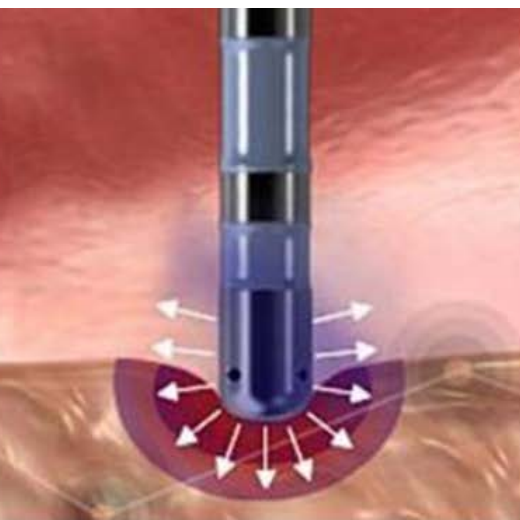


# Electrophysiology Testing





# EPS & Catheter Ablation

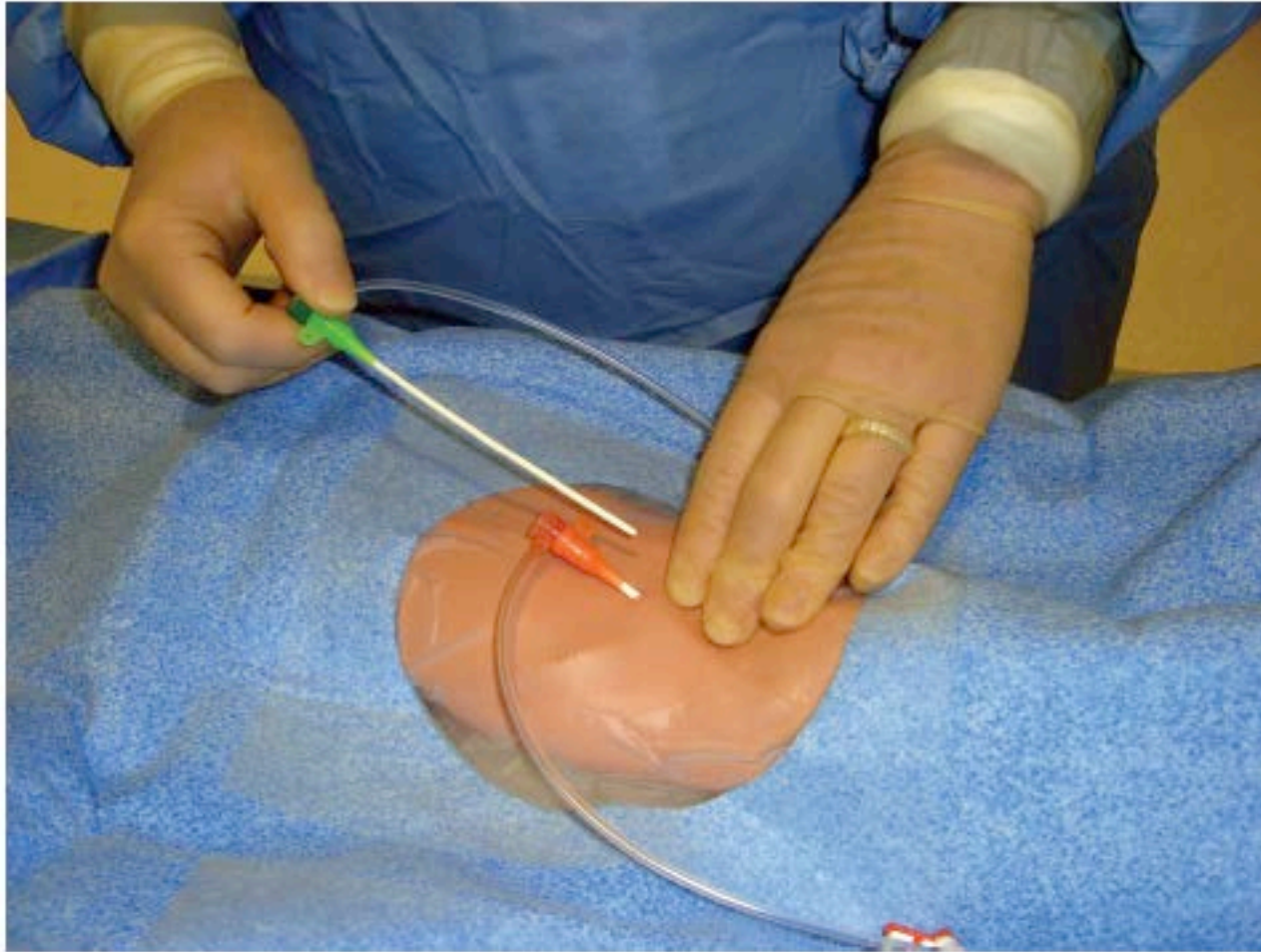
- Diagnosis and mechanism
- Curative radiofrequency ablation

Minimally invasive procedure to evaluate electrical health

## Appropriate Patients

- Syncope
- Any Regular Arrhythmia except Sinus tachy.
  - SVT, VT, Flutter
- Evaluate for need for pacemaker or ICD
- Atrial fibrillation – ablation therapy

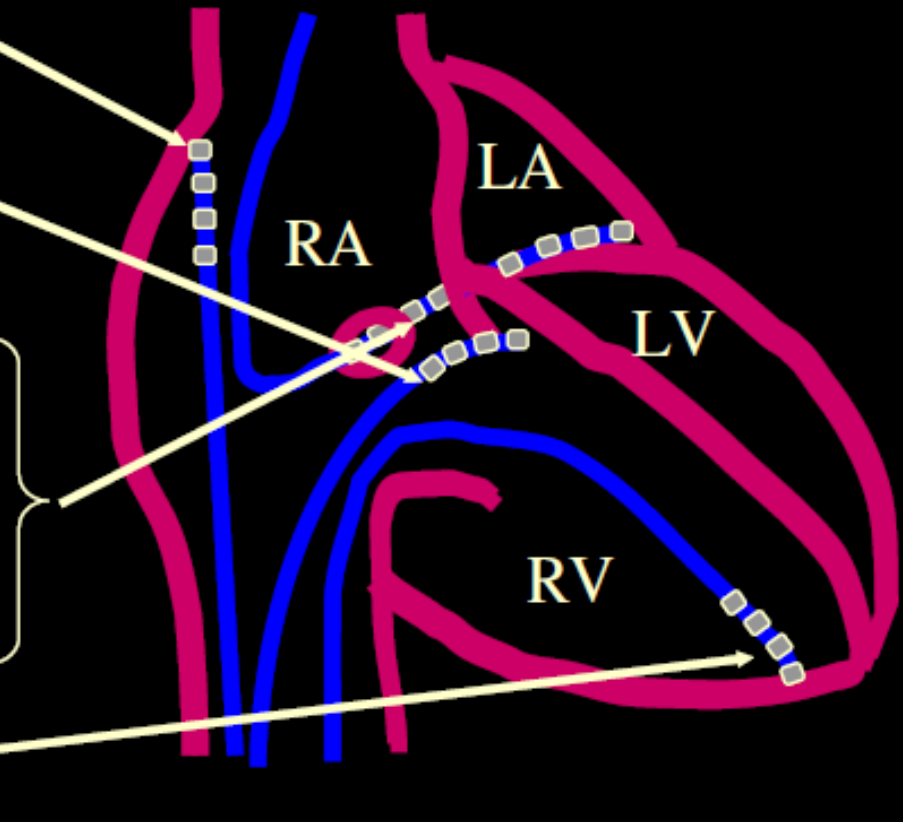
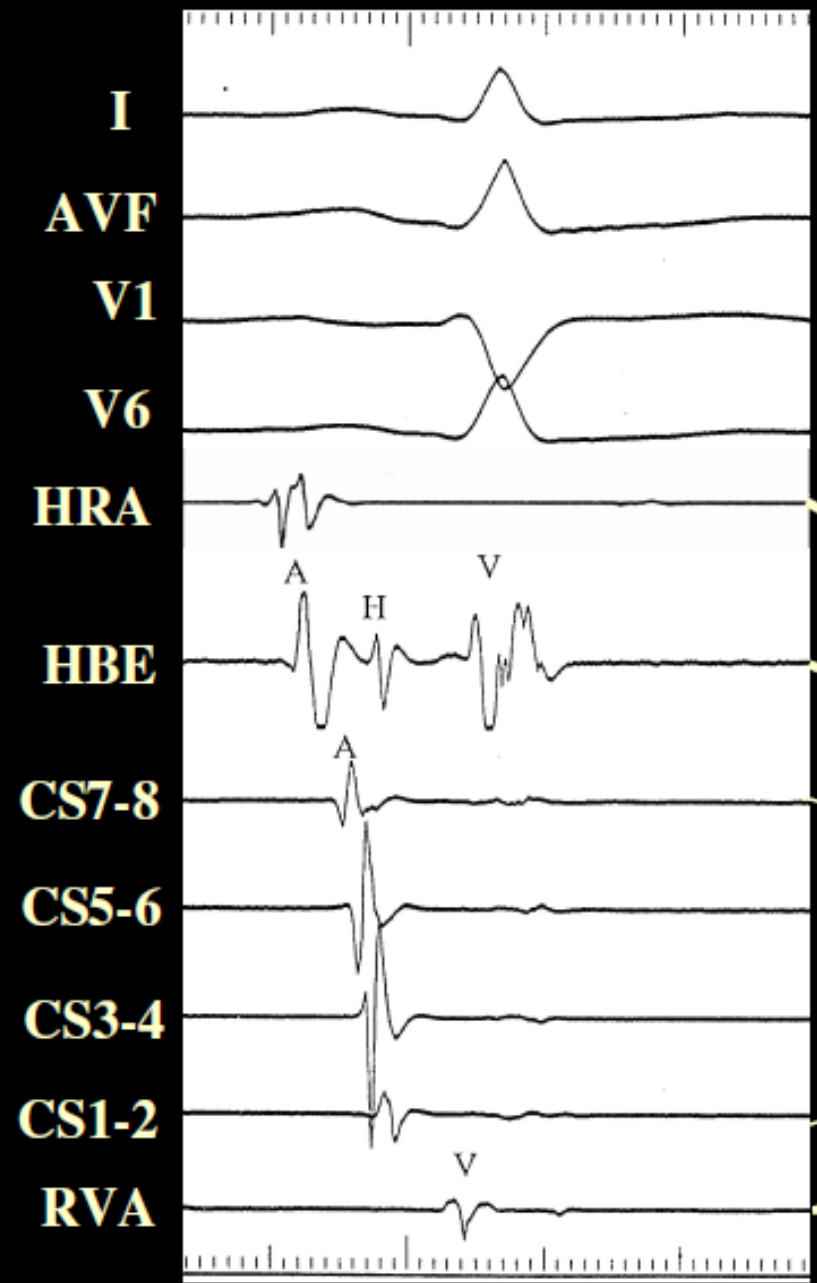
# Femoral Vein Access with Local Anesthetic and Twilight Sedation

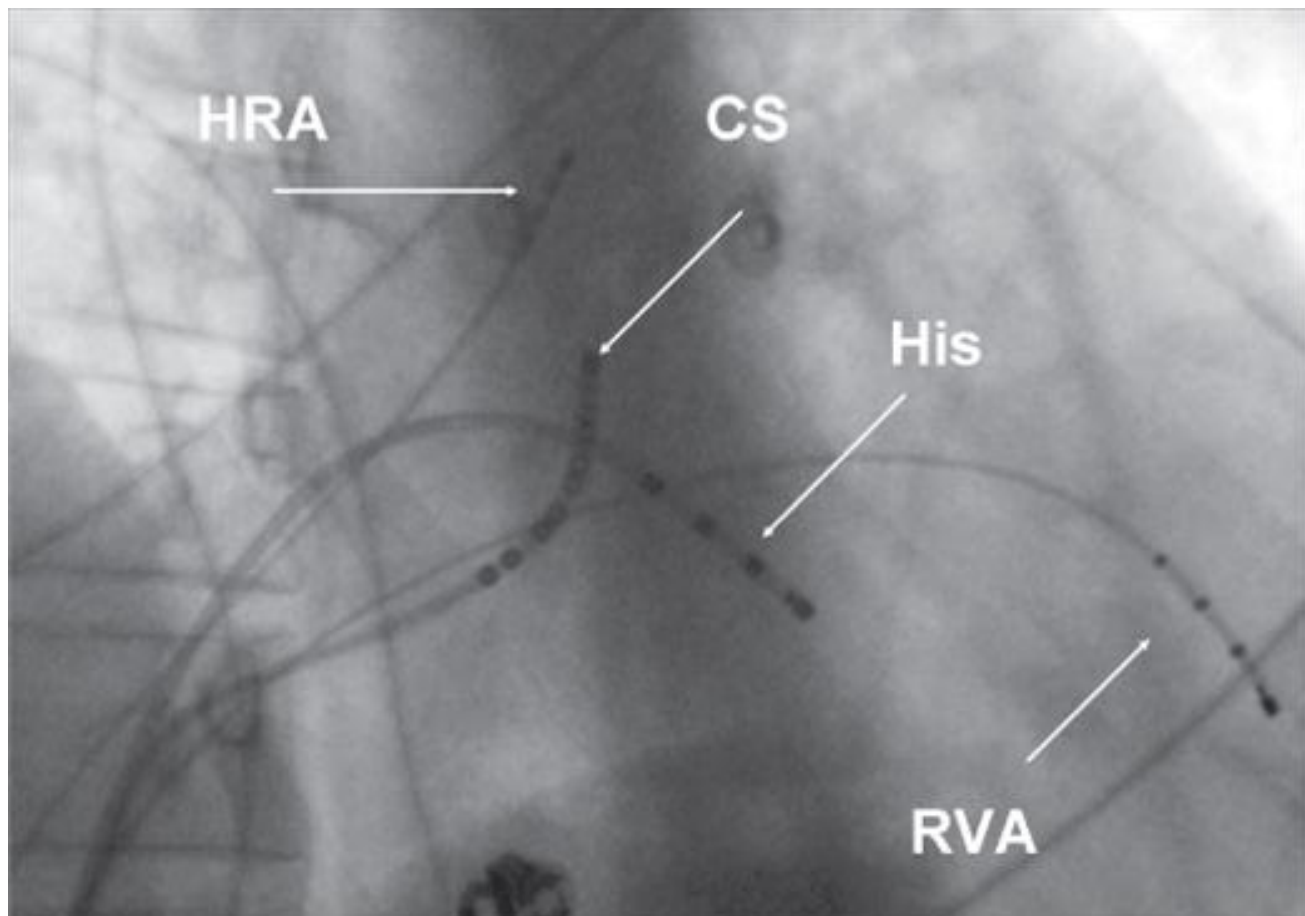


# ***Electrocardiogram vs. Intracardiac Electrogram***

- **Electrocardiogram (ECG):**
  - Recorded on body surface.
  - Reflects the electrical activity of the whole heart.
- **Intracardiac Electrogram (EGM):**
  - Recorded *within* the heart.
  - Usually filtered differently.
  - Reflects local electrical activity in the heart near the recording electrodes.

# Typical Baseline Tracings





# Baseline Recording

- Surface ECG

I

aVF

V1

V6

- Intracardiac electrograms

HRA

HBE

CS

RVA

- Electrode numbering convention:  
distal = 1

I

aVF

V1

V6

HBE

CSp

CSm

CSm

CSd

RV



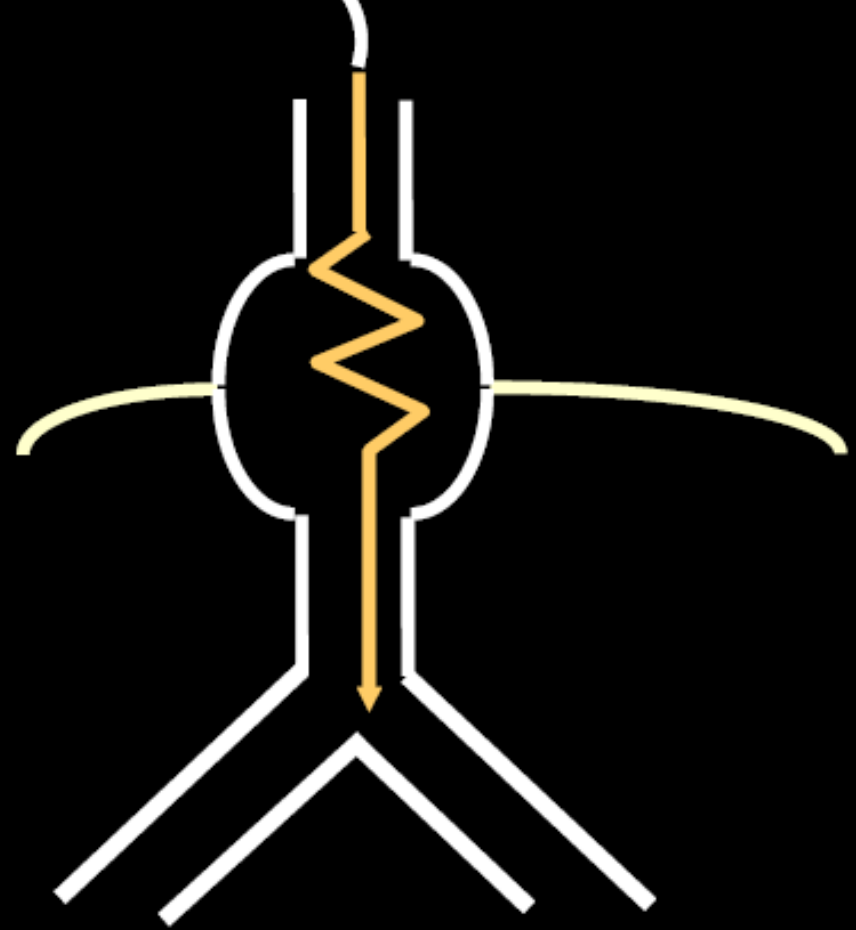
# Normal Cardiac Conduction via the AVN

♥ Decremental conduction

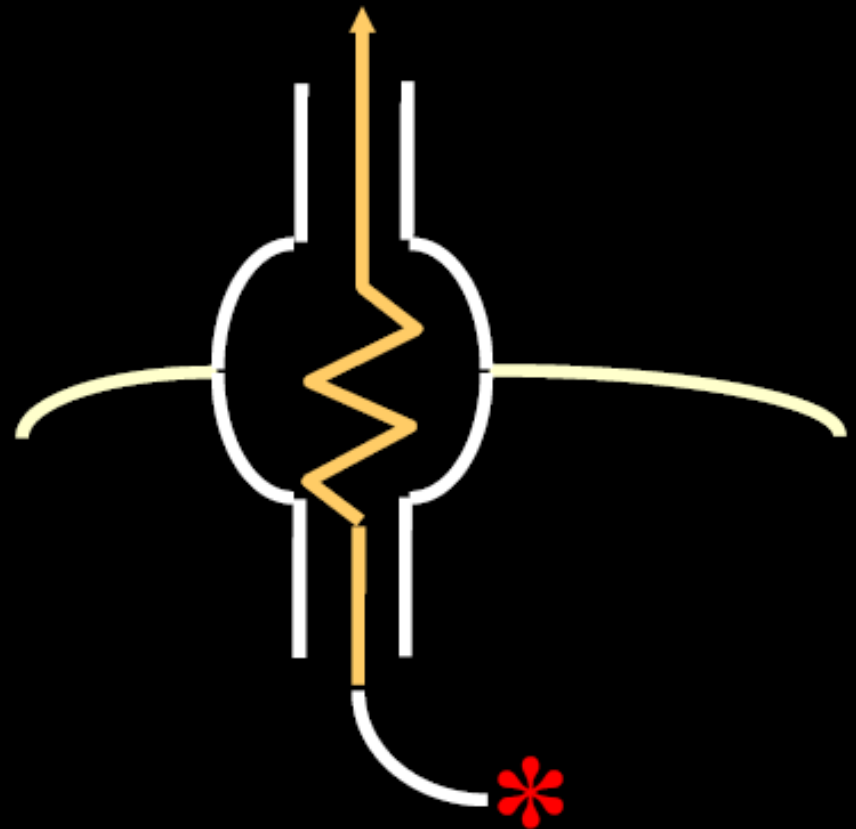
♥ Midline ventricular activation pattern



Anterograde



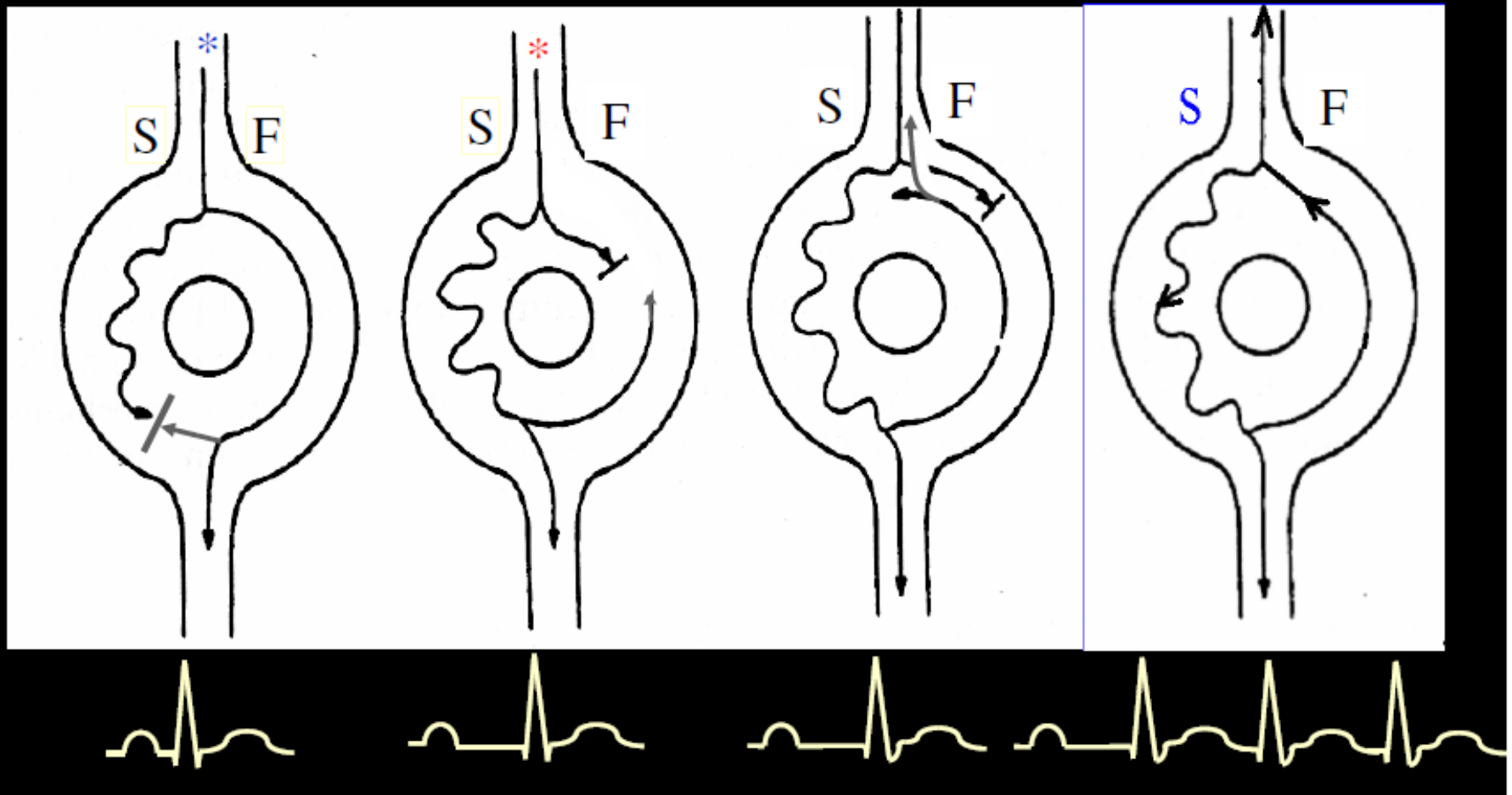
Retrograde





# AVNRT

## *Initiation of reentry*



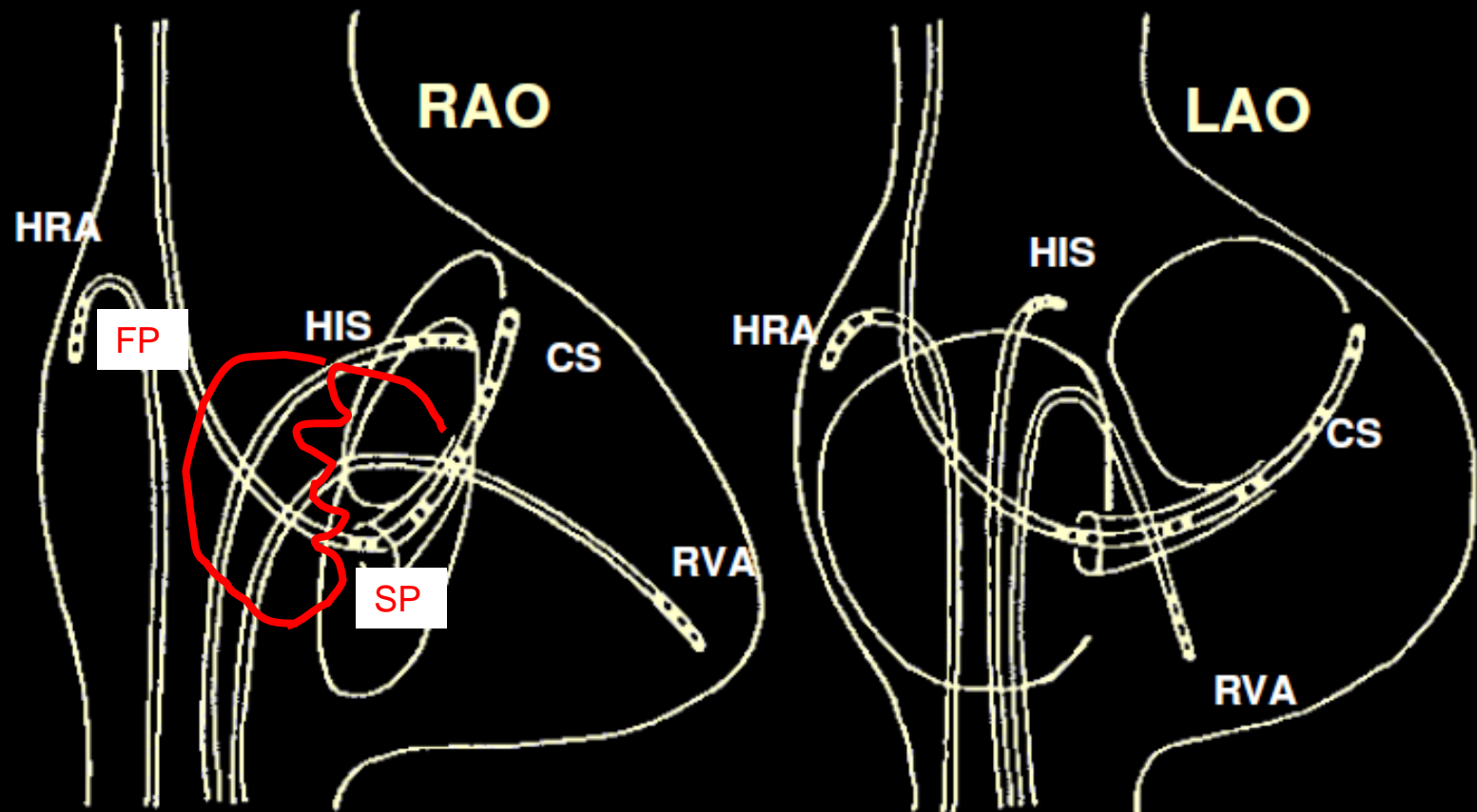
# Initiation of AVNRT – Single APD4

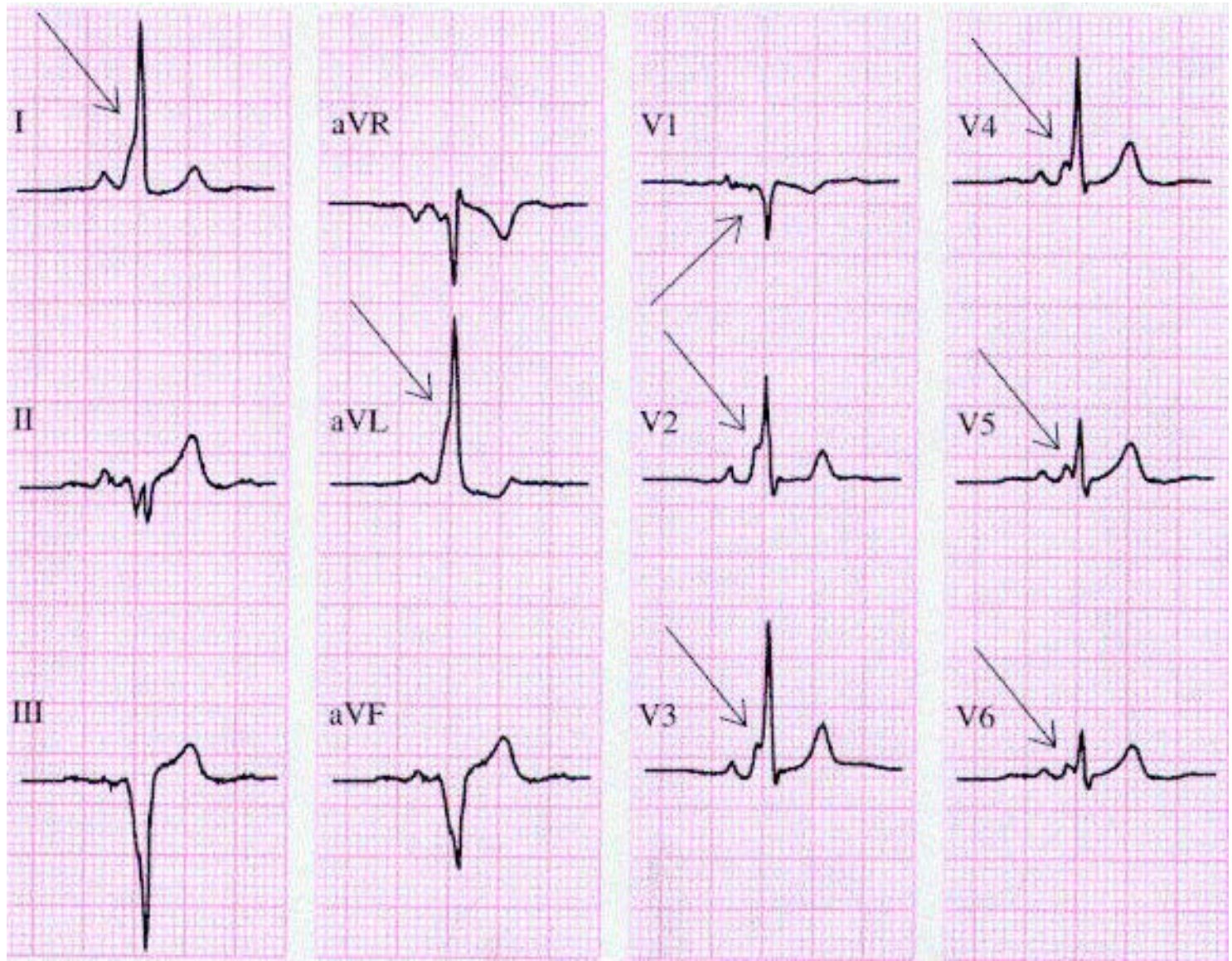


- Antegrade block in fast pathway with conduction down the slow pathway
- Short VA time (<70 msec)

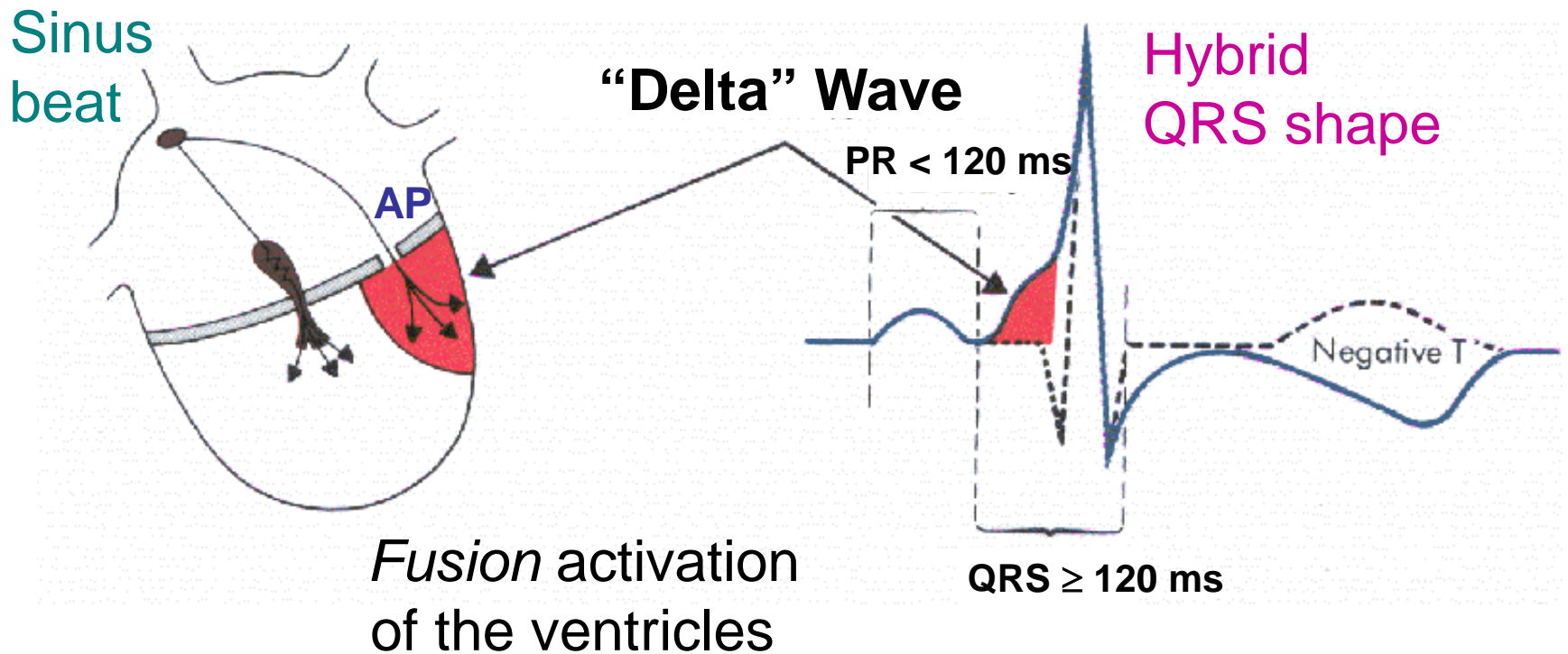
# Typical multi-polar catheter placement

- High right atrium
- Coronary sinus
- His bundle
- RV apex, RV outflow tract





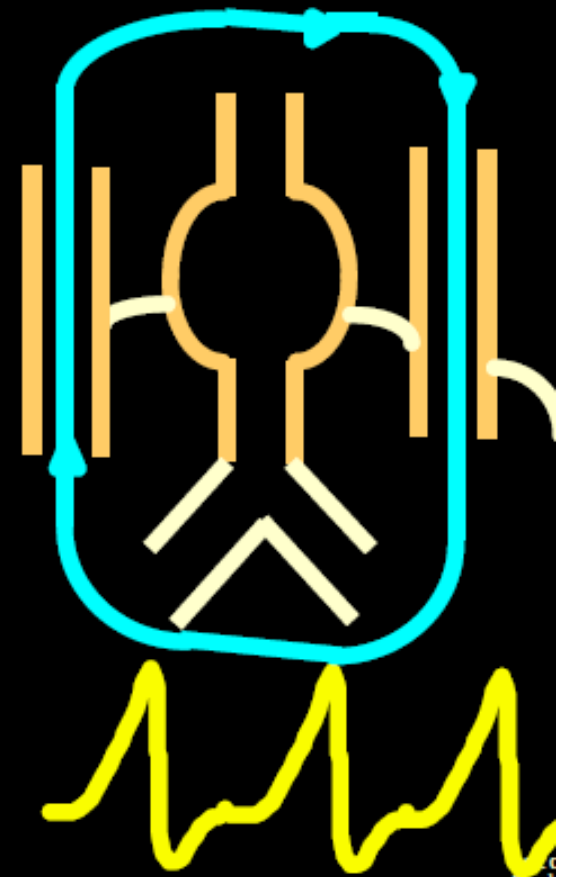
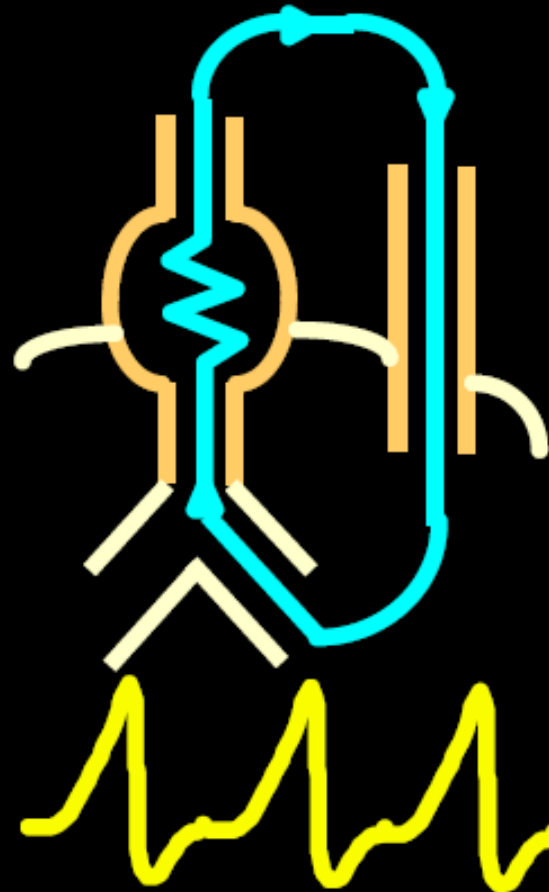
# Accessory Pathway with Ventricular Preexcitation

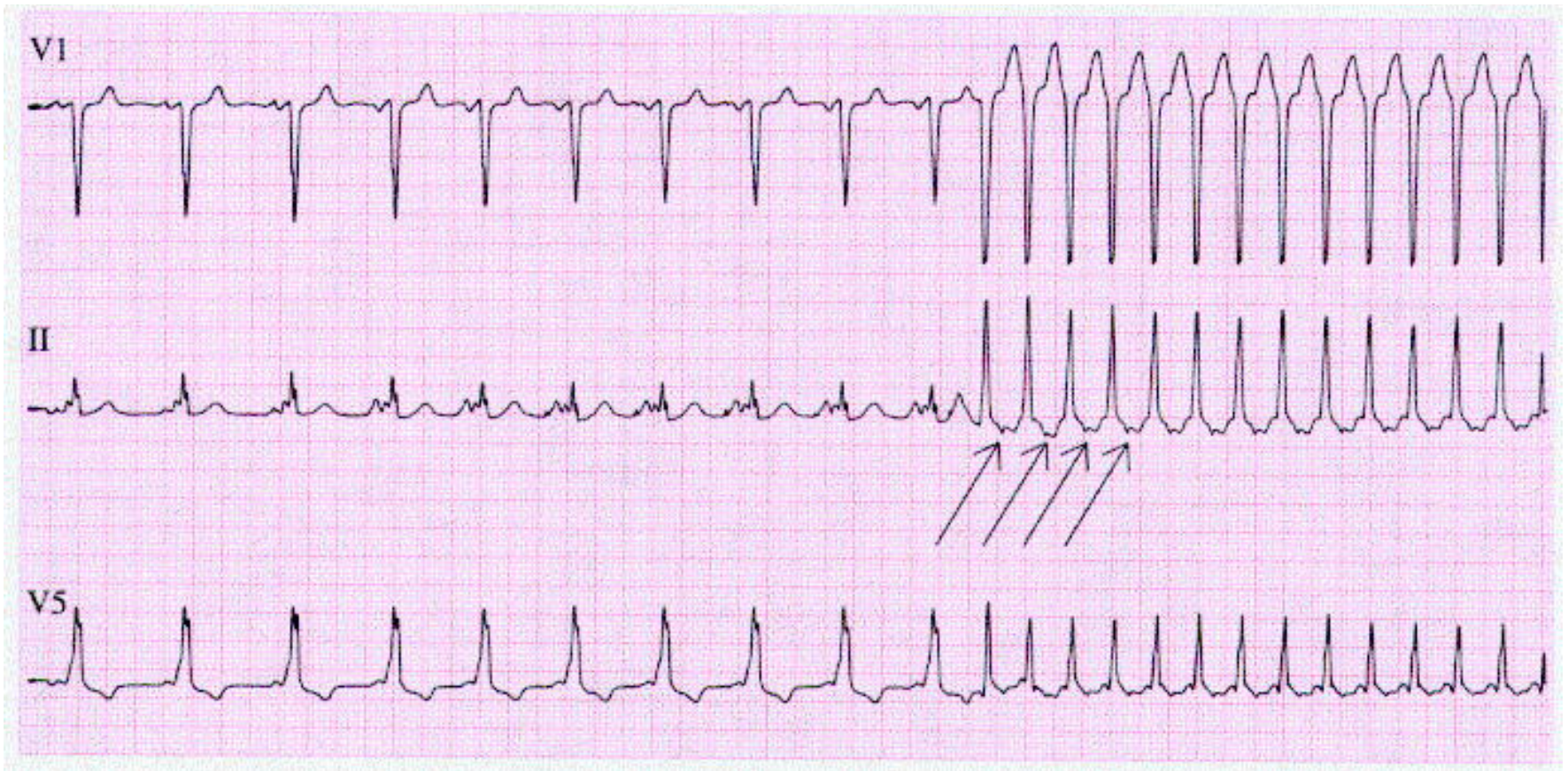


# AVRT

ORTHODROMIC

ANTIDROMIC





A three-lead ECG rhythm strip during SR and ***the abrupt*** onset of ***ORT***.

Arrows indicate the ***retrograde P*** waves visible in ***lead II***

# Orthodromic AVRT – Left sided AP





62 yo with ischemic CM EF 42% presents with near syncope while watching the last 2 minutes of OSU football.

You recommend: 1) amiodarone; 2) LHC; 3) EPS; 4) TTT; 5) beta-blocker and assure that ICD not necessary since EF is >35%

This tracing shows: 1) AVNRT with aberrancy; 2) AT; 3) AVRT; 4) VT



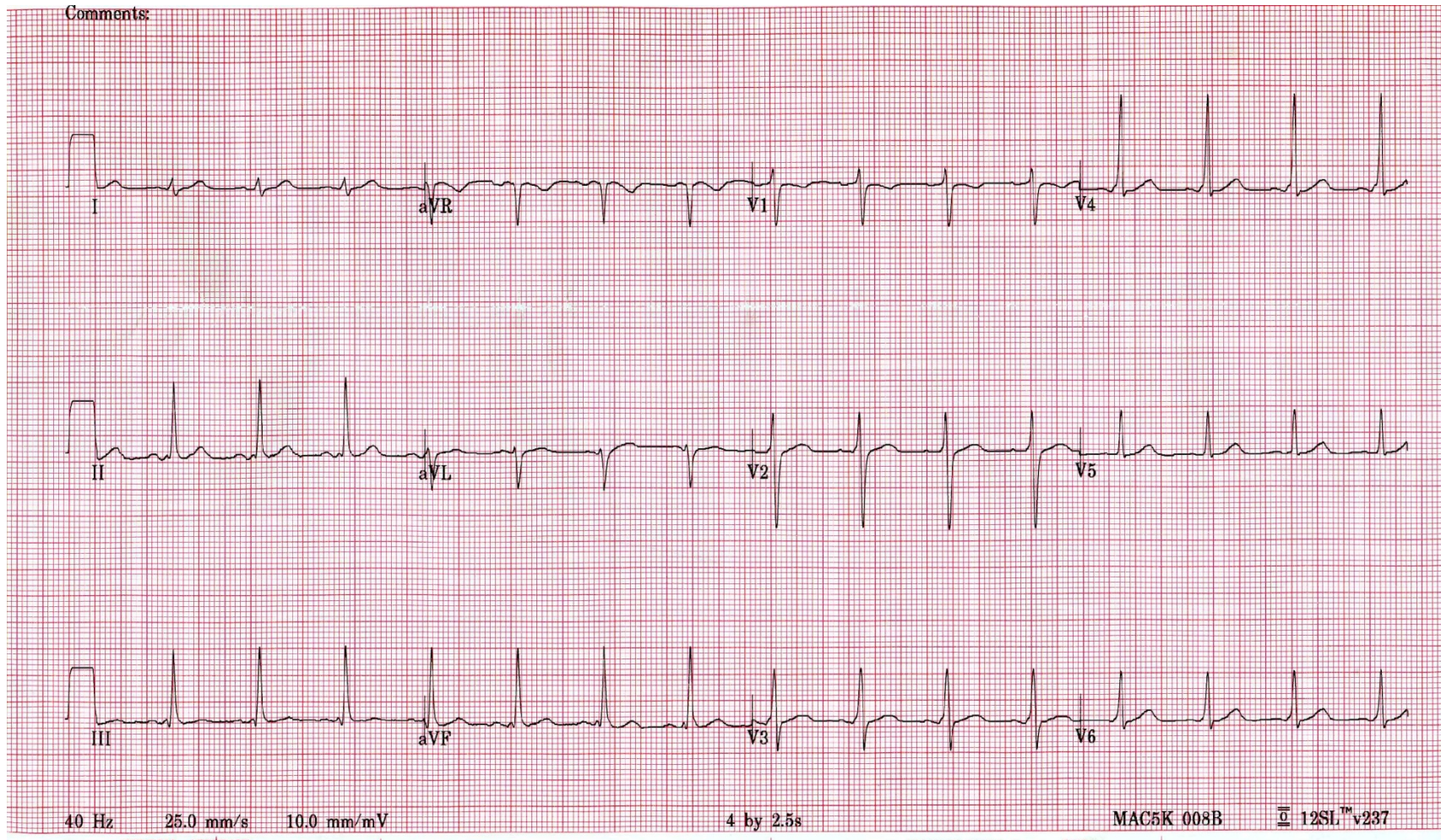
THANK  
YOU

# 19 yo M brought to ER by squad after syncope while running BP = 80 / 50

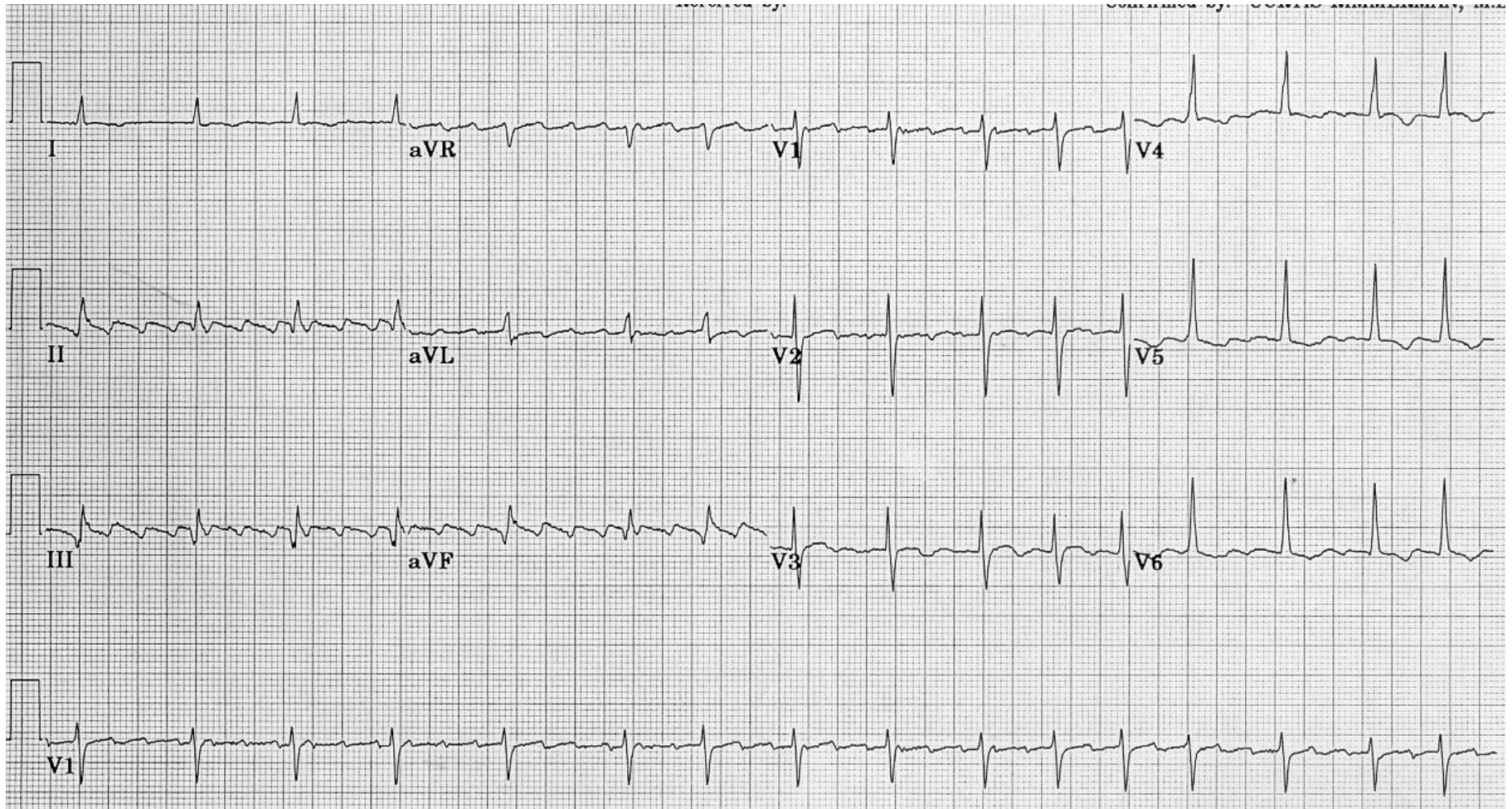


# ECG after DCCV

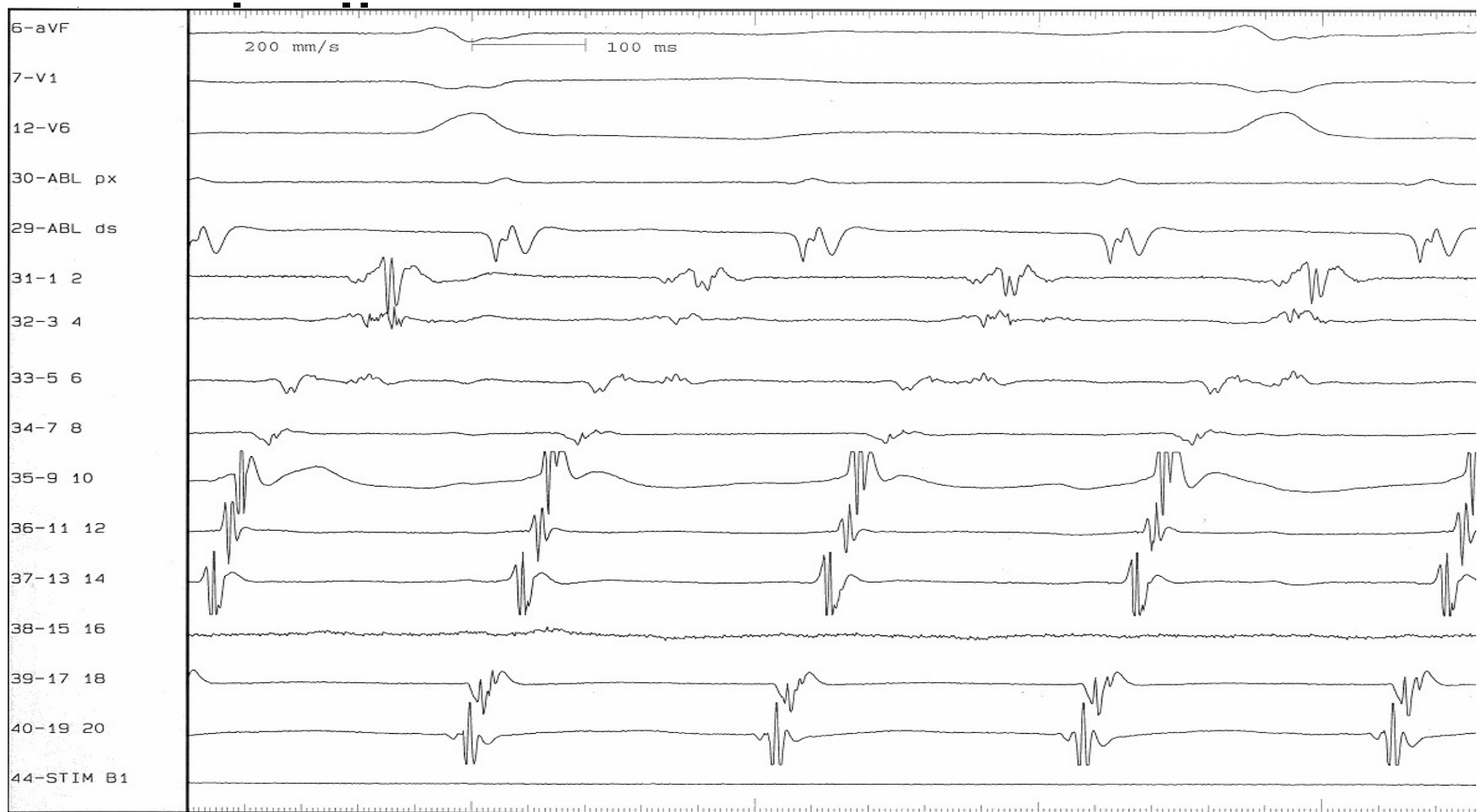
Comments:



# Atrial Flutter: Typical 12-lead ECG



# Typical AFL: Intracardiac EGM with Halo catheter placed along crista



# Typical AFL: Termination during RFA

