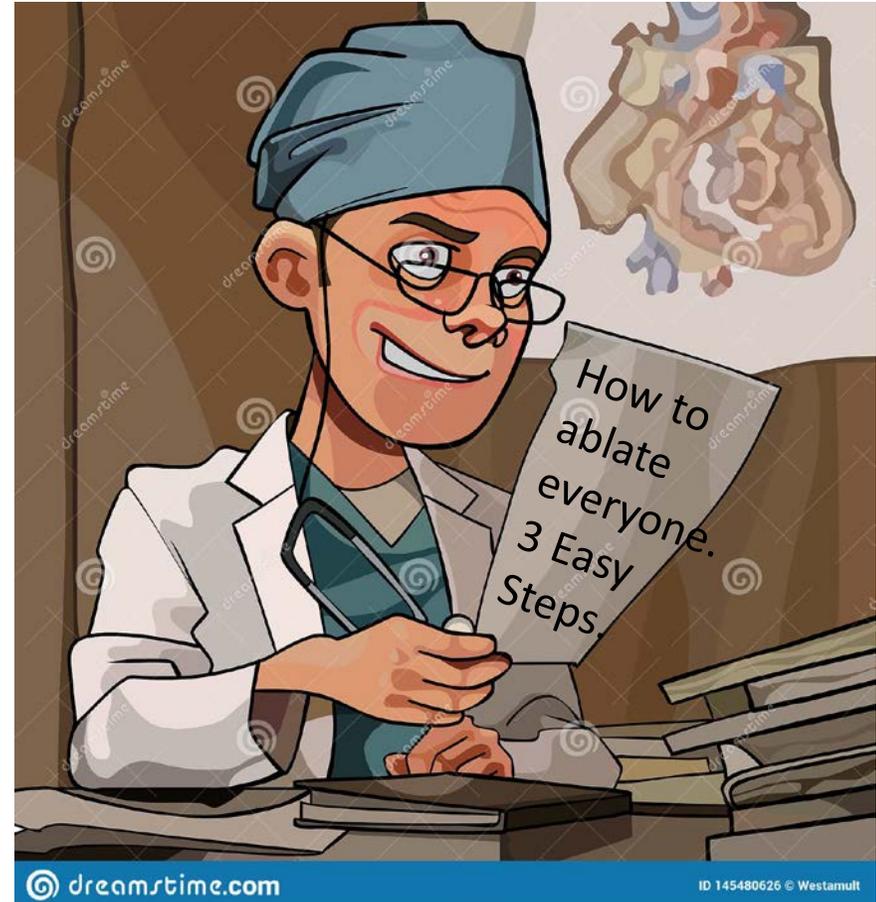
Case

- 77 Y/o female
- PHM: HTN, TIA, Rapid HB's
- ER Visit and Admission OSH after c/o CP, dyspnea, Tachycardia
- Tachycardia was treated in ER medically and she was admitted for a Troponin 0.34
- EKG
- Head CT: Normal
- Echocardiogram: LVEDD 44, LA 34, LVEF .60 Trace TR
- Left heart catheterization: Right Dominant, LVEF 0.80, LVEDP14, 10% luminal irregularities

The Consultation



- Careful review of records
- FIND & Review: ECG, Teletstrip, Holter, Kardia strip, Applewatch/wearable...
- 4 ER visits +/- Multiple medications: BB, CCB
- Tachycardia stops with an injectable medicine that makes her feel bad



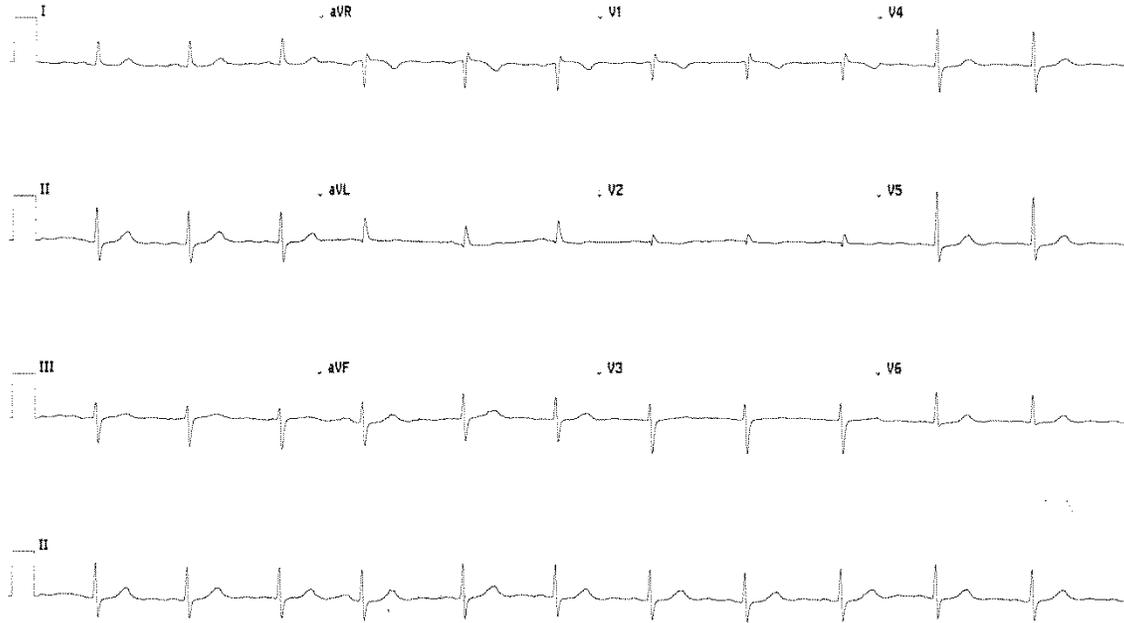
ECG: Baseline and Tachycardia



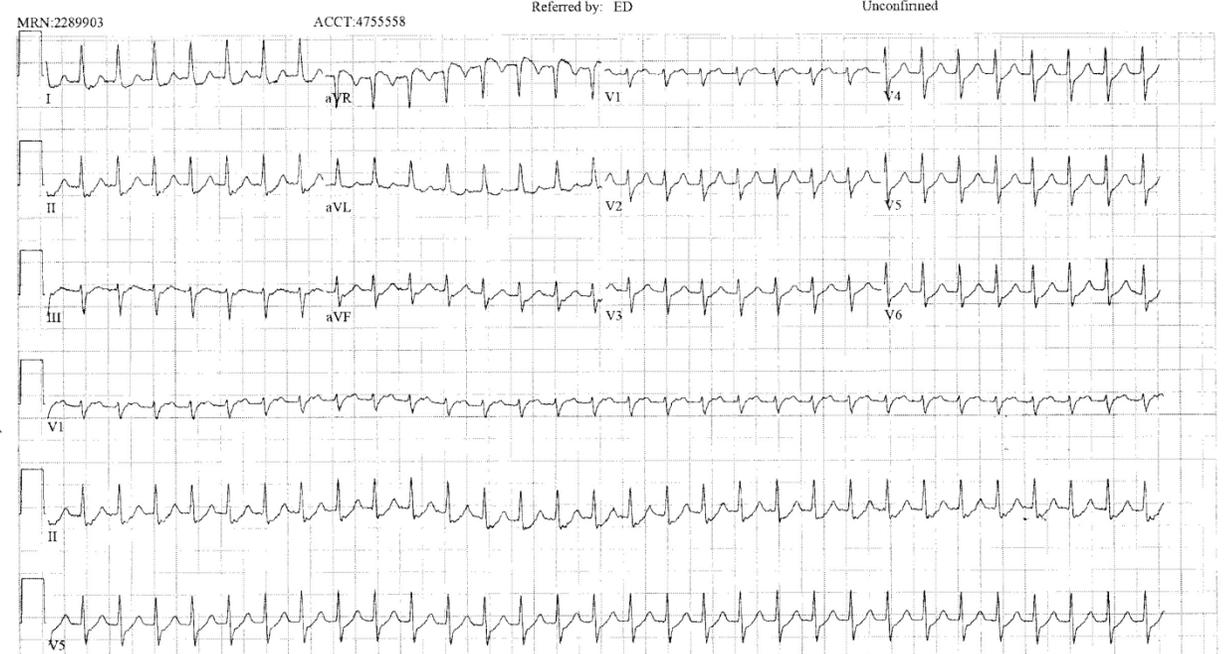
ID: DOB 09-Dec-1941
78yr. Female

Vent rate 71 BPM
PR int 179 ms
QRS dur 91 ms
QT/QTc 382/404 ms
P-R-T axes 2 2 53

INTERPRETATION
INCOMPLETE RIGHT BUNDLE BRANCH BLOCK (90+ ms QRS DURATION, TERMINAL R IN V1/V2, 40+ ms S IN I/aVL/V4/V5/V6)
BORDERLINE ECG
Reviewed by _____



Technician: EG
Test ind:



25mm/s 10mm/mV 40Hz 8.0 SP2 12SL 241 HD CID: 123

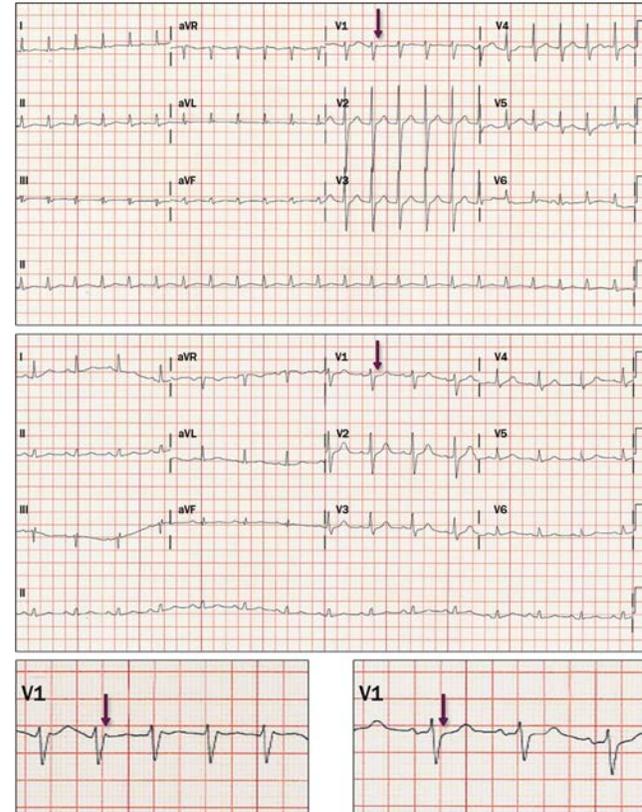
EID: EDT: ORDER: ACCOUNT: 4755558

Page 1 of 1

Paroxysmal Supraventricular Tachycardia



- Definition:
- Umbrella term to describe a tachycardia with A/V rates >100bpm originating from tissue above HIS bundle
- AT (focal/Multi), IST, Macroreentrant AT (AFL), JT, Accessory Pathway Mediated Tachycardias (AVRT) and AVNRT
- Generally EXCLUDE AF



SVT



- **Epidemiology**
- **Prevalence SVT: 2.29 per 1000 p**
- **Incidence SVT: 36 per 100000 py**
- **Women have 2x risk of men**
- **Middle-older aged favors AVNRT, younger balance of AVNRT and AVRT (favors AVRT)**
- **50,000 ER visits per year**



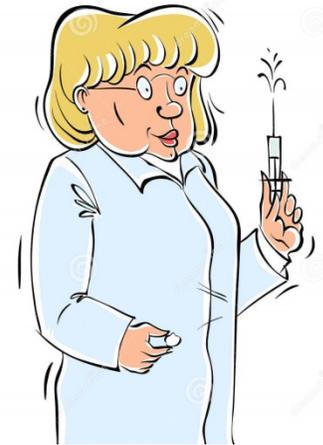
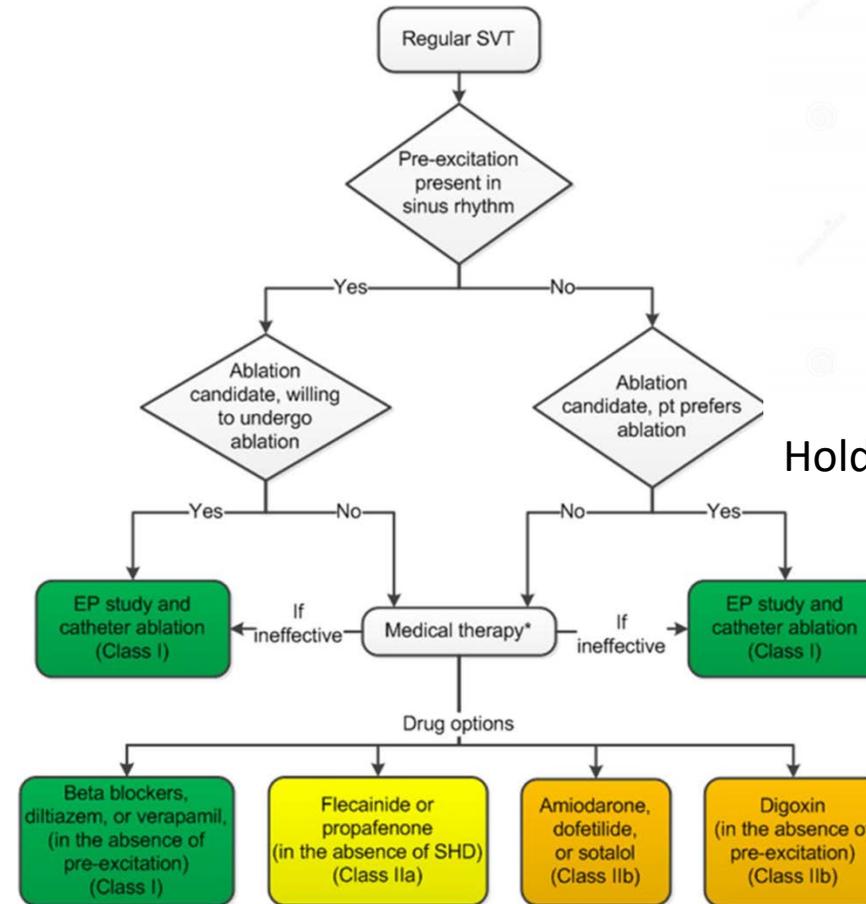
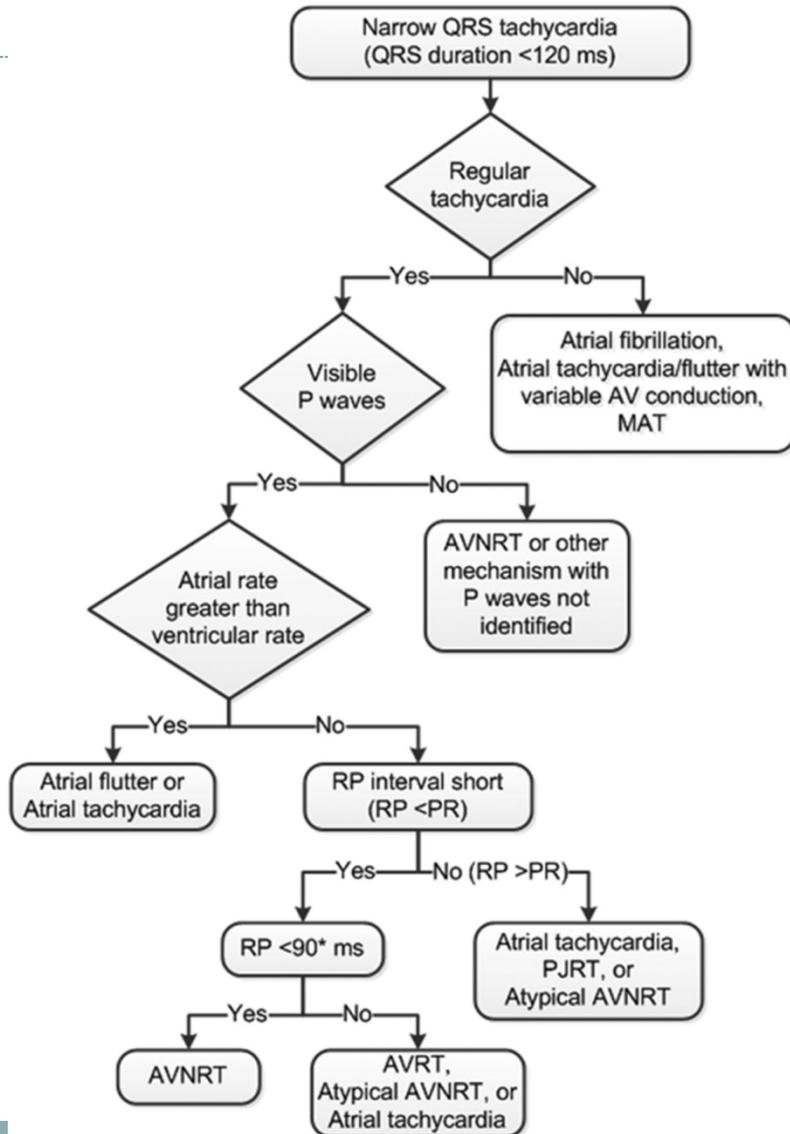
SVT



- Impact on QOL: varies on frequency, duration, and Sx at rest or only with exertion
- Documented SVT 38%
- Palpitations 22%
- Chest pain 5%
- Syncope 4%
- Afib 0.4%
- SCA 0.2%
- PSVT diagnosed as ANXIETY 54% pts

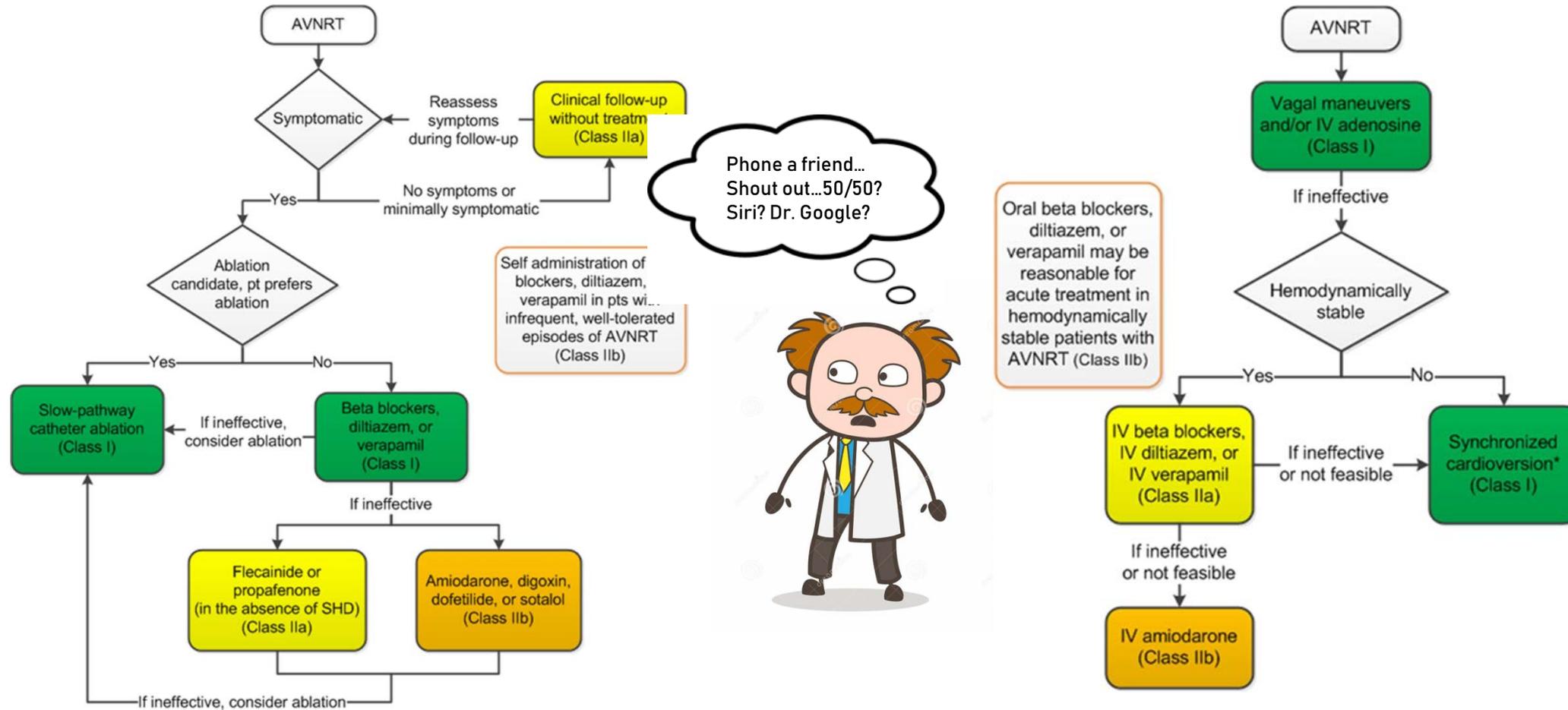


Medical Therapy for SVT (2015 Guidelines)



Hold still I can fix this...

Office Consultation vs. Acute Bedside Management



ACC/AHA Guidelines



ACC/AHA/HRS Guideline

2015 ACC/AHA/HRS Guideline for the Management of Adult Patients With Supraventricular Tachycardia A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society

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The Data Supplement files are available with this article at <http://circ.ahajournals.org/lookup/suppl/doi:10.1161/CIRC.0000000000000311/-DC2>. The American Heart Association requests that this document be cited as follows: Page RL, Joglar JA, Caldwell MA, et al. 2015 ACC/AHA/HRS guideline for the management of adult patients with supraventricular tachycardia: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. *Circulation*. 2016;133:e506-e574. doi: 10.1161/CIRC.0000000000000311.

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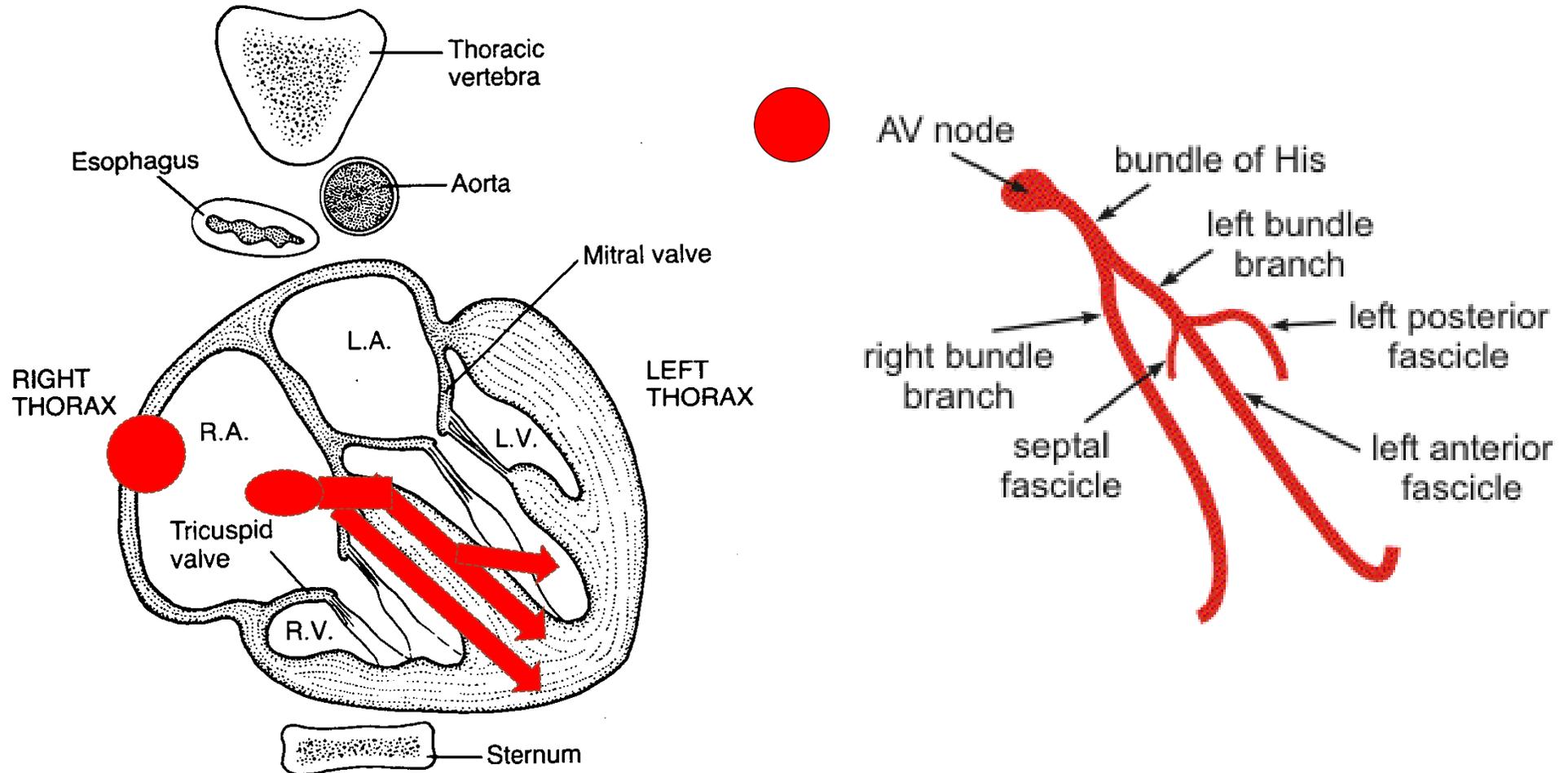
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(*Circulation*, 2016;133:e506-e574. DOI: 10.1161/CIRC.0000000000000311)

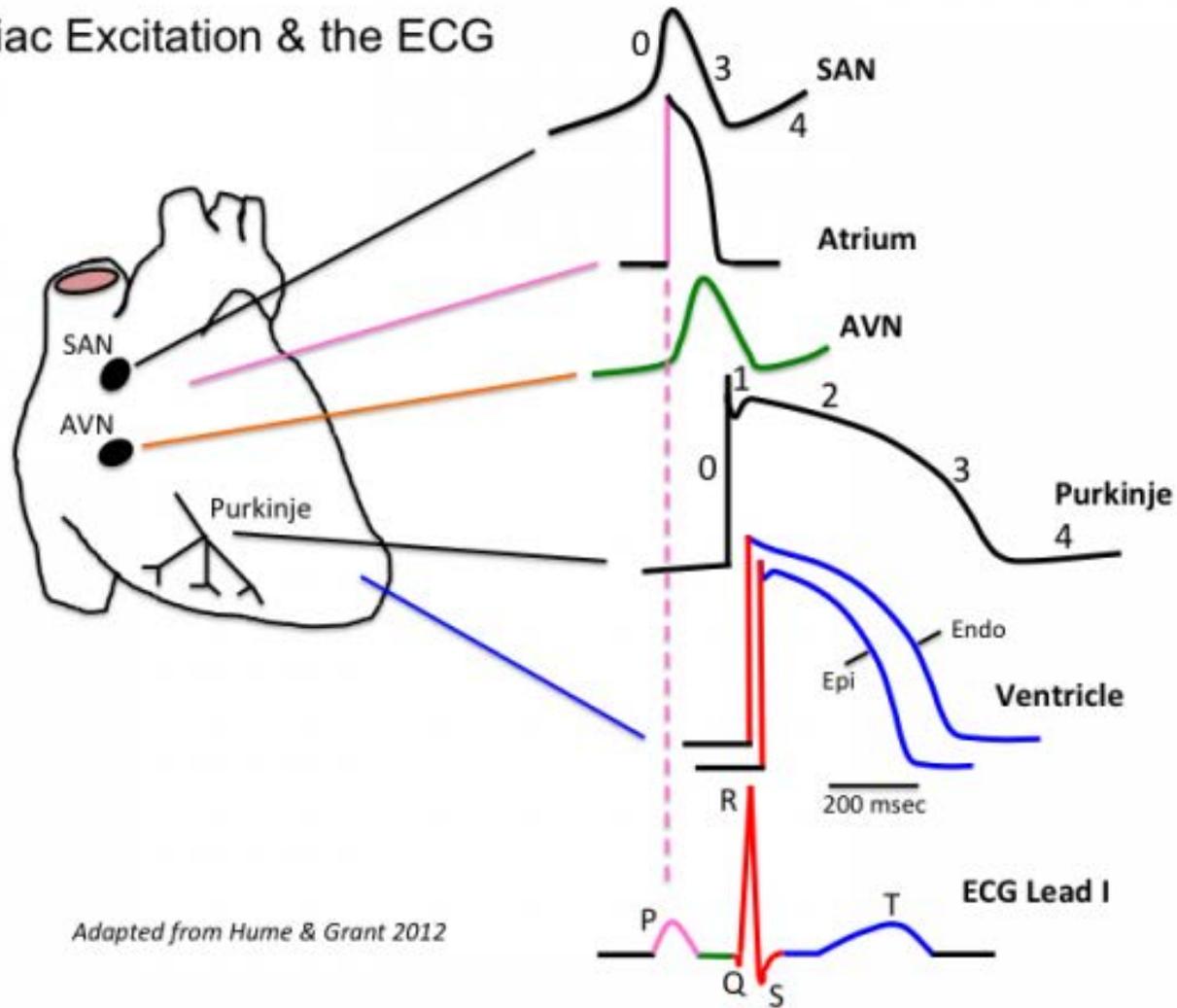
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Mechanical pump with a wiring diagram

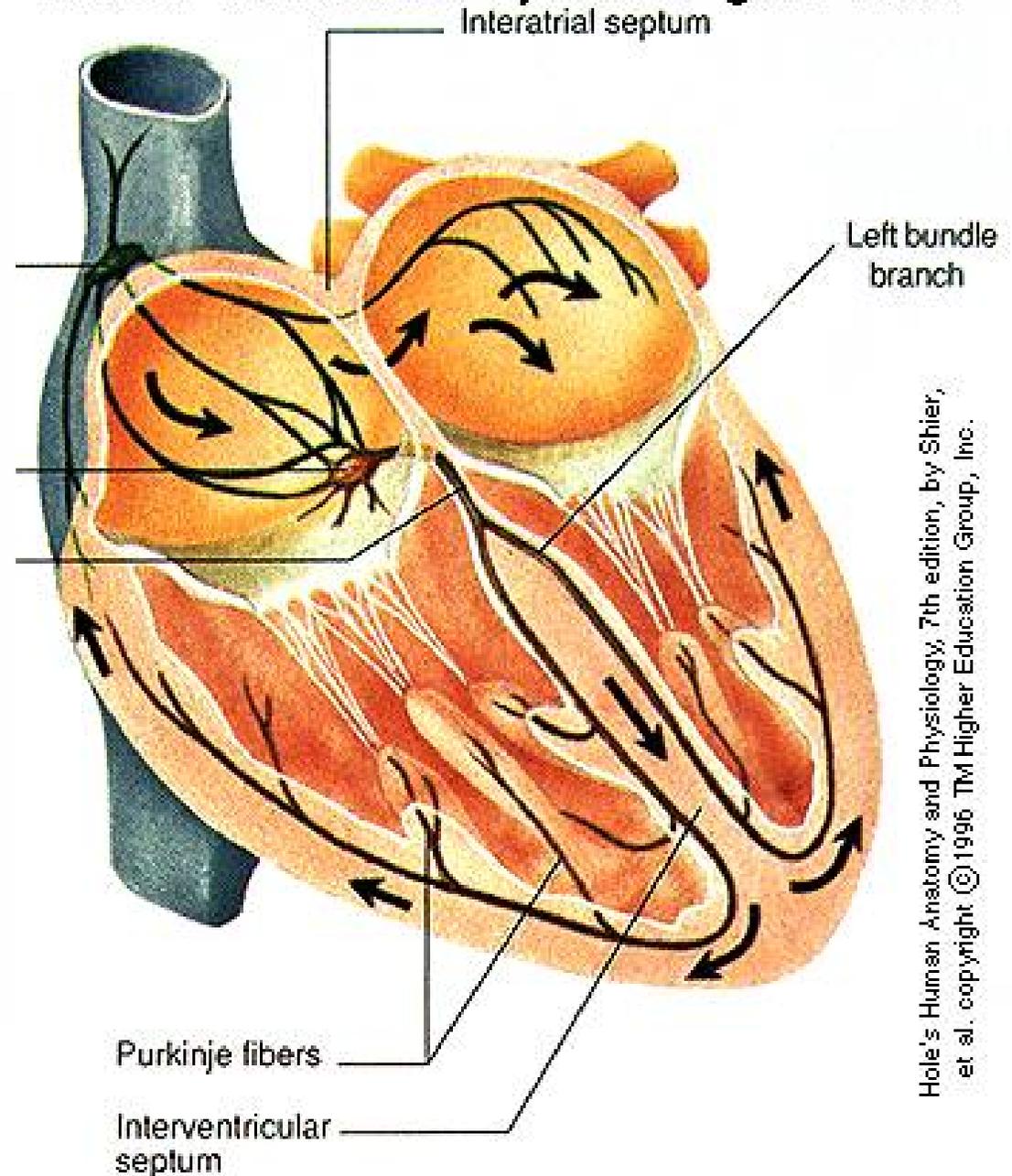


Cardiac Conduction System. Figure 15.19

Cardiac Excitation & the ECG



Adapted from Hume & Grant 2012

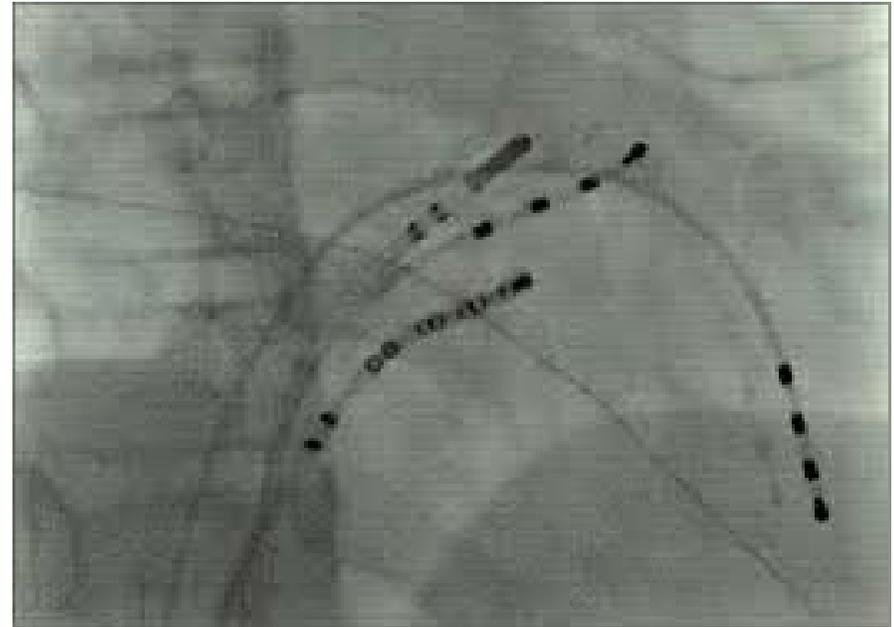


Hole's Human Anatomy and Physiology, 7th edition, by Shier, et al. copyright © 1996 TM Higher Education Group, Inc.

EP Study



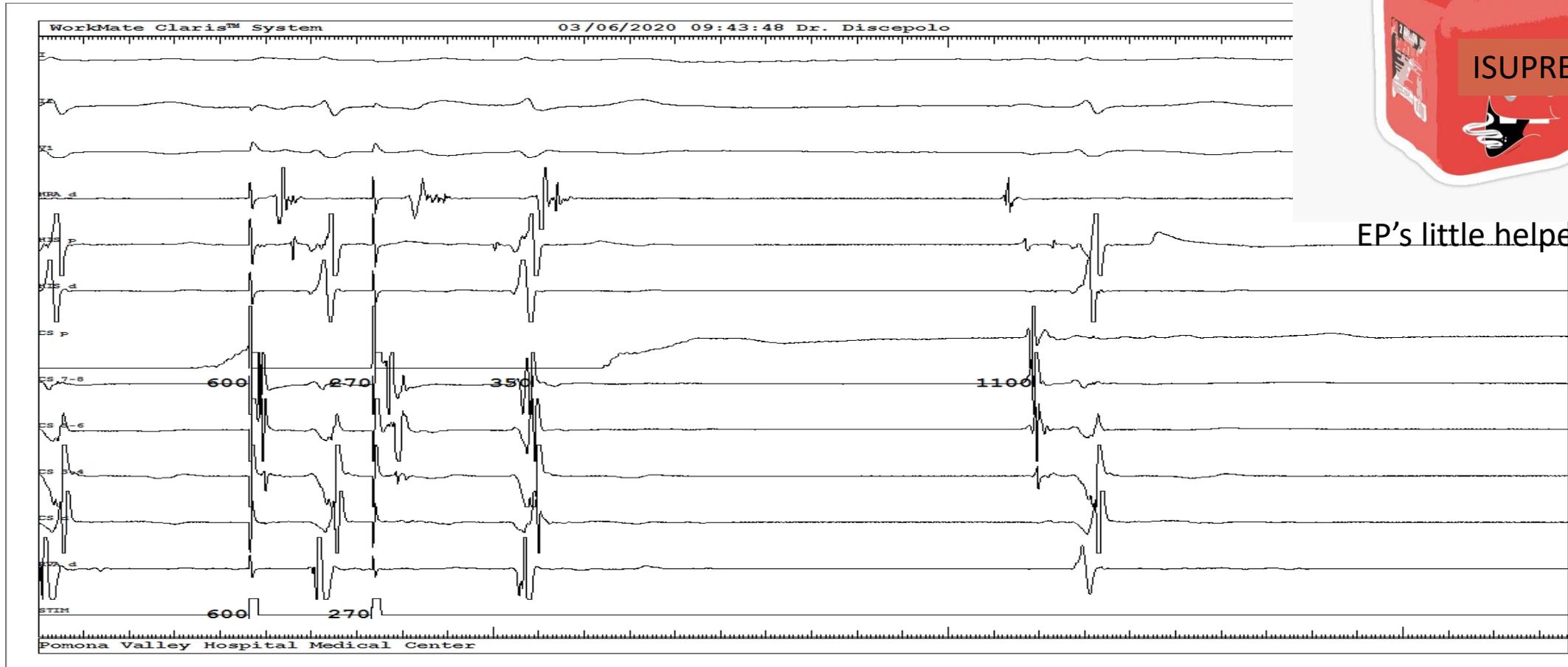
- NSR
- SCL 771, PR 177, QRSD 74, QT 324; AH 78, HV 40
- VAW 530
- VAERP 700/500
- AVN(FP)ERP 700/310
- Isuprel was given



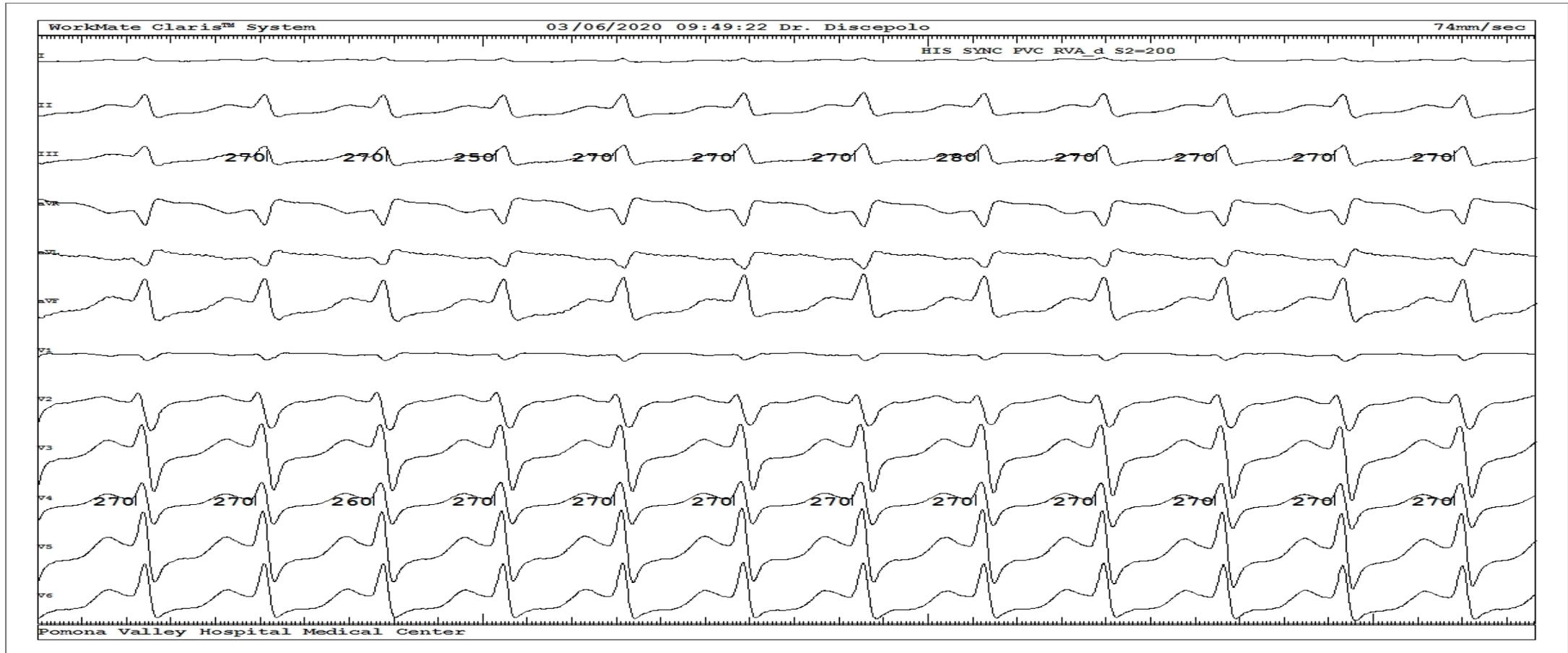
A clue!!



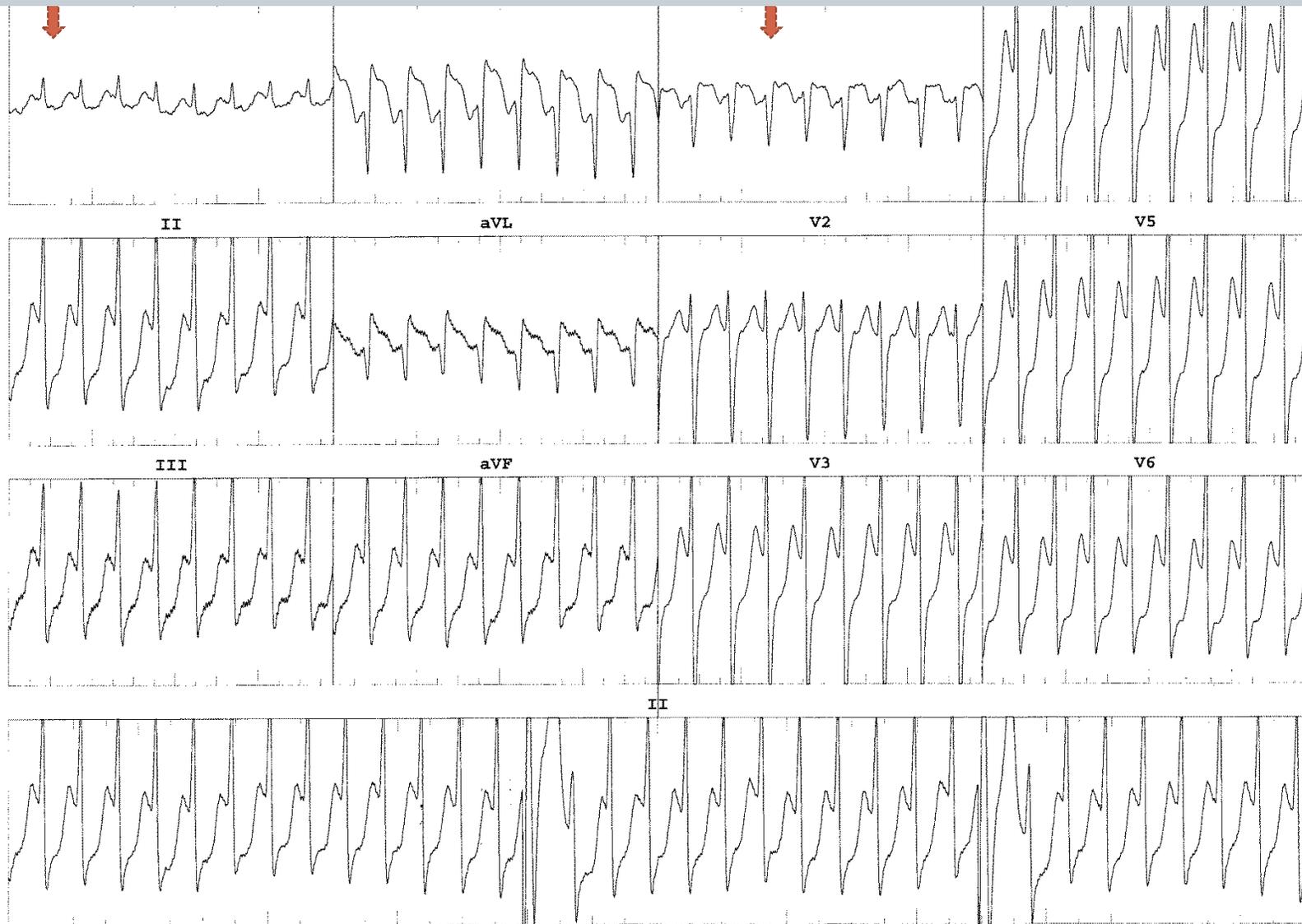
EP's little helper



Narrow Complex Tachycardia: TLC 270 (222 BPM) (No Pwave)



Basics are essential

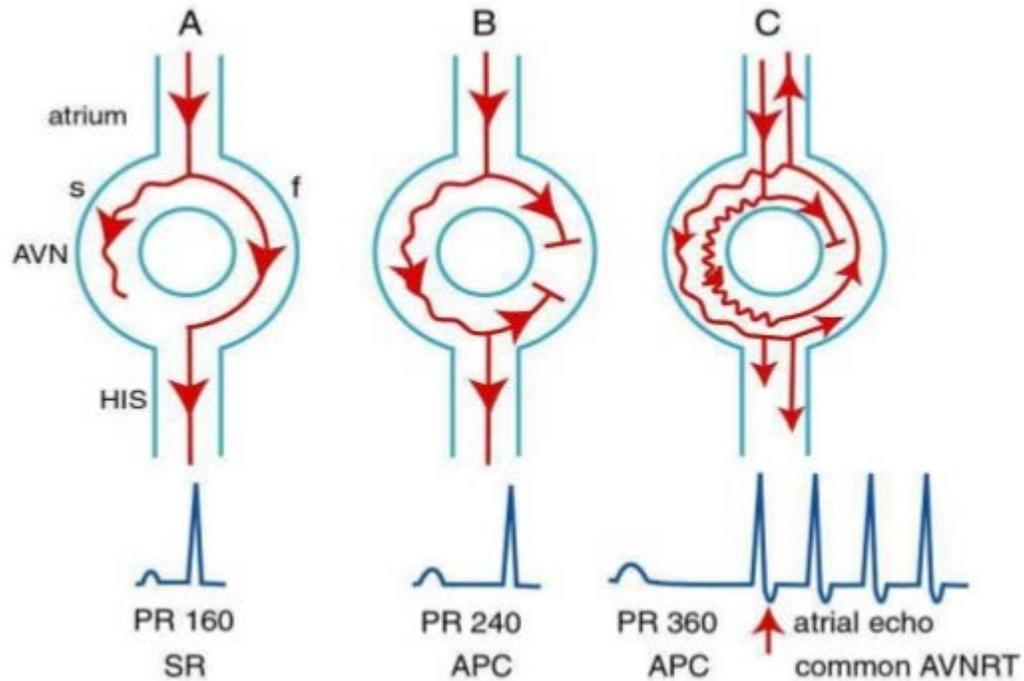


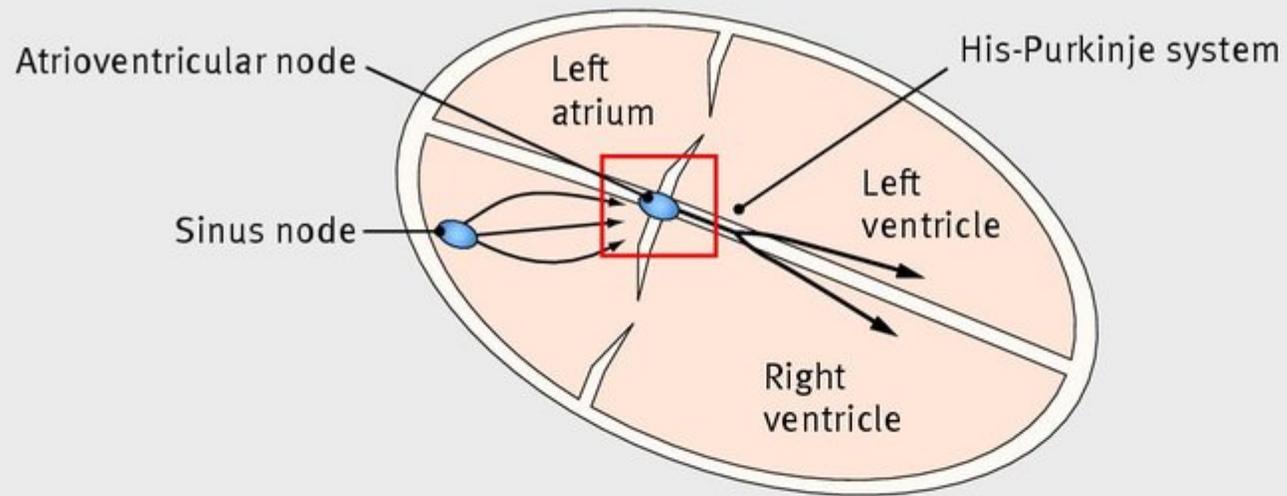
Where do I cut?

AVNRT: Nodal Reentry Mechanism

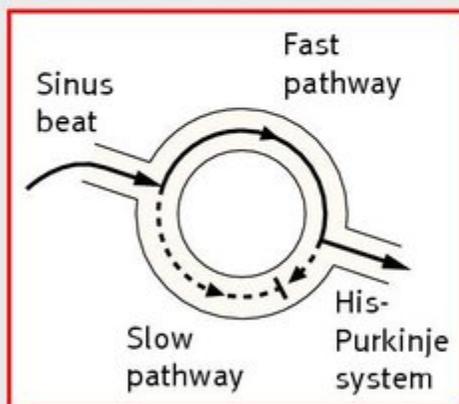


Pathophysiology

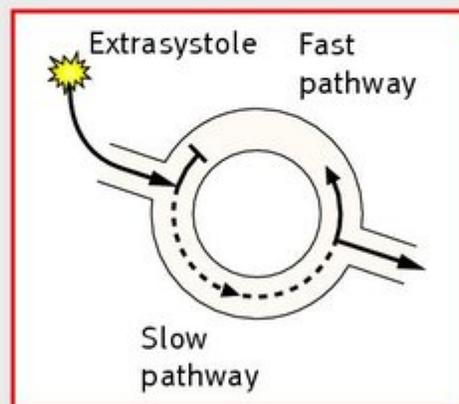




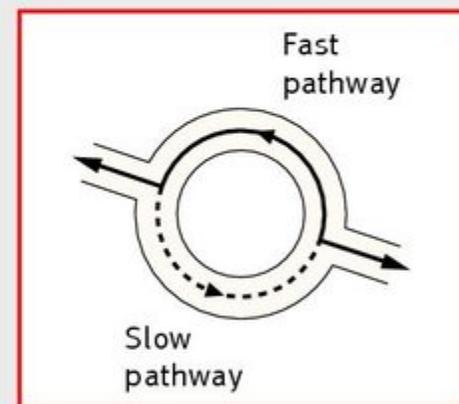
Mechanism at atrioventricular node



Normal condition:
Anterograde conduction
down the fast pathway

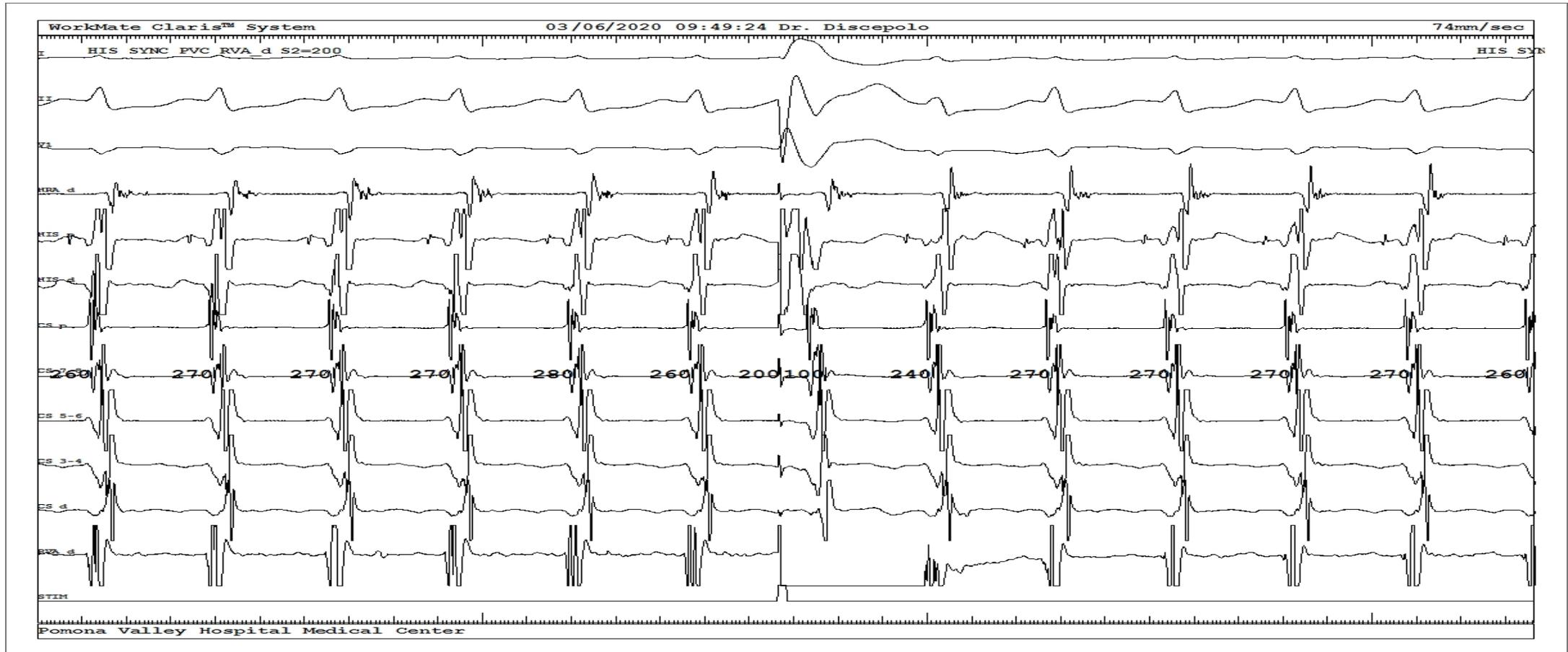


Extrasystole:
An extrasystole during the
refractory period of the fast
pathway propagates exclusively
down the slow pathway. By the
time the impulse reaches the
distal end of the fast pathway
it is no longer refractory and it
conducts retrogradely

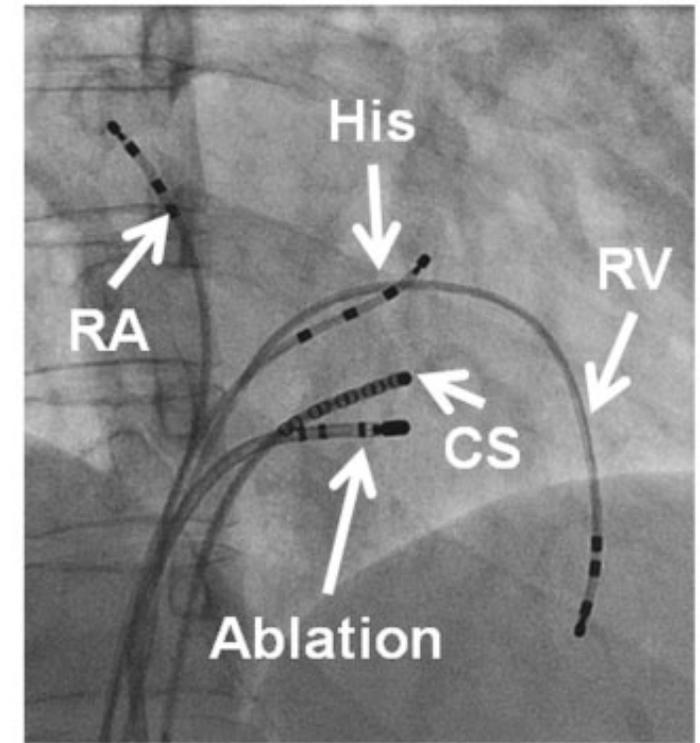
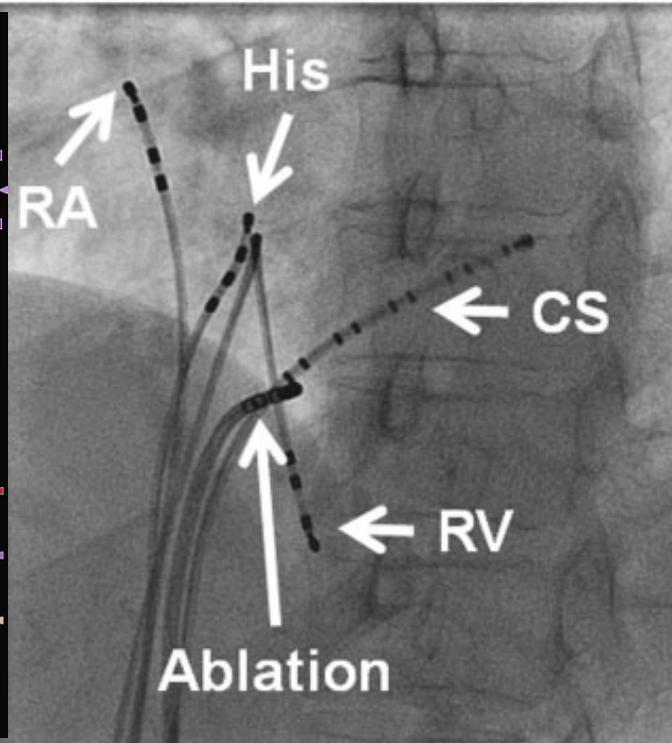
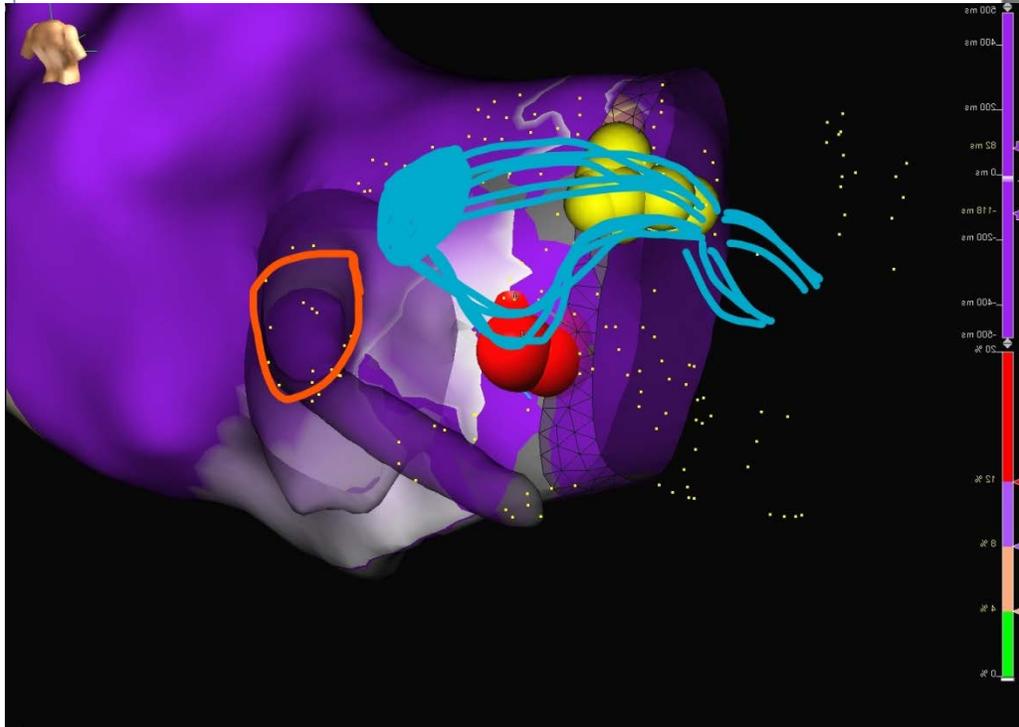


AVNRT perpetuated:
A re-entrant circuit is
formed with retrograde
conduction up the fast
pathway, anterograde
conduction down the slow
pathway, and almost
simultaneous activation of
atria and ventricles

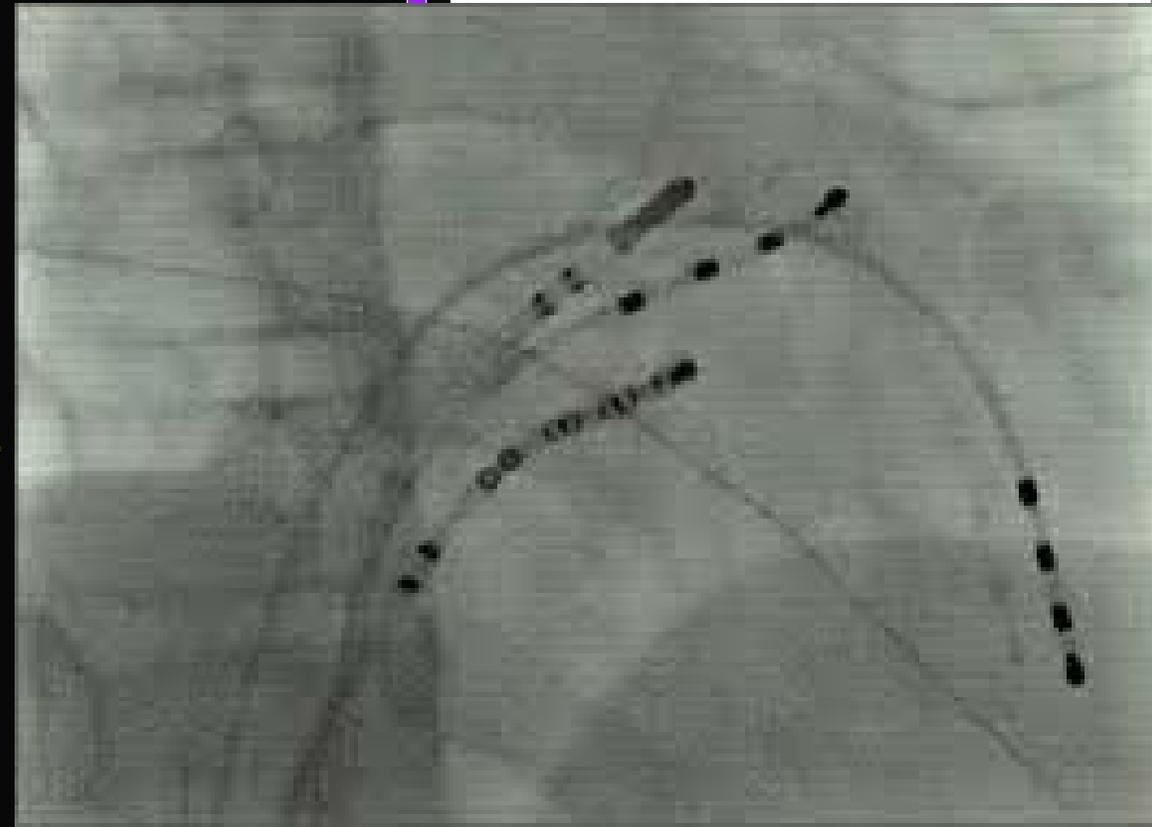
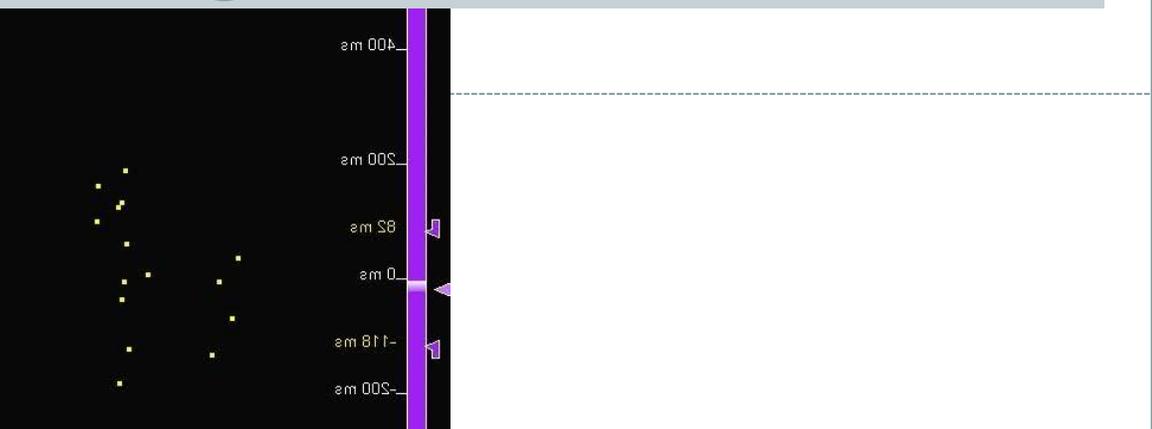
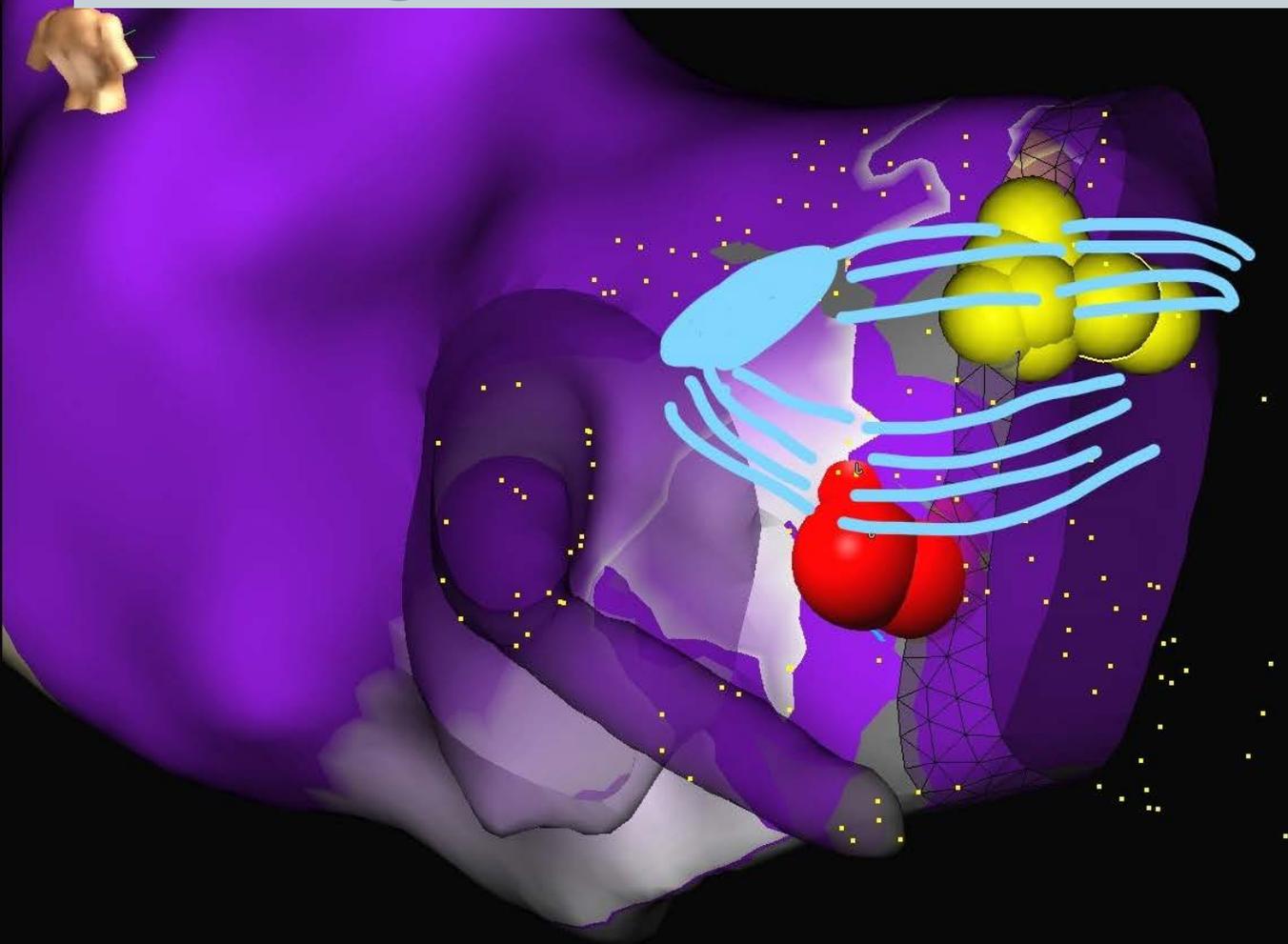
His Refractory PVC

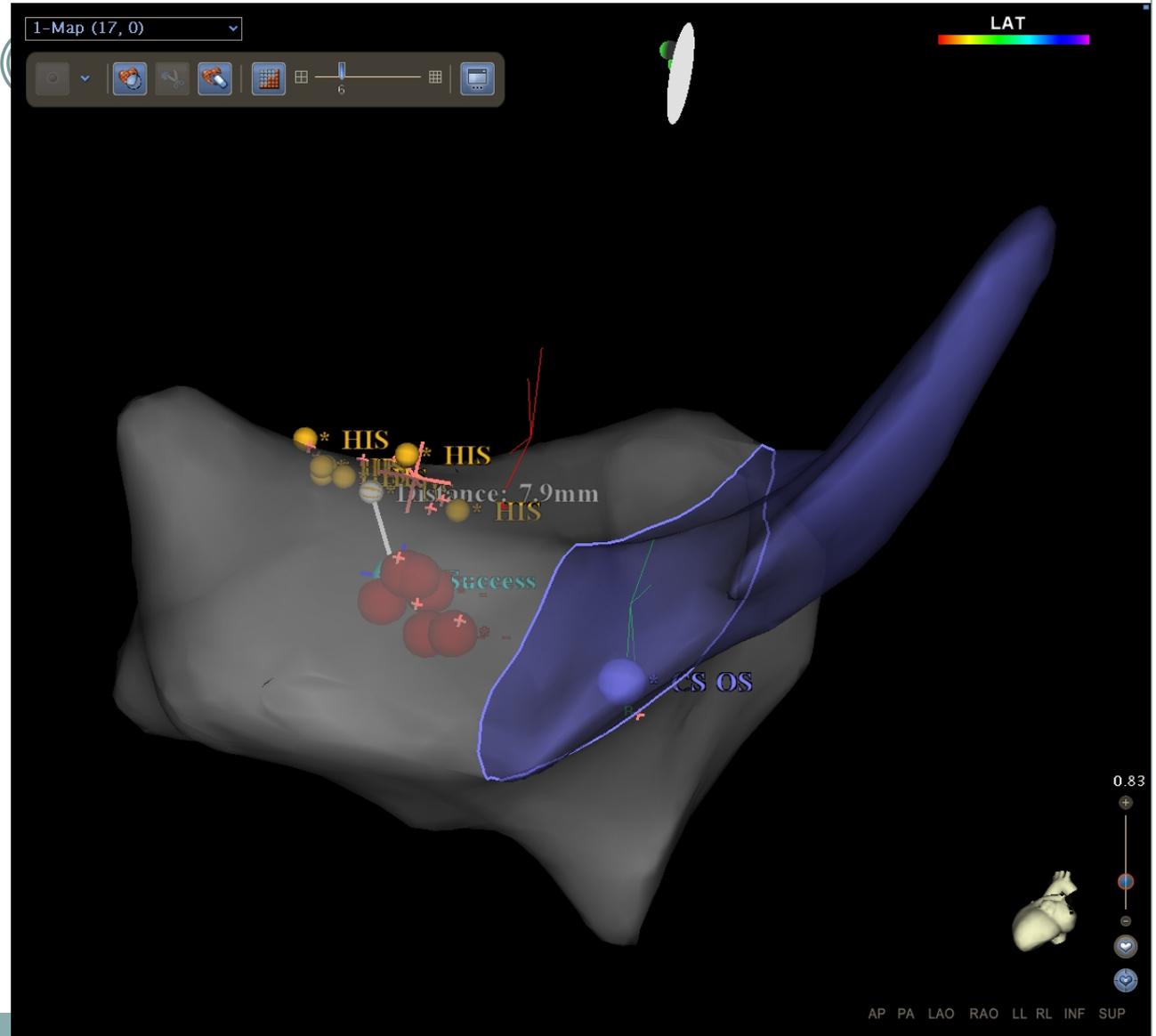
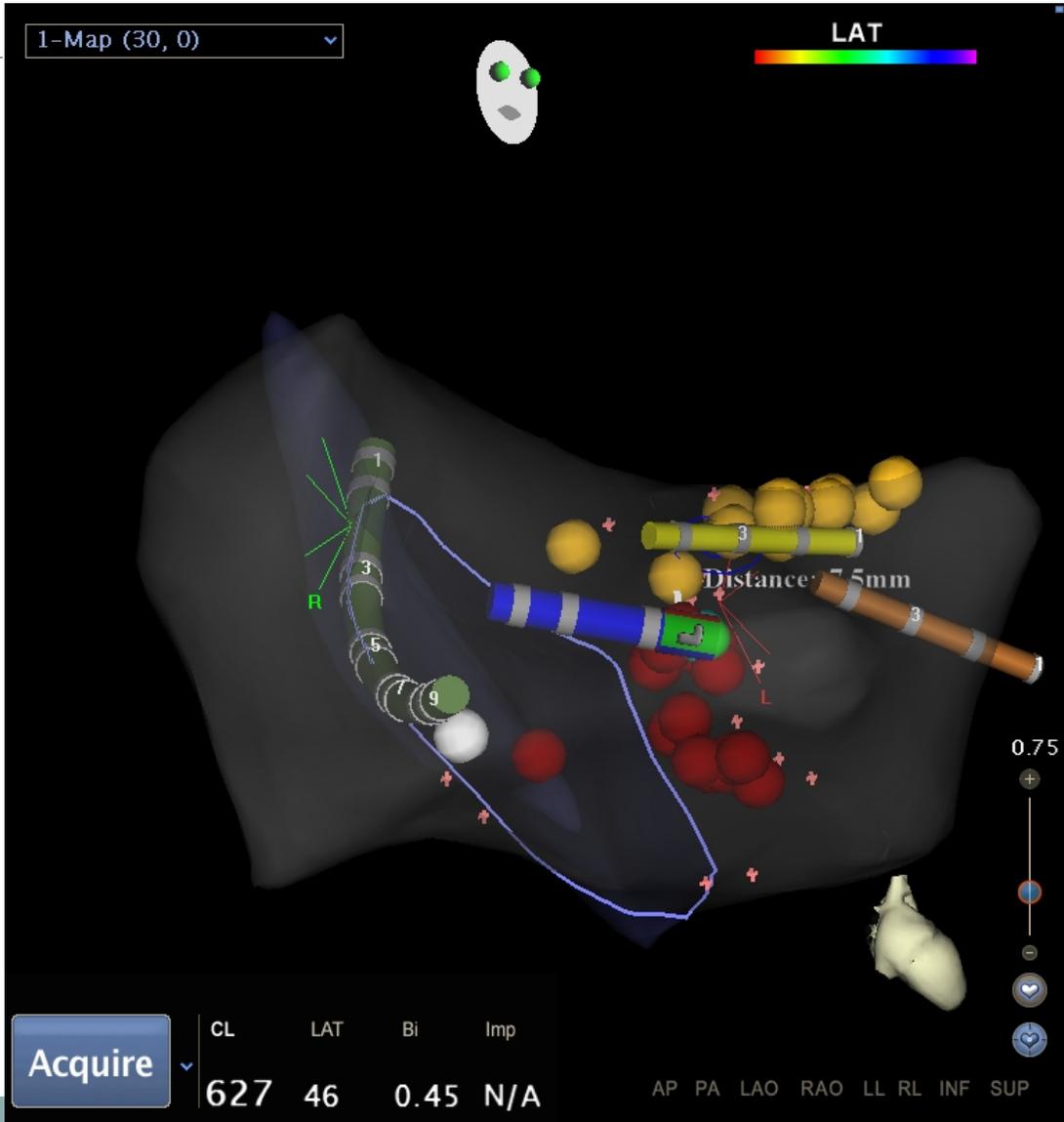


X ray imaging & Electro anatomical mapping



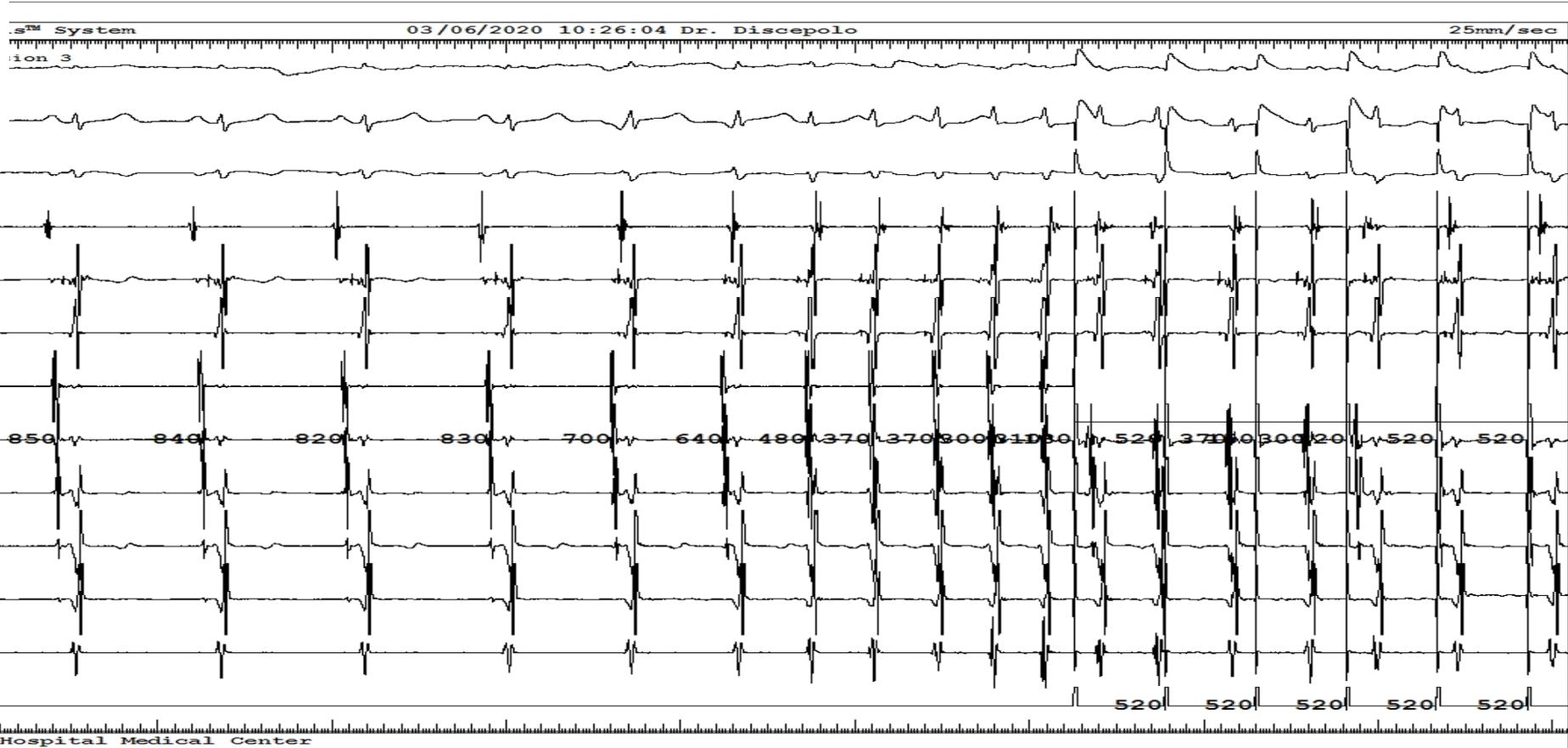
Defining the Structure in KOCH triangle (AVN, CS Os, TCA)

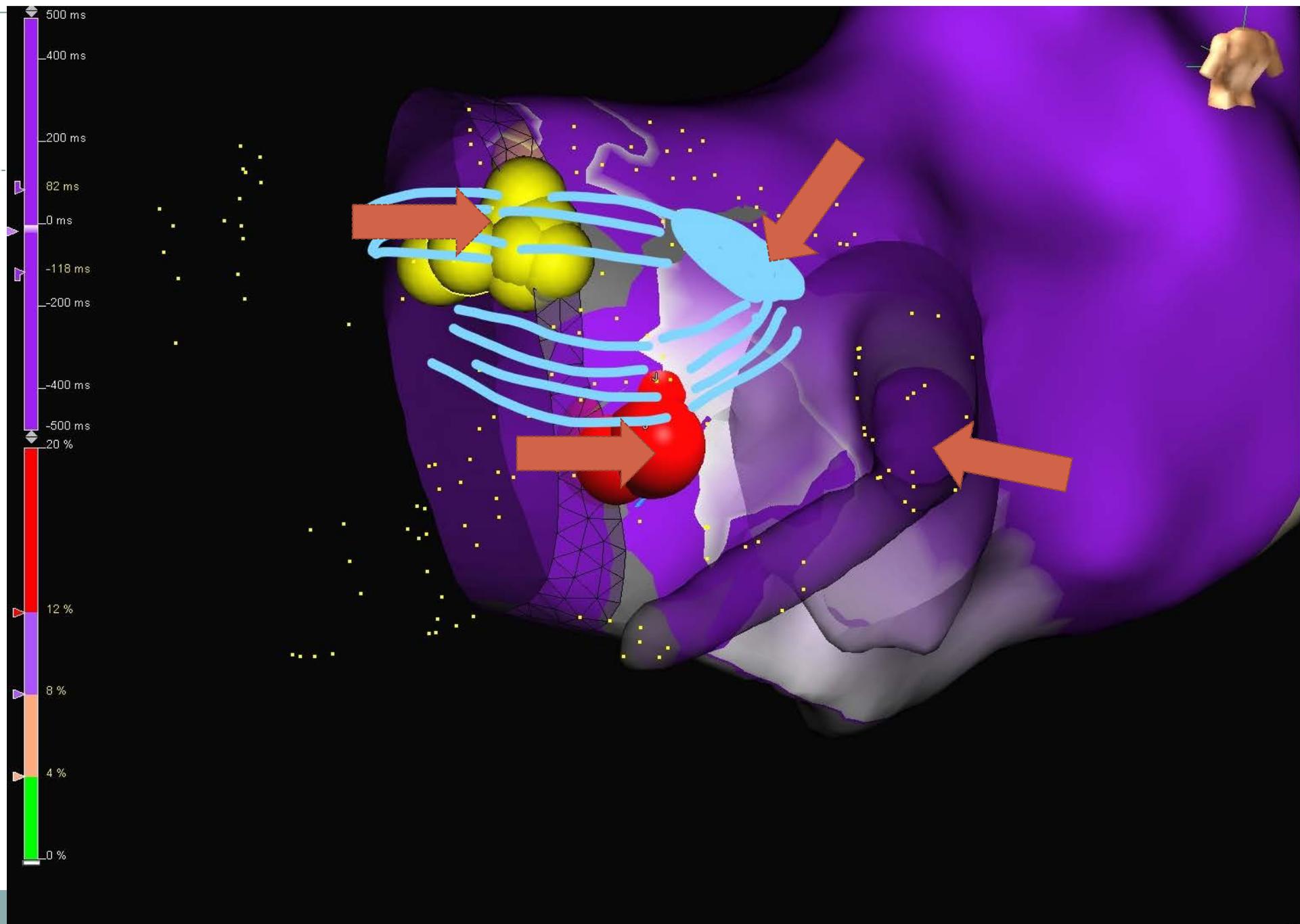




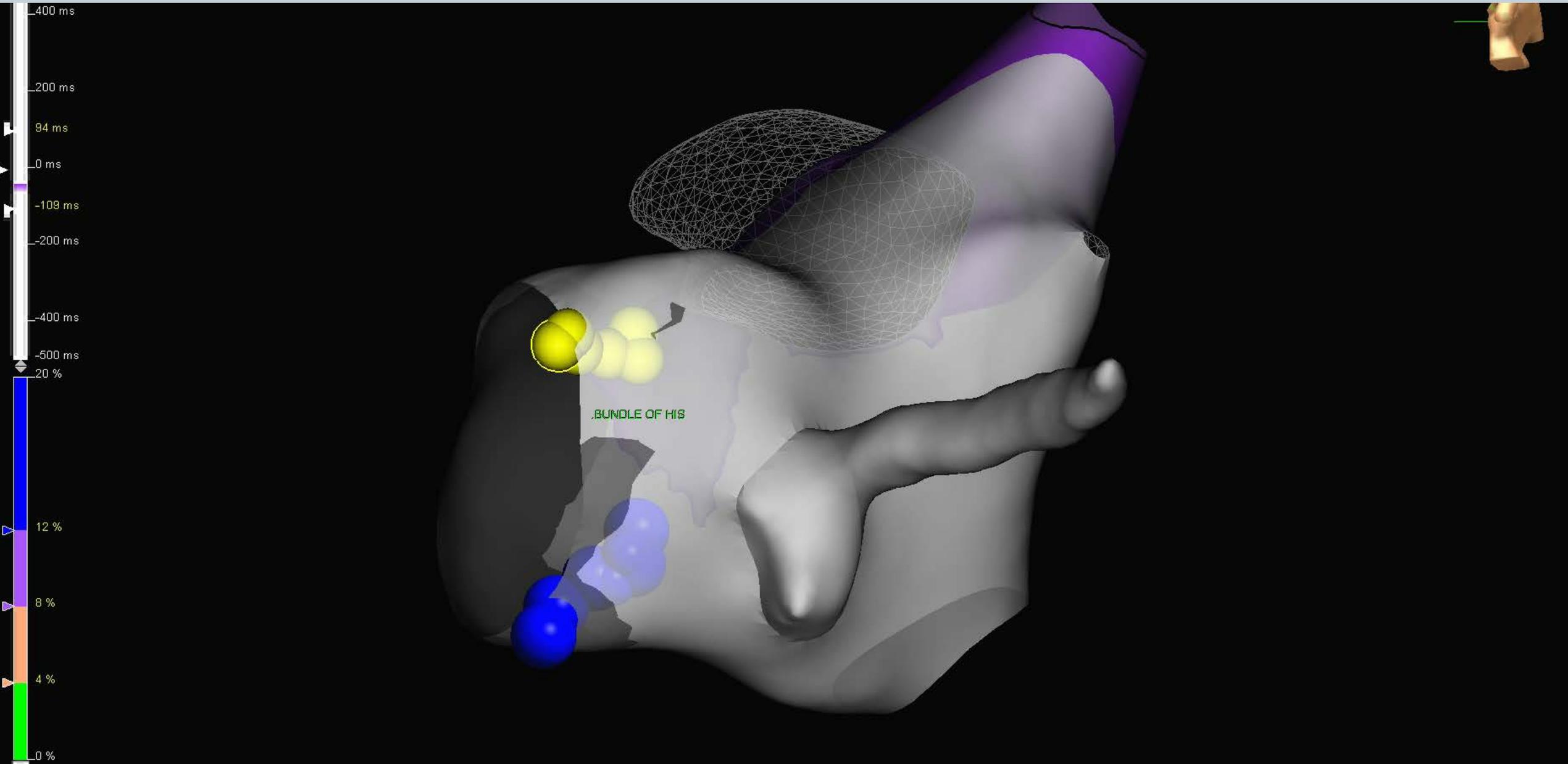


Ablate With Care: No Take Backsies

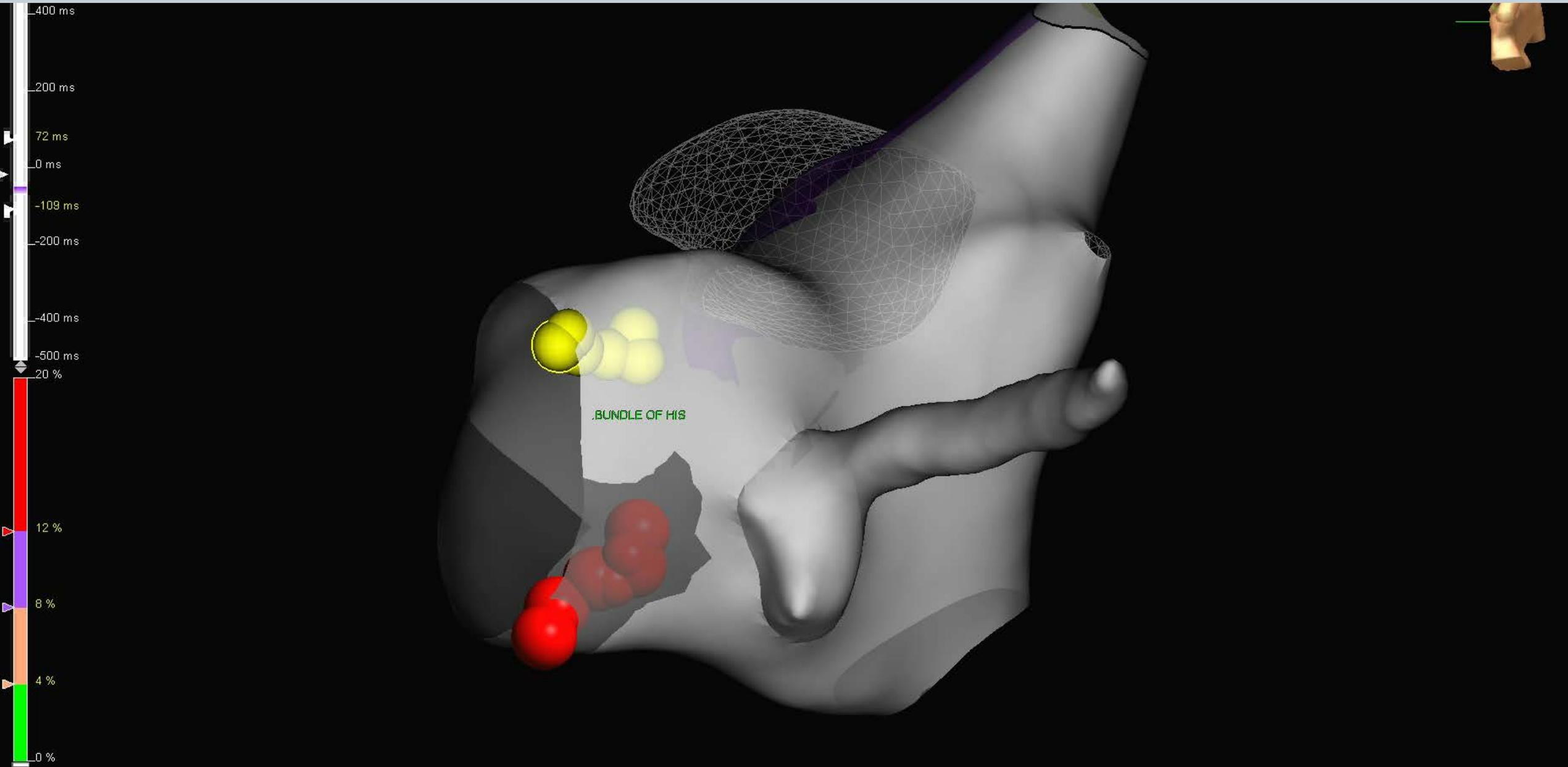




Normal Conduction (FP & SP)

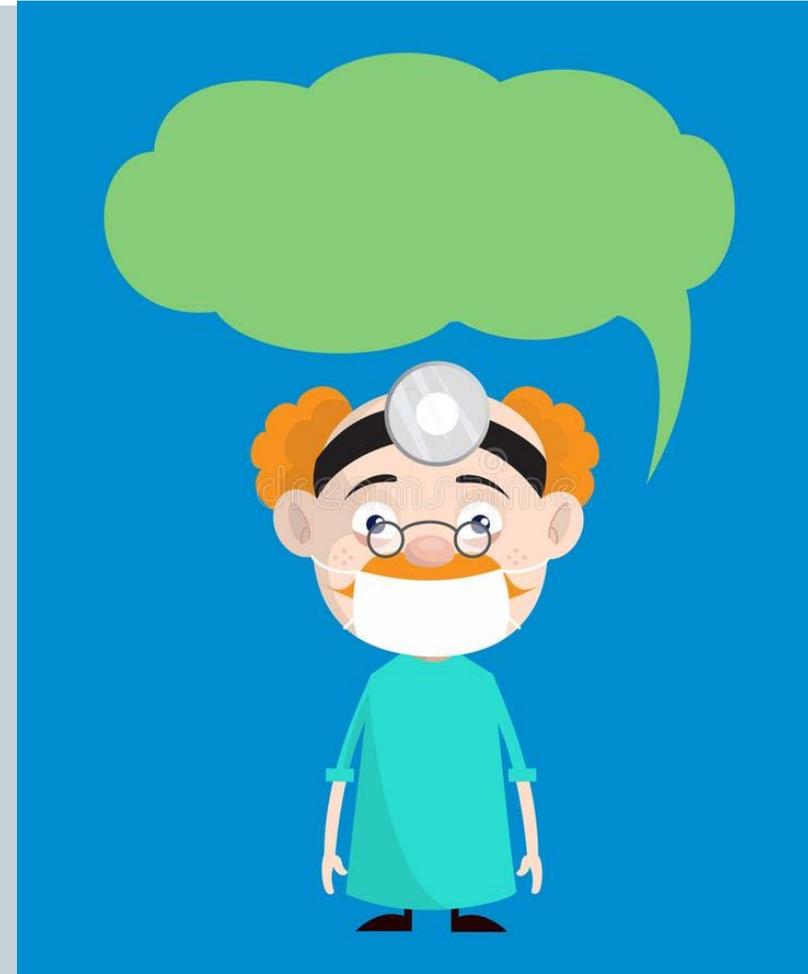


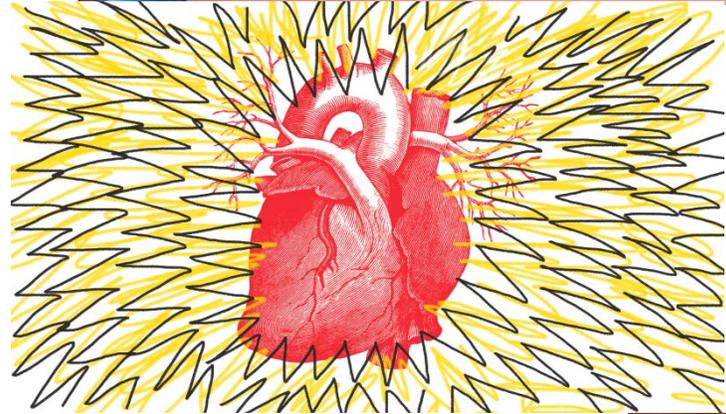
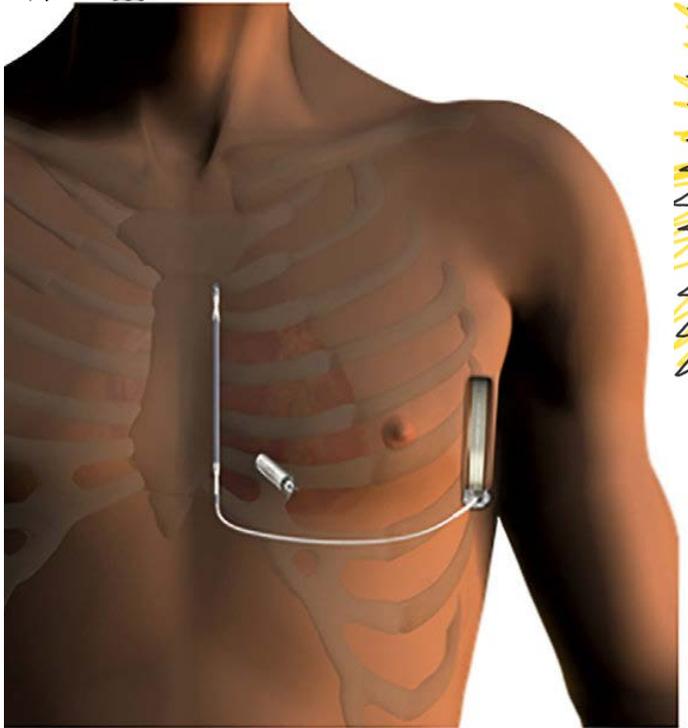
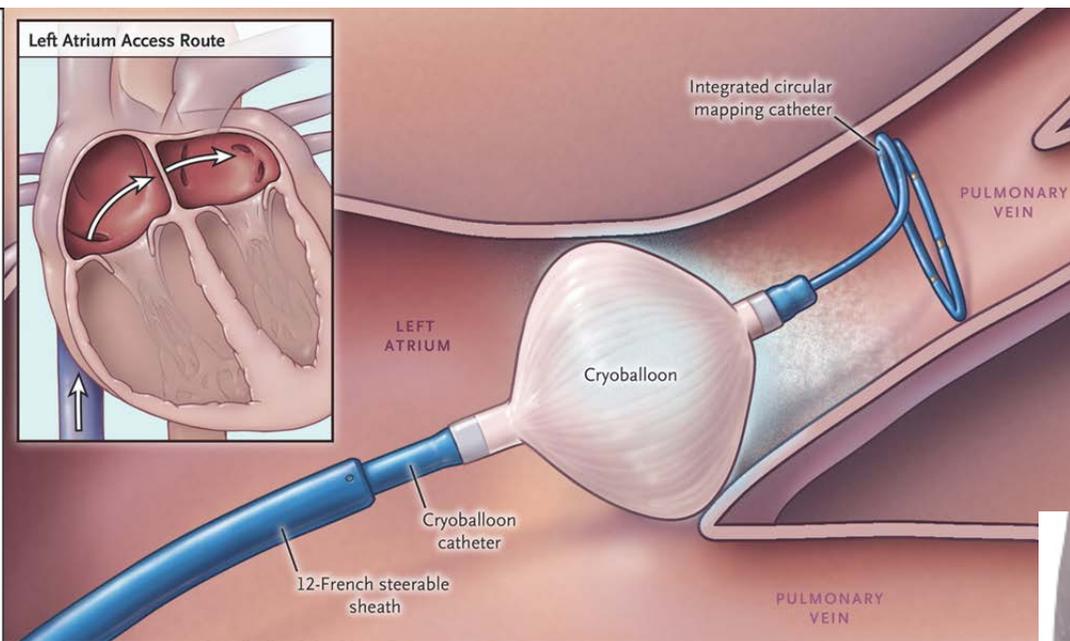
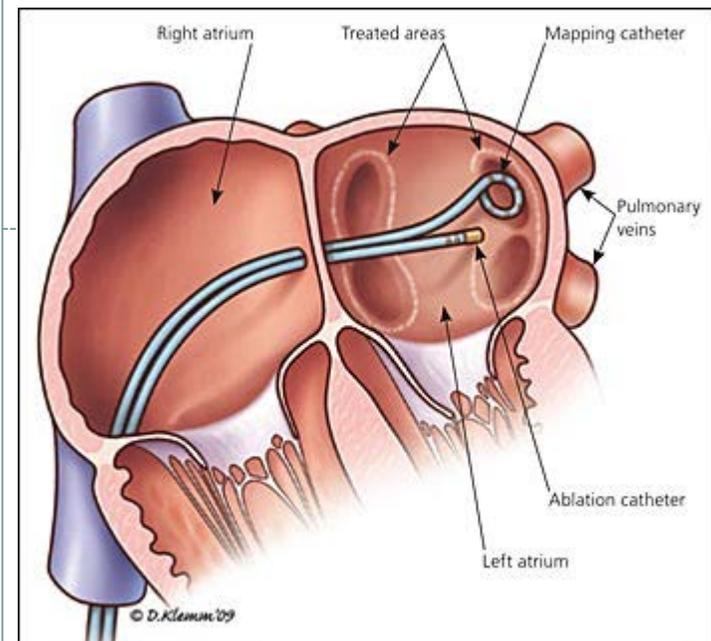
Normal Conduction (FP) SP Blocked



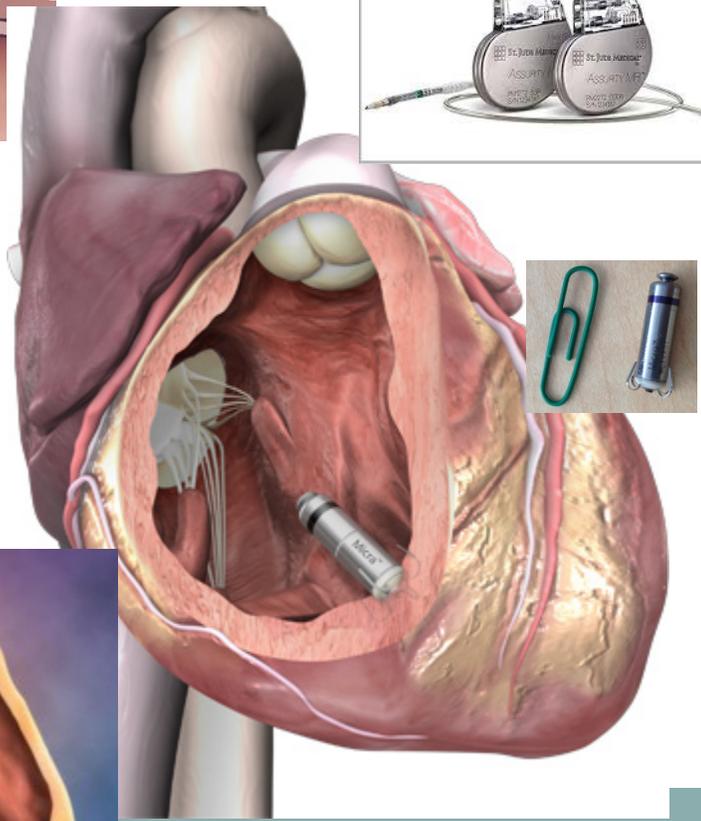
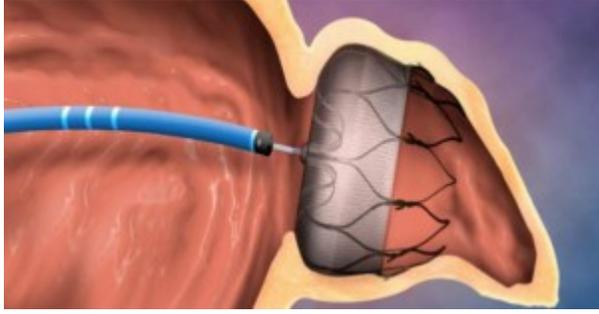
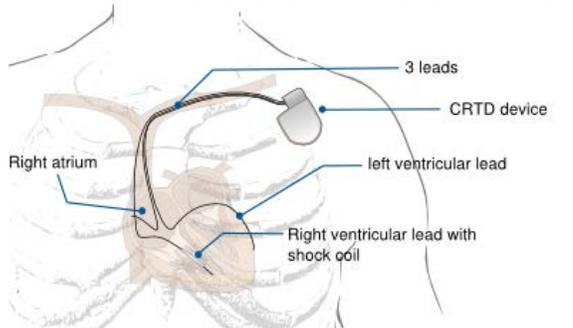
Summary

- **SVT: Multiple Mechanism (AT, AFL, AVNRT, Variety of AVRTs)**
- **Each has unique, complex mechanism; the fundamentals of which are constantly being refined**
- **Medical therapy is reasonably effective if we think about mechanism (Nodal dependence (CCB), AP involved (1C: Flecainide))**
- **Catheter ablation is an effective and curative strategy**





EP



THANK YOU



Wash your hands!

