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 GENERAL HOSPITAL
 HEART CENTER

Workshop on Supraventricular Tachycardia

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Workshop on SVT - Goals


- Anatomy
- Physiology
- Cases

Classification of Arrhythmia Mechanisms

1. Focal
(abnormal impulse generation)
2. Reentry
(abnormal impulse conduction)


Anatomic Classification of SVT

- I. ATRIAL (AV node independent)
- II. AV JUNCTIONAL (AV node dependent)

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Anatomic Classification of SVT

- I. ATRIAL (AV node independent)
 - Arise above the AV node
 - Independent of AV conduction
- II. AV JUNCTIONAL (AV node dependent)
 - Involve AV node as part of circuit
 - 1:1 AV relationship

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Anatomic Classification of SVT

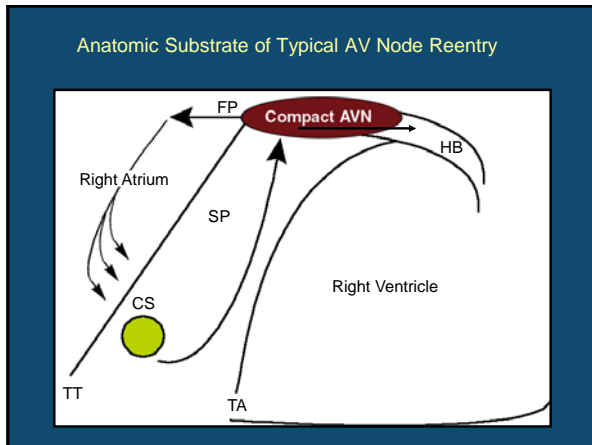
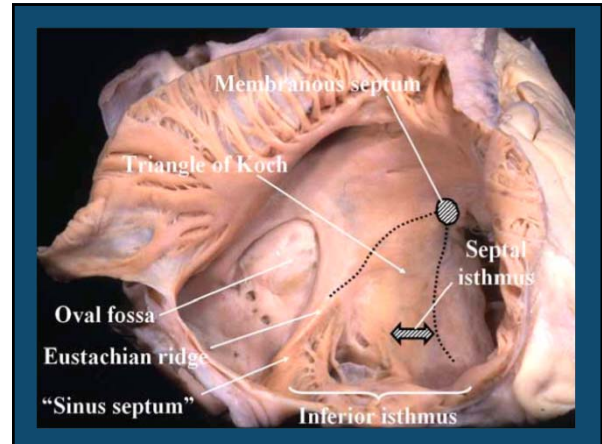
- I. Atrial (AV node independent)
 1. Sinus tachycardia
 2. Atrial tachycardia
 3. Atrial flutter
 4. Atrial fibrillation
- II. AV Junctional (AV node dependent)
 1. AV node reentry
 2. AV reentry

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Mechanisms of Common SVTs

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Delacretaz NEJM 2006 354:1039-51



AV Junctional SVTs: ECG Correlations

A. AVNRT

B. AVRT

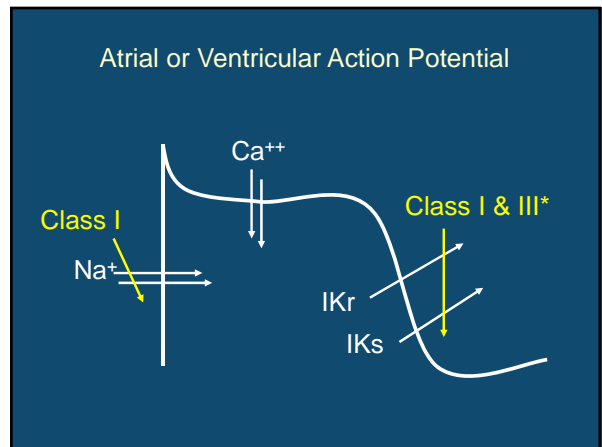
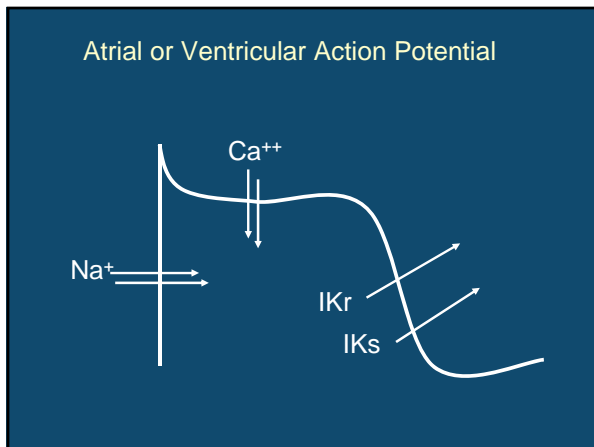
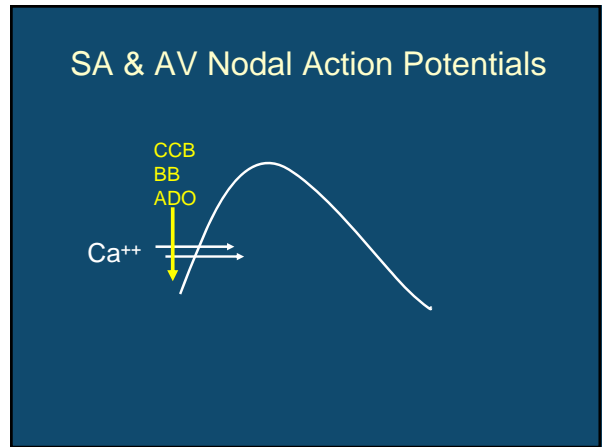
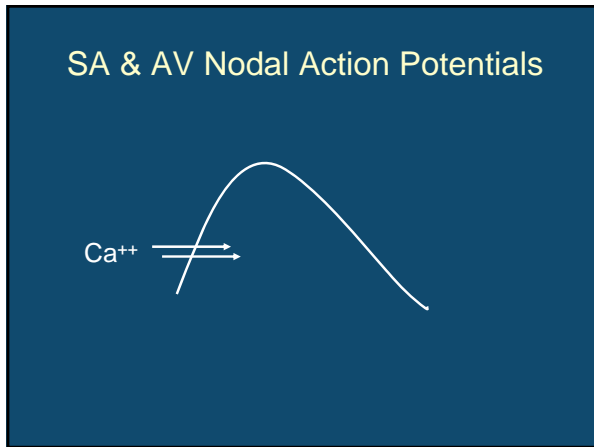
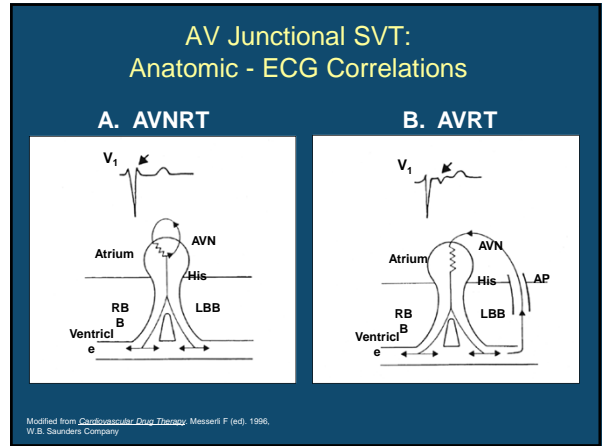
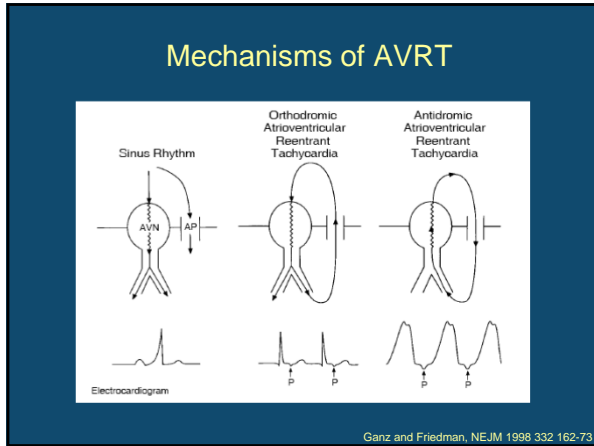
Modified from *Cardiovascular Drug Therapy*, Messeri F (ed), 1996, W.B. Saunders Company.

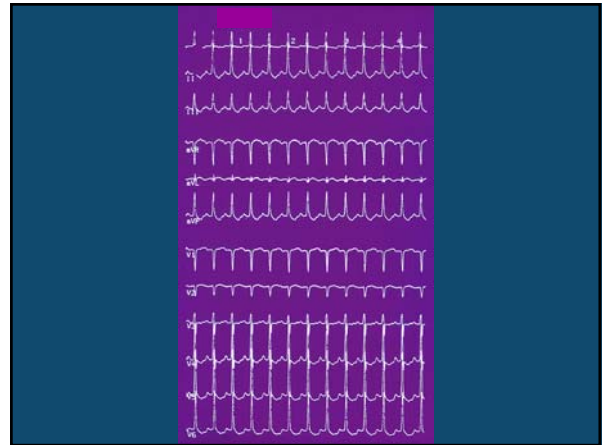
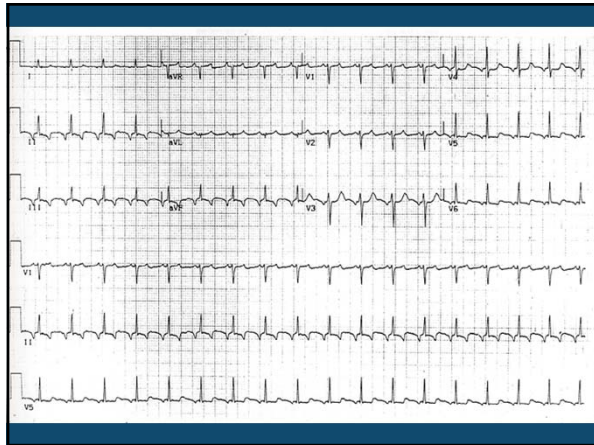
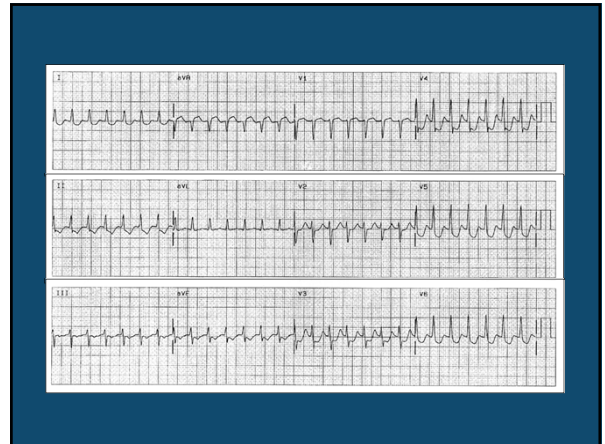
Wolff L, Parkinson J, White PD. Bundle-branch block with short P-R interval in healthy young people prone to paroxysmal tachycardia. *Am Heart J* 1930;5:685-704.

Wolferth OC, Wood FC. The mechanism of production of short P-R interval and prolonged QRS complexes in patients with presumably undamaged hearts; hypothesis of an accessory pathway of auriculo-ventricular conduction (bundle of Kent). *Am Heart J* 1933;8:297-311

Fig. 4—Schematic representation to illustrate the hypothesis of premature transmission of the impulse through the bundle of Kent to the right ventricle. The shaded area represents the section which is activated before the impulse reaches the ventricle through the bundle of His. This mechanism would account for the short P-R interval, the widening of the QRS complex and the slurring of its initial deflection.

Fig. 5—Schematic representation showing the path of an impulse which might be responsible for exciting a paroxysm of supraventricular tachycardia or muscular fibrillation.





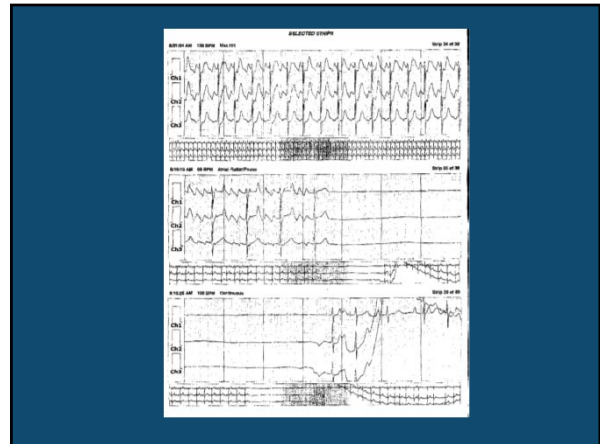
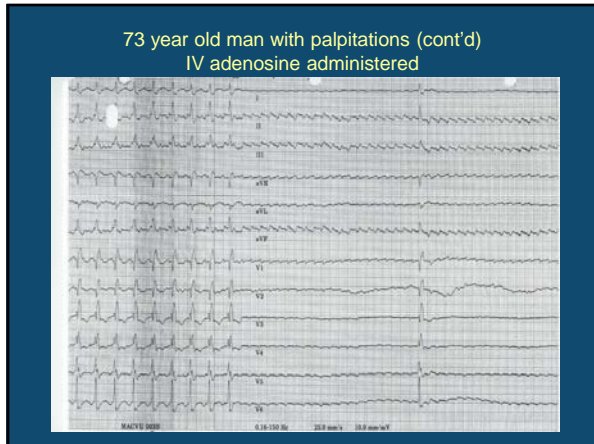
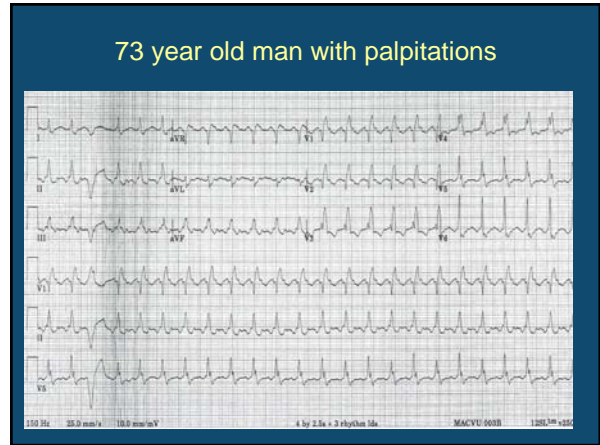
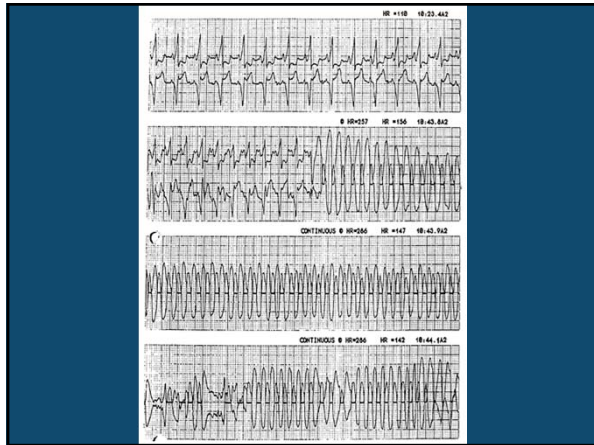
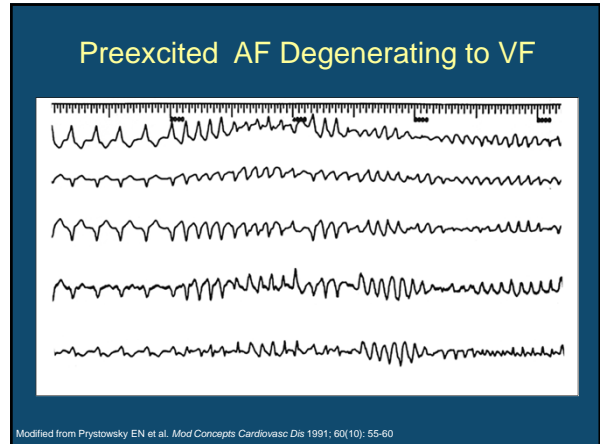
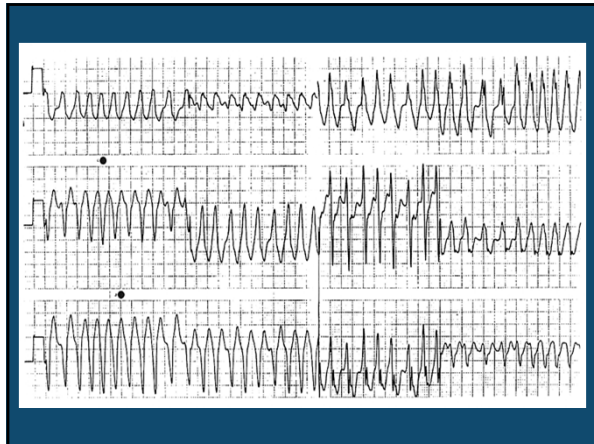
38 year old man with palpitations

ECG tracing showing leads I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6. The tracing shows a regular rhythm with a rate of approximately 70 bpm. The P waves are upright in leads I, II, III, aVL, aVF, V4, V5, and V6, and inverted in leads aVR and V1. The QRS complexes are narrow and the ST segments are normal. The T waves are upright in leads I, II, III, aVL, aVF, V4, V5, and V6, and inverted in leads aVR and V1.

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38 year old man with palpitations (contd)
Post-Cardioversion

ECG tracing showing leads I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6. The tracing shows a regular rhythm with a rate of approximately 70 bpm. The P waves are upright in leads I, II, III, aVL, aVF, V4, V5, and V6, and inverted in leads aVR and V1. The QRS complexes are narrow and the ST segments are normal. The T waves are upright in leads I, II, III, aVL, aVF, V4, V5, and V6, and inverted in leads aVR and V1.



Pretreatment Evaluation

- (1) Make a diagnosis
- (2) Eliminate the cause if possible
- (3) Determine the baseline hemodynamics
- (4) Select drugs or DCCV based on 1-3

A-V Node Reentry (AVNRT)

- A. Decompensated: electrical cardioversion
- B. Compensated
 1. vagal maneuvers
 2. **adenosine**
 3. verapamil; diltiazem; beta blocker
 4. digoxin
 5. I.V. procainamide
 6. pacing
 7. electrical cardioversion

A-V Reciprocating Tachycardia (AVRT) with known WPW

- A. Decompensated: electrical cardioversion
- B. Compensated
 1. vagal maneuvers
 2. **adenosine**
 3. I.V. procainamide
 4. pacing
 5. electrical cardioversion
 6. **avoid digoxin and verapamil**

Atrial Tachycardia

- A. Decompensated: electrical cardioversion
- B. Compensated
 1. Rate control - beta blocker; diltiazem; verapamil; digoxin
 2. Termination
 - A. Vagal maneuvers
 - B. **Adenosine** (not for AFL/AF)
 - C. IV Beta blocker (rarely effective)
 - D. Class IA, IC, or III agents
 1. **iv procainamide**
 2. po flecainide or propafenone
 3. iv amiodarone
 - E. Pacing
 - F. Electrical cardioversion

Atrial Fibrillation (in the absence of WPW)

- A. Decompensated: electrical cardioversion
- B. Compensated
 1. Rate control - beta blocker; diltiazem; verapamil; digoxin
 2. Termination
 - B. Class IA, IC, or III agents
 - A. Digoxin ?
 - C. Electrical cardioversion

Catheter Ablation Therapy

RFA usually first line therapy	}	<ul style="list-style-type: none"> ◆ AV node reentry ◆ Wolff Parkinson White Syndrome ◆ Atrial flutter ◆ Atrial tachycardia
RFA usually second line therapy	}	<ul style="list-style-type: none"> ◆ Atrial fibrillation ◆ Ventricular tachycardia

