

Supraventricular Tachycardias

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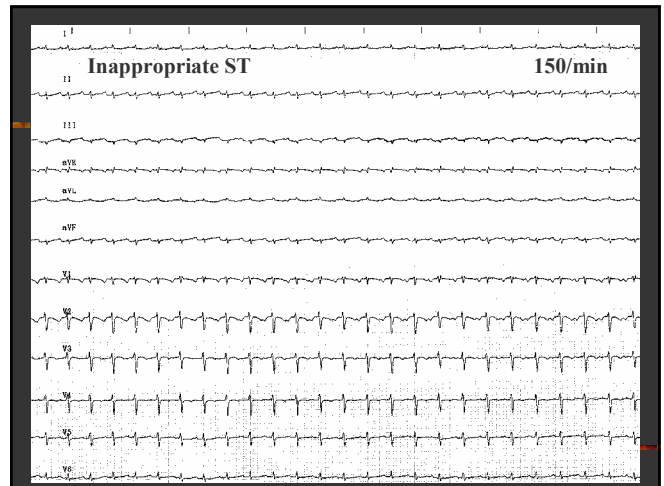
Kessaria, September, 8, 2004

SUPRAVENTRICULAR TACHYCARDIA Classification

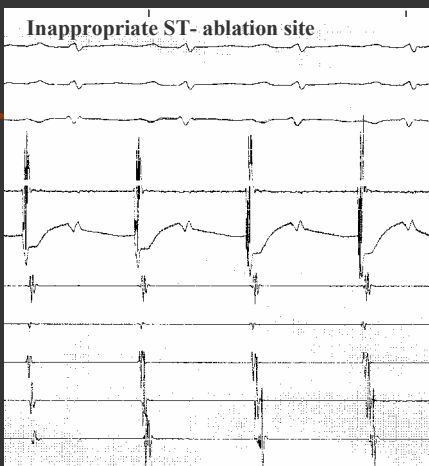
- Sinus tachycardia
- AV nodal reentry tachycardia (AVNRT)
- AV reentry tachycardia (AVRT)
- Atrial flutter
- Atrial tachycardia
- Atrial fibrillation

Sinus tachycardia

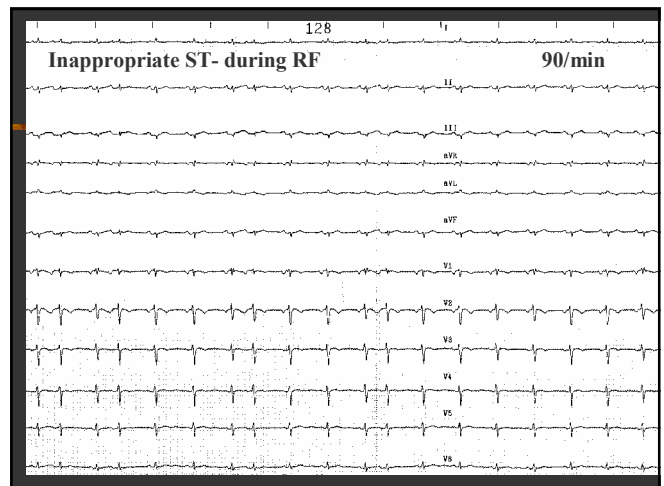
- Physiologic
- Inappropriate sinus tachycardia
- Sinus node reentry tachycardia
- Pseudo sinus tachycardia

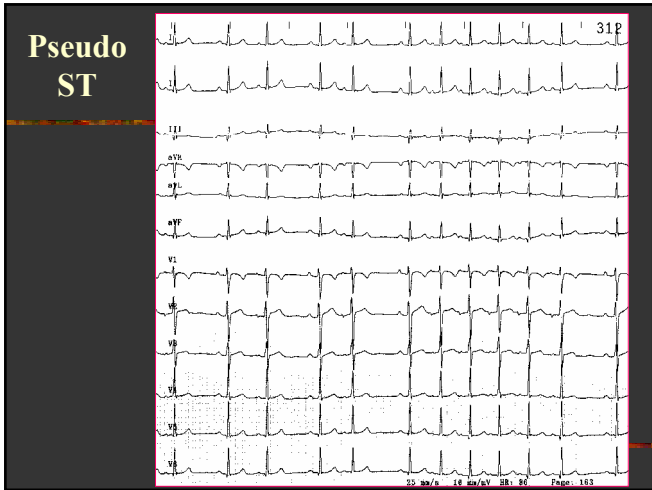
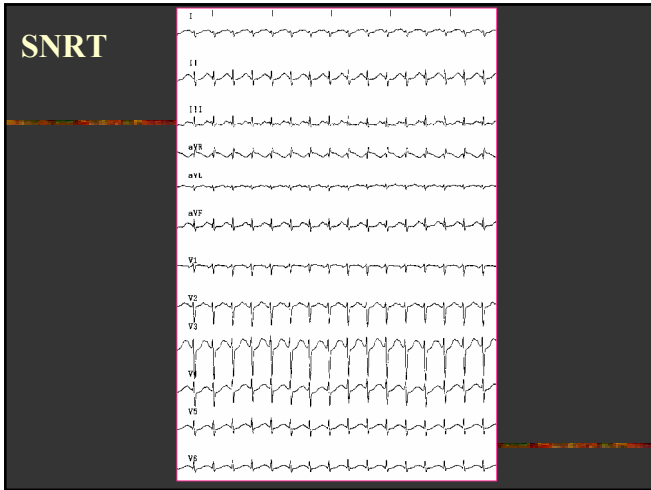


Inappropriate ST- ablation site



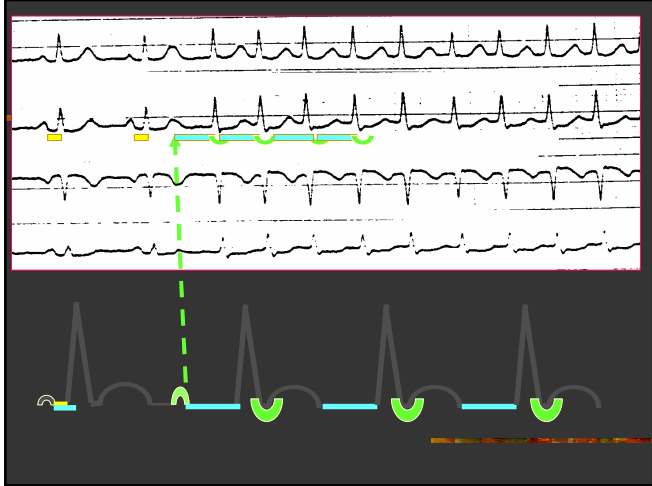
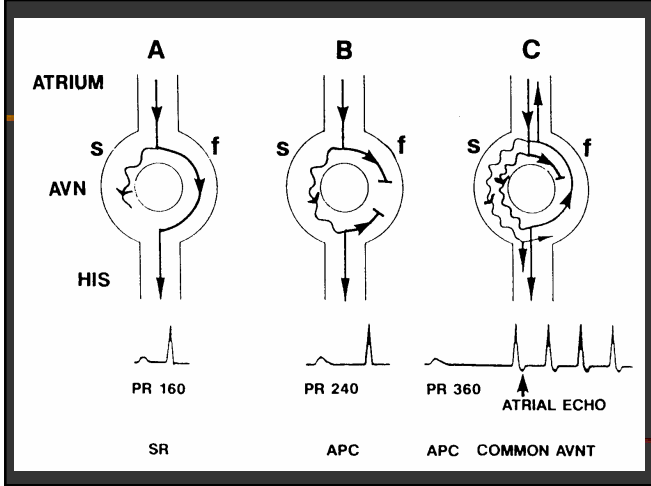
Inappropriate ST- during RF

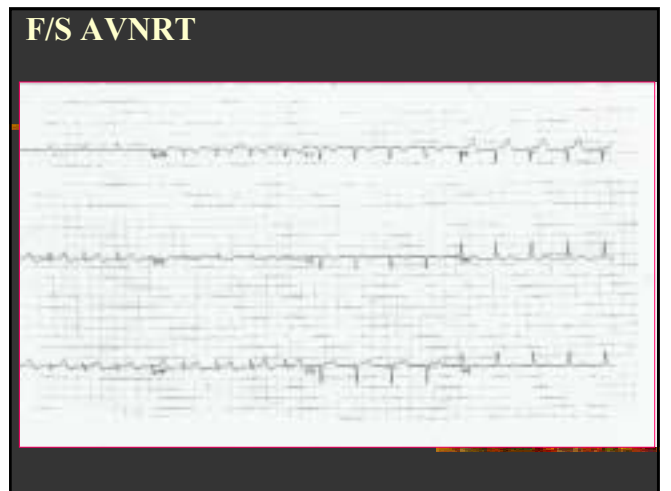
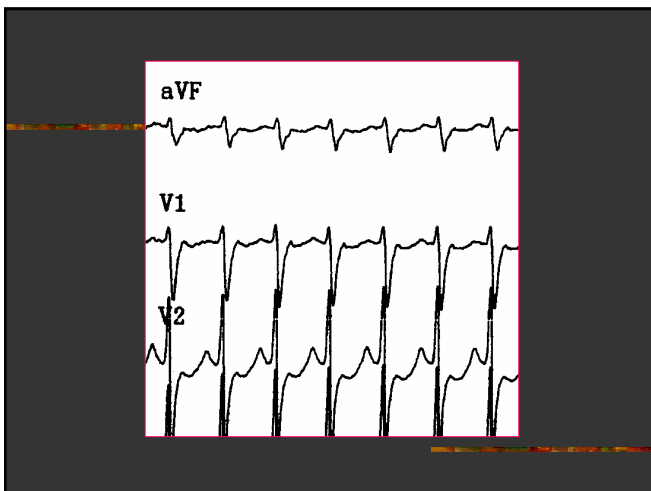
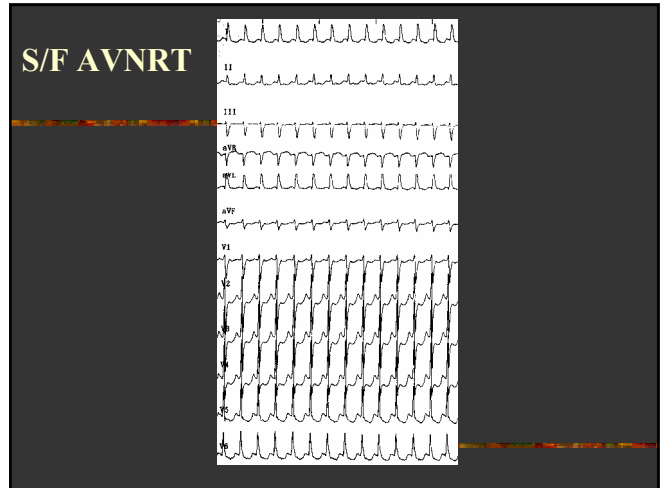
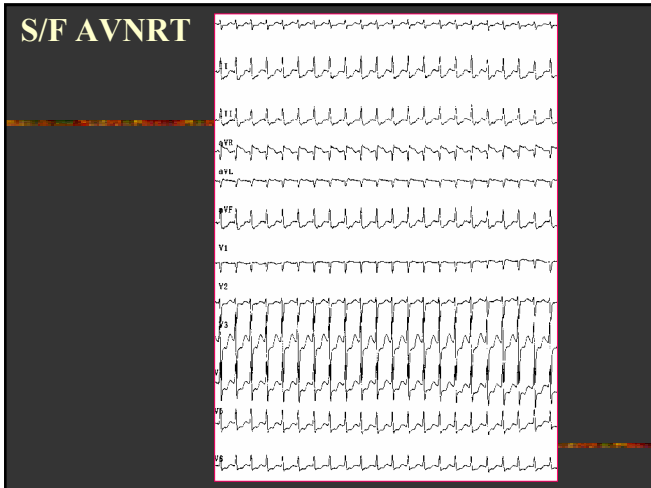
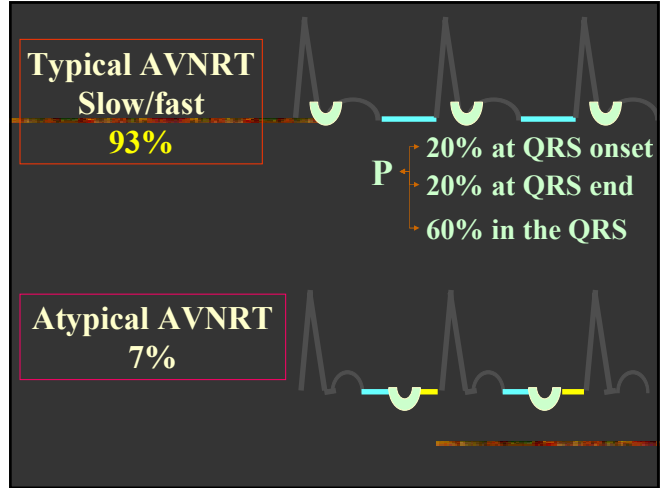
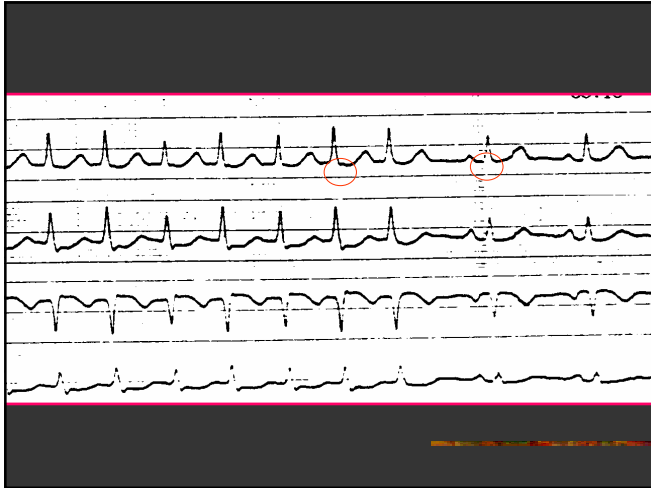


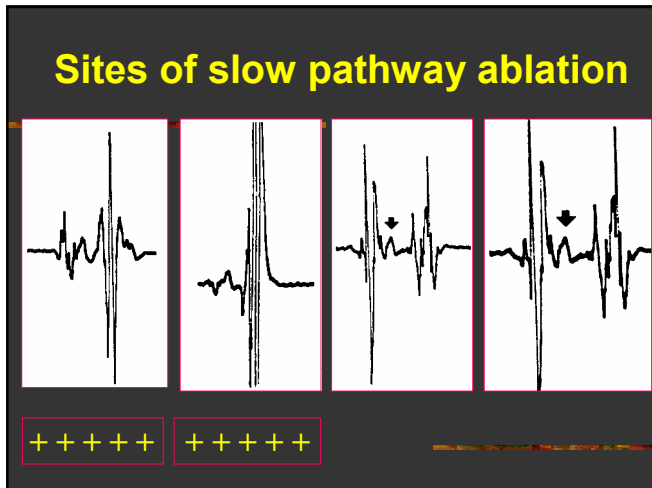
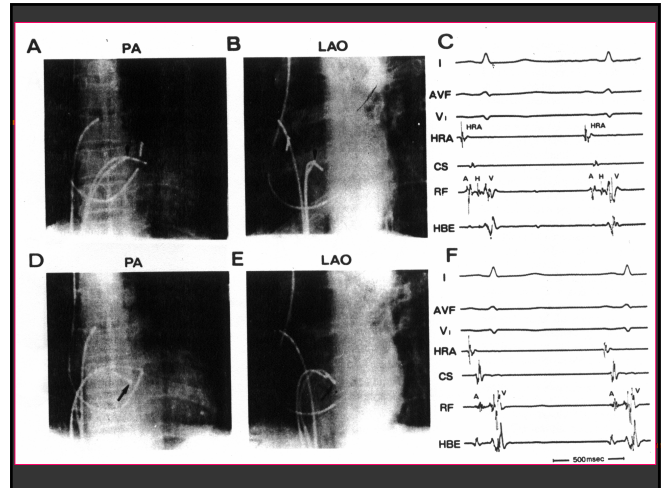
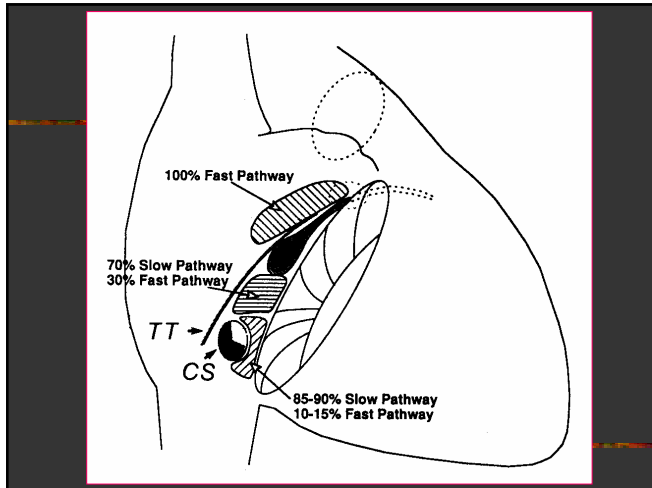


- ### AV nodal reentry tachycardia
- #### Clinical features
- The most frequently encountered regular SVT (70%)
 - Female predominance (2/3)
 - Most common in the elderly
 - Age (at ablation): 9-91 (48 ± 17) yrs
 - Sporadic familial cases
 - No obvious heart disease ($\geq 95\%$)

- ### AV nodal reentry tachycardia
- #### Mechanism
- Reentry mechanism: ≥ 2 extranodal pathways with different conduction velocity and refractoriness
 - 93%: slow/fast AVNRT ("common")
 - 7%: "uncommon"
 - fast/slow; slow/intermediate; F/S+S/F
 - various involving slow pathway







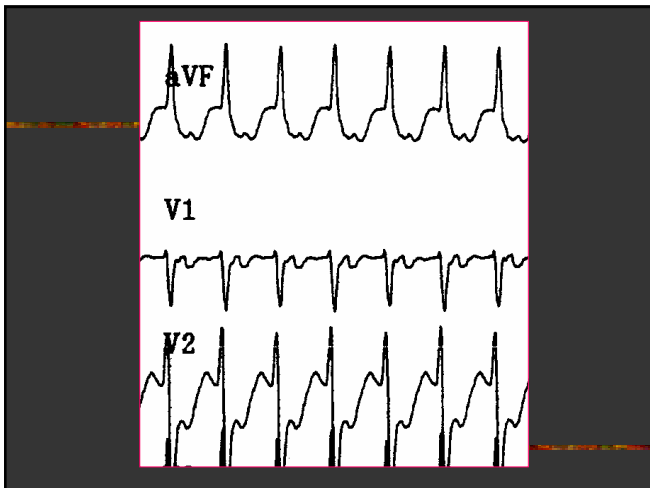
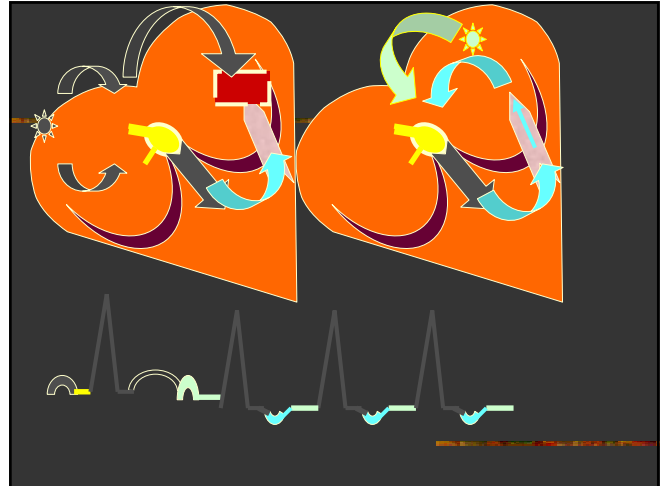
- ### RF Ablation of AVNRT
- (1st procedure)
- **SUCCESS: 573 pts (97.1%)**
 - *SP abolition*: 287 pts (50.1%)
 - *SP modification*: 268 pts (46.8%)
 - *SP mod/abol + various*: 11 pts (1.9%)
 - *Miscellaneous*: 7 pts (1.2%)
 - **FAILURE: 8 pts (1.4%)**
 - **DISCONTINUED: 9 pts (1.5%)**

- ### Complications
- **No complications: 570 pts (96.6%)**
 - **Transient/permanent AVB: 17 pts (2.9%)**
 - immediate/late PM in 6 pts (1%)
 - including 1 pt with hemomediastinum
 - **Pericardial effusion: 2 pts (0.3%)**
 - including 1 pt with tamponade (0.15%)
 - **Myocardial ischemia: 1 pt (0.15%)**

- ### AV reentry tachycardia
- #### Clinical features
- The second most frequently encountered *regular SVT* (20%)
 - Male predominance (60%)
 - Most common in the young
 - Age (at ablation): 9-82 (27 ± 17) yrs
 - Sporadic familial cases
 - No obvious heart disease (≥95%)

AV reentry tachycardia Mechanism

- Reentry mechanism involving the AV node antegradely and ≥ 1 accessory pathway (AP) retrogradely:
 - overt AP: WPW
 - concealed AP: concealed WPW
- Typical form: $RP < PR$ (episodic++)
- Atypical form (PJRT): $RP > PR$ (incessant)



Accessory pathway location

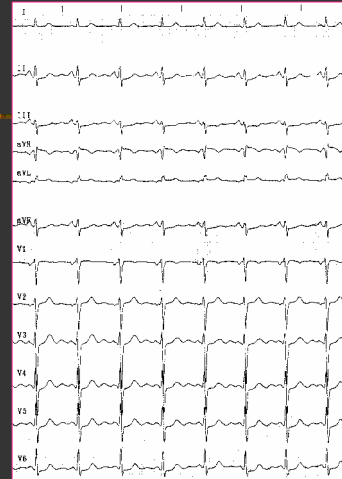
- Right, left or septal AV annulus
- Left free wall: 57%
- Posteroseptal: 20%
- Right free wall: 15%
- Right antero/midseptal/para-His: 8%
- Multiple AP's # 5%

RF Ablation of AP

(1st procedure)

- **SUCCESS/RECURRENCE**
 - Left free wall: 95% / 4%
 - Posteroseptal: 93% / 15%
 - Right free wall: 94% / 10%
 - Anteroseptal/midseptal: 98% / 2%
- **COMPLICATIONS <2%**

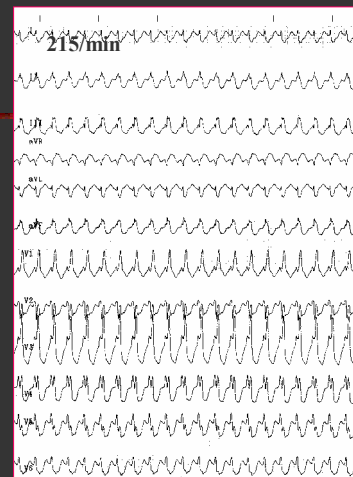
Conc LL



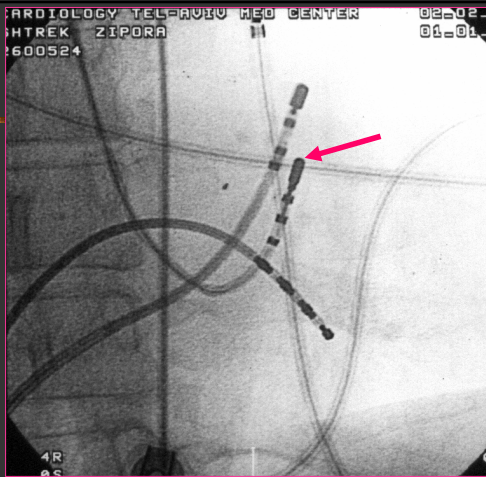
AVRT



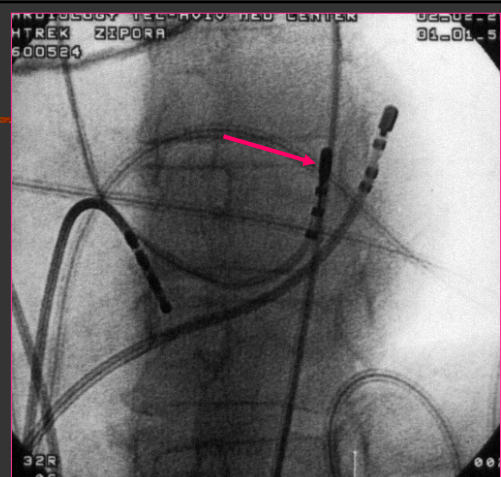
AVRT +RBBB

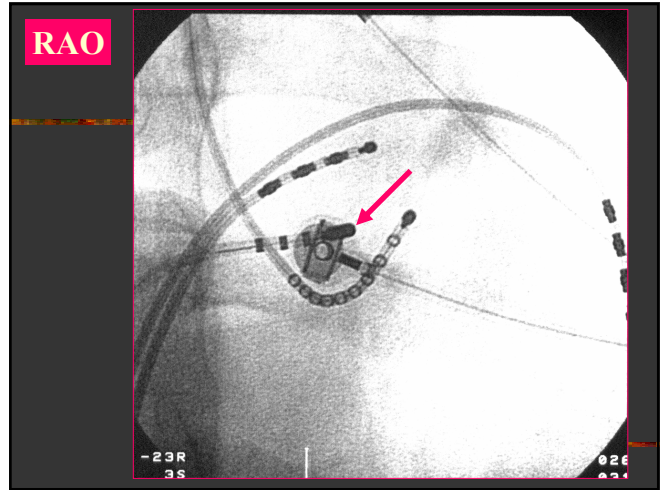
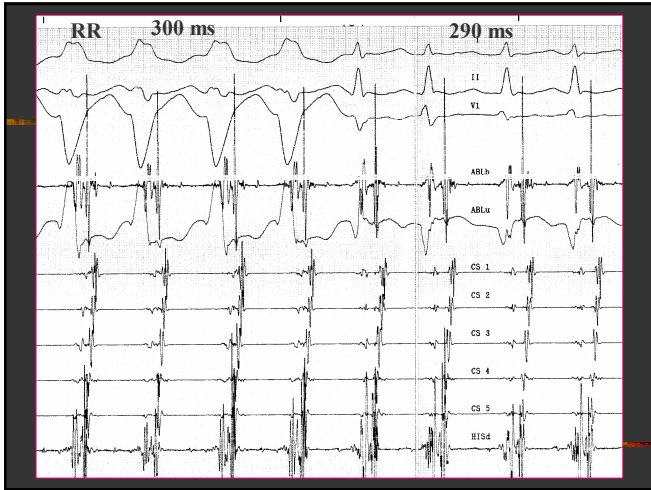
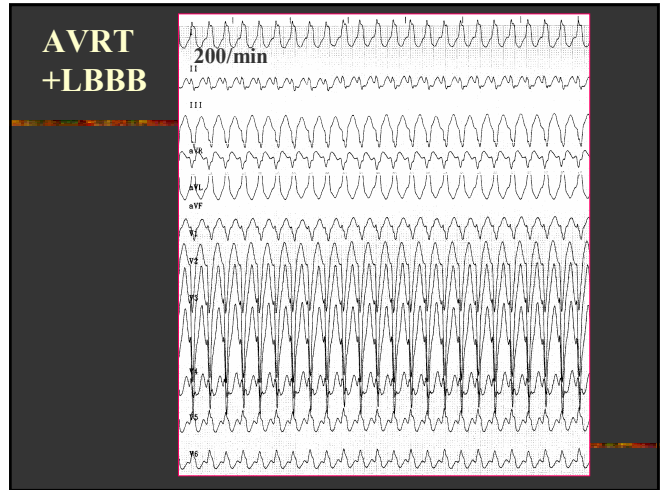
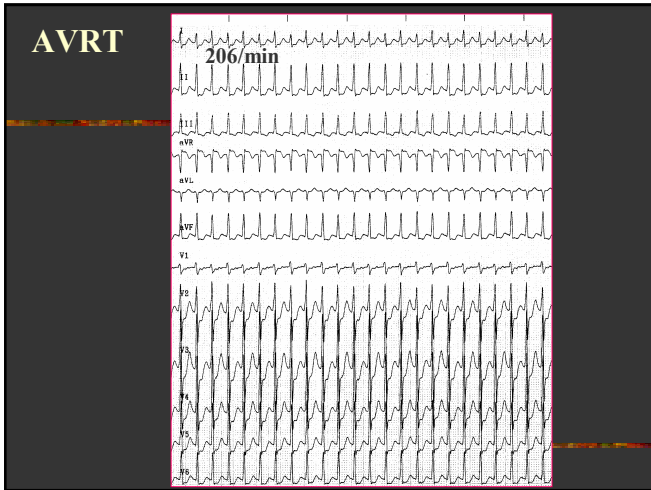
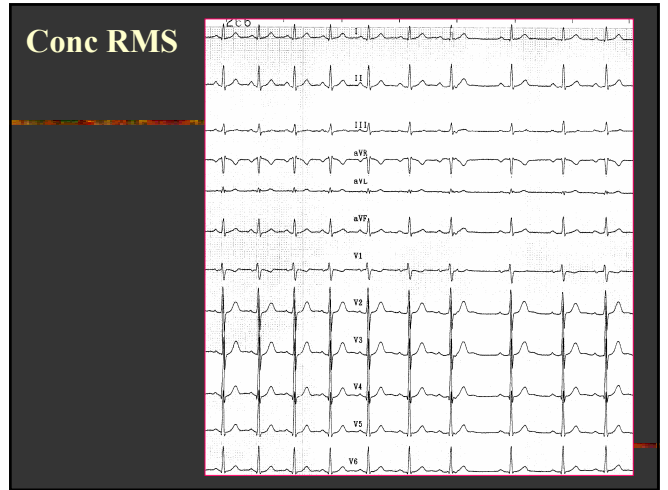
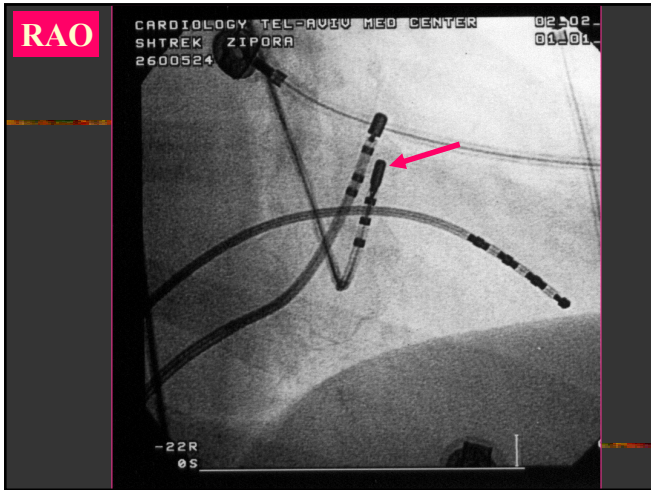


AP

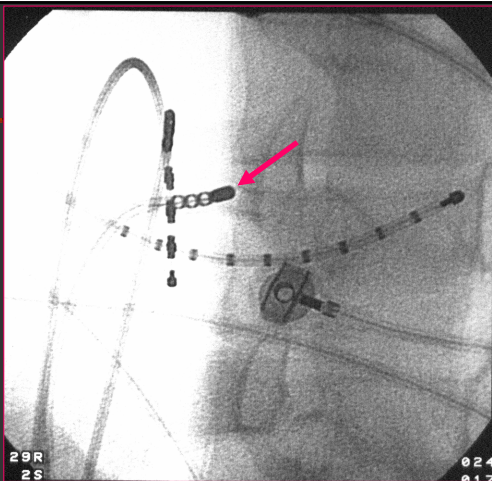


LAO

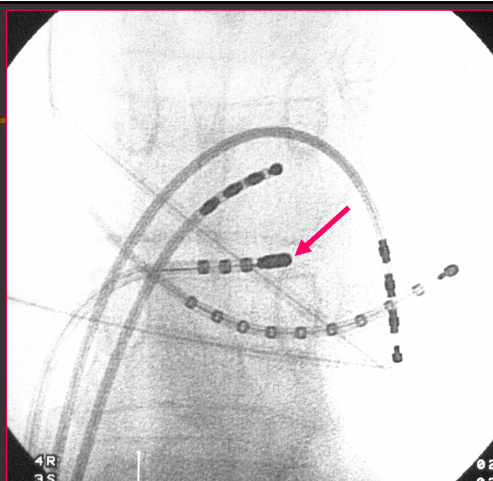




LAO



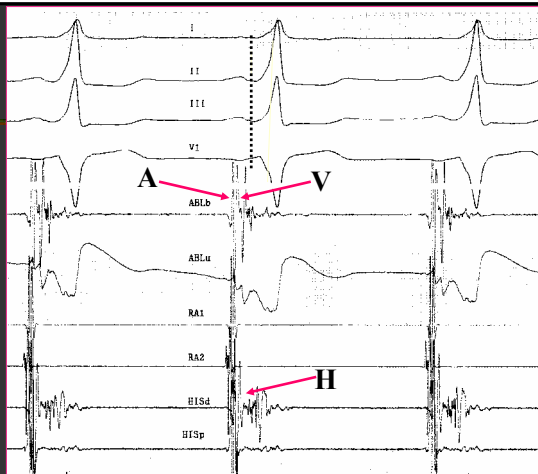
AP



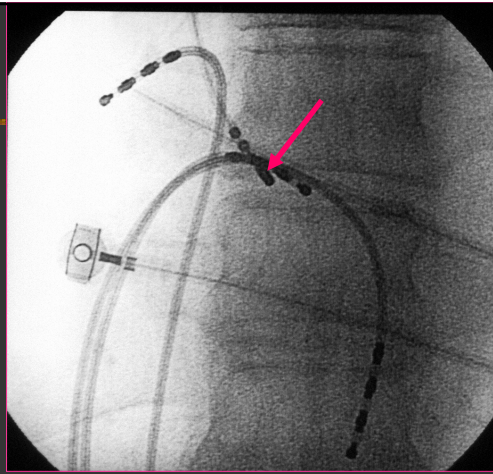
**WPW
RAS**

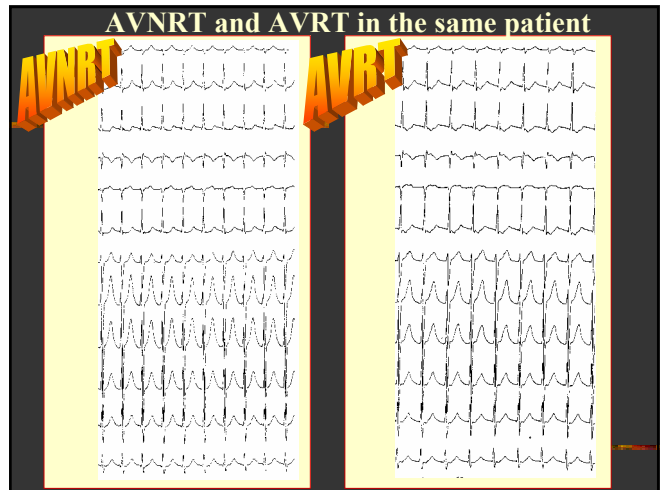
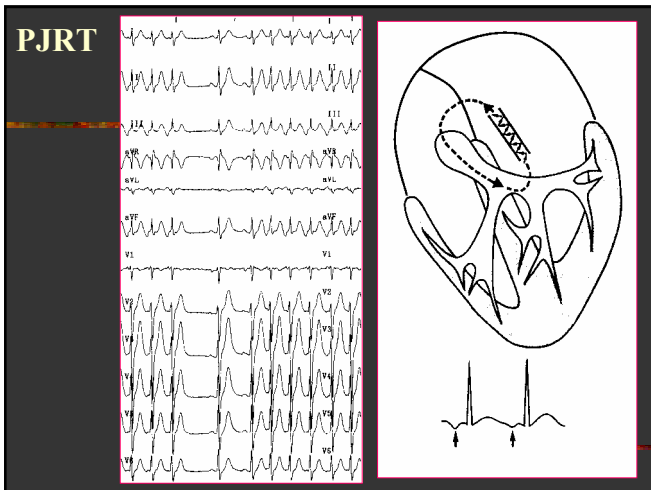
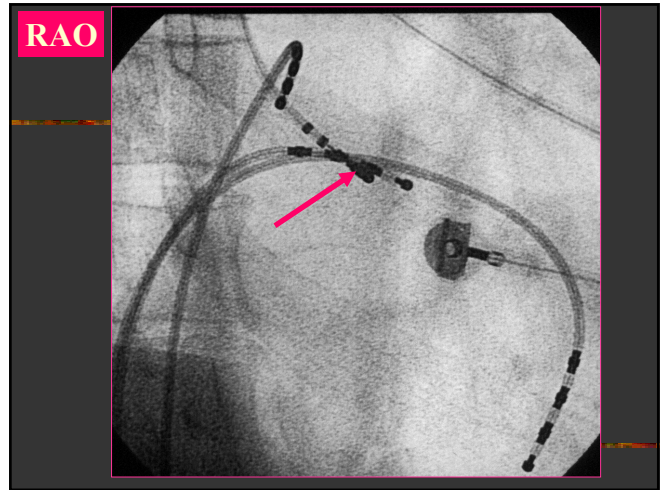
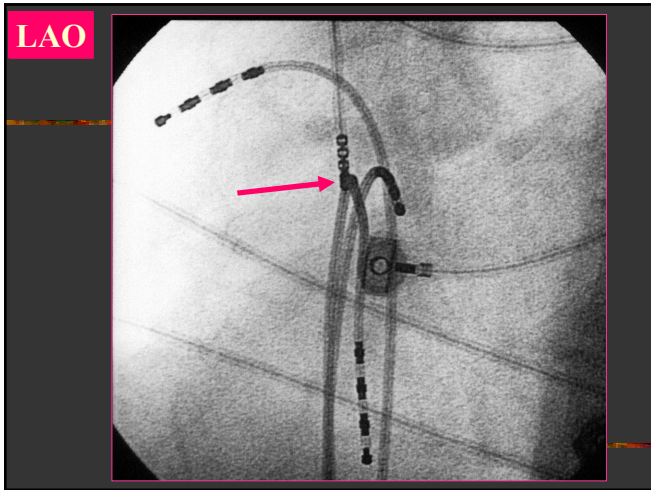


AVRT

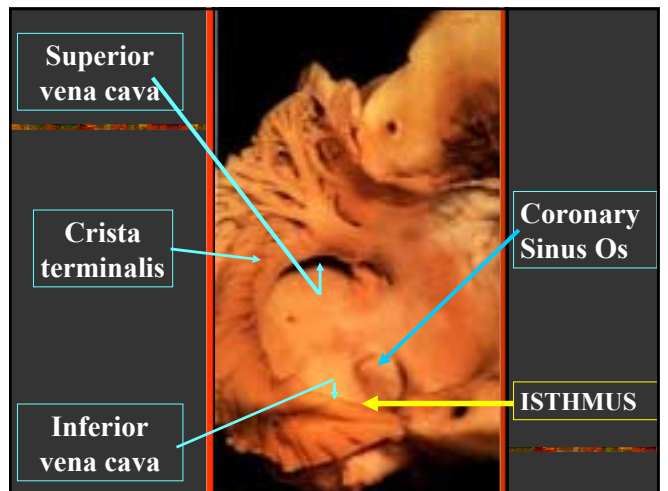


AP





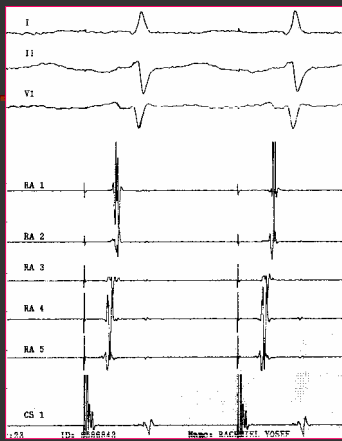
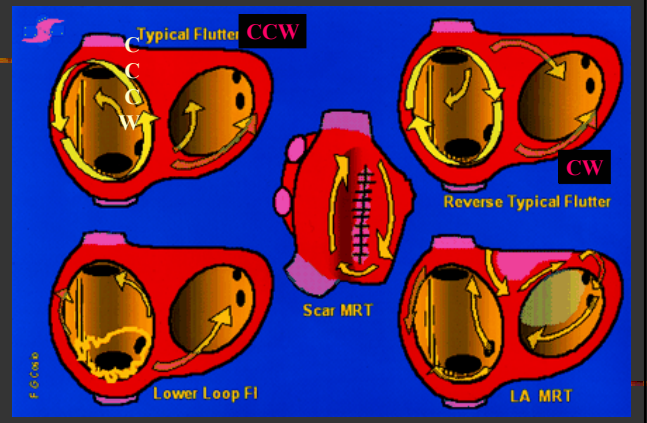
- Atrial flutter**
Clinical features
- Commonly observed arrhythmia
 - Male predominance
 - Favorising factors: age, HTN, CABPG, LAE, RHD, class 1C AAD, COPD
 - Frequently associated with atrial fibrillation



Atrial flutter Mechanism

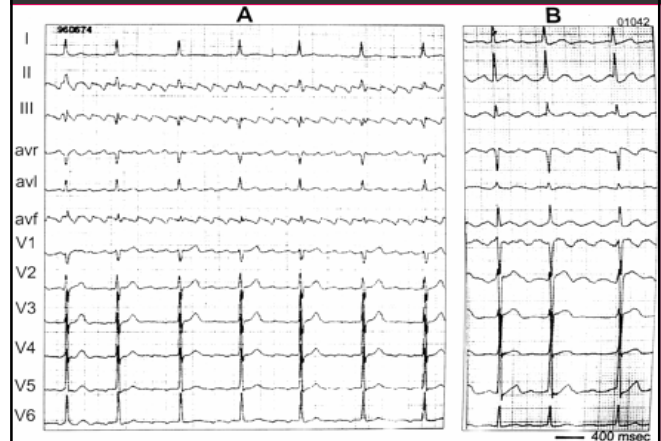
- Reentry mechanism typically involving the RA and the cavo-tricuspid-CS isthmus (“*isthmus-dependent Aflutter*”)
 - counterclockwise +++
 - clockwise +
 - lower-loop
- Non-isthmus dependent Aflutter:
 - left Aflutter, surgical scars

Various Types of Atrial Flutter

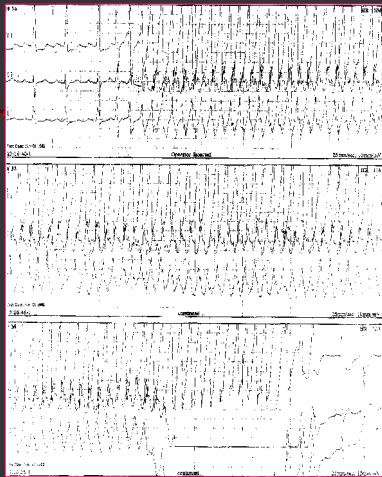


CCW

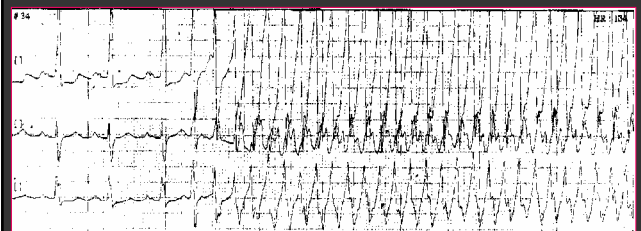
CW



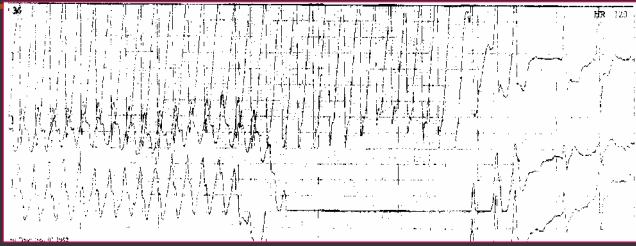
AFL 1:1



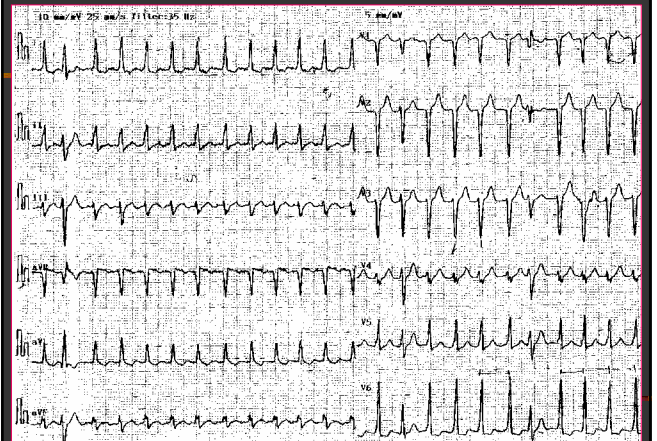
AFL 1:1 onset



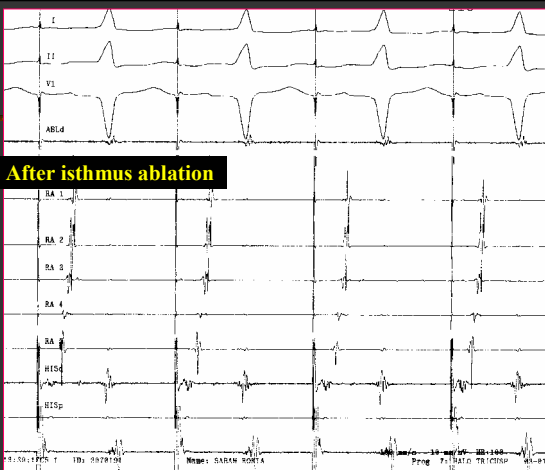
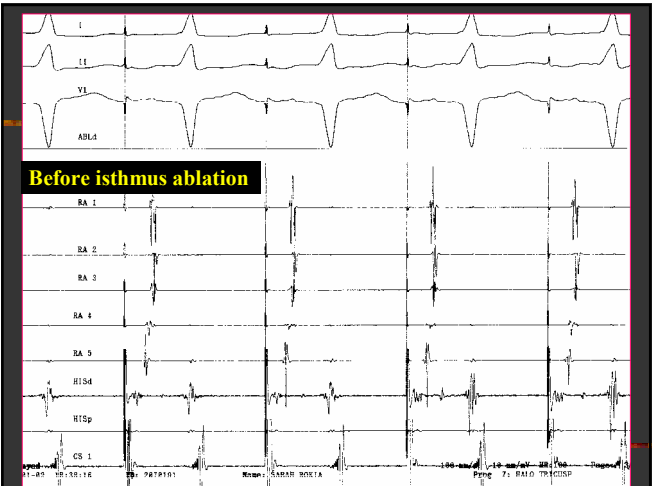
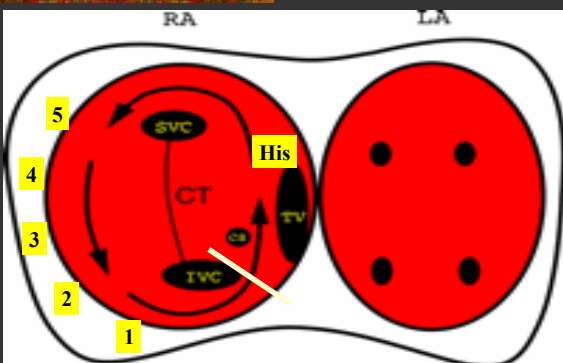
AFL 1:1 termination



AFL 2:1



Isthmus-dependent Counterclockwise Atrial Flutter



RF Ablation of Atrial Flutter (1st procedure)

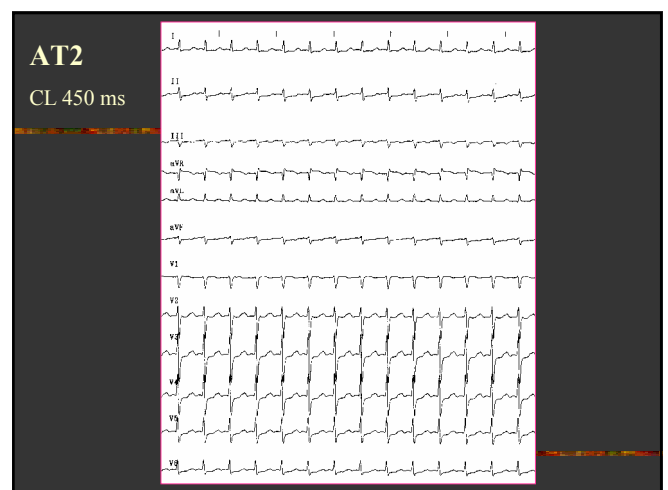
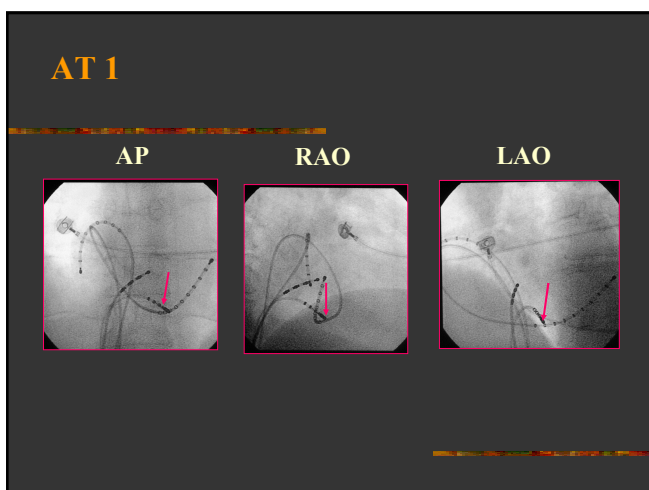
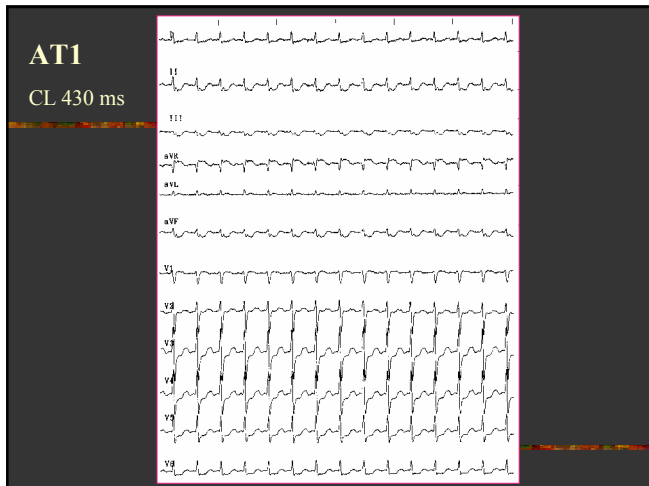
- Success: 88%
- Failure: 8%
- Discontinued: 4%
- Recurrence # 10-15%
- Complications: <1%

Atrial tachycardia Clinical features

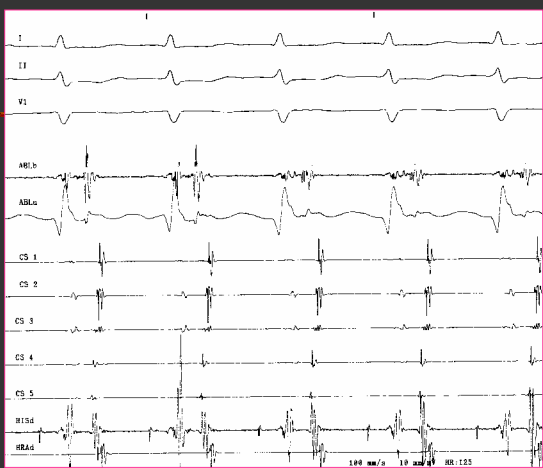
- The least common cause of SVT (#10%)
- Occurs at all ages, especially in the elderly
- Frequently associated with sino-atrial and atrial conduction abnormalities, AVNRT, cardiac disease, post-CHD surgery

Atrial tachycardia Mechanisms

- Reentry, triggered activity
- Frequently catecholamine sensitive
- Site of origin:
 - crista terminalis
 - right/left AV annulus
 - slow/fast pathways areas
 - origin pulmonary veins



AT2

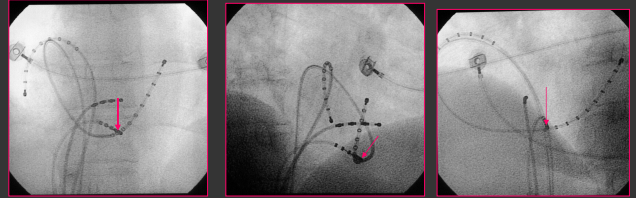


AT 2

AP

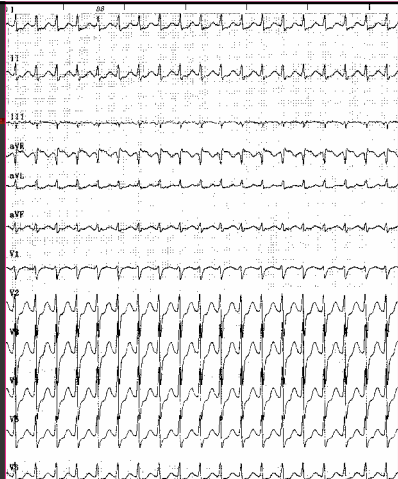
RAO

LAO

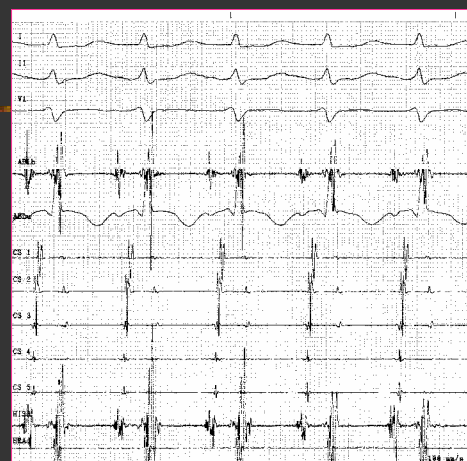


AT3; ISO

CL 300 ms



AT3

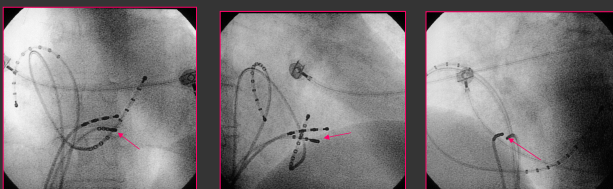


AT 3

AP

RAO

LAO



Atrial fibrillation

- It will be for Dr Sami Viskin