Complex Supraventricular Tachycardia

가톨릭의대 서울성모병원 순환기내과

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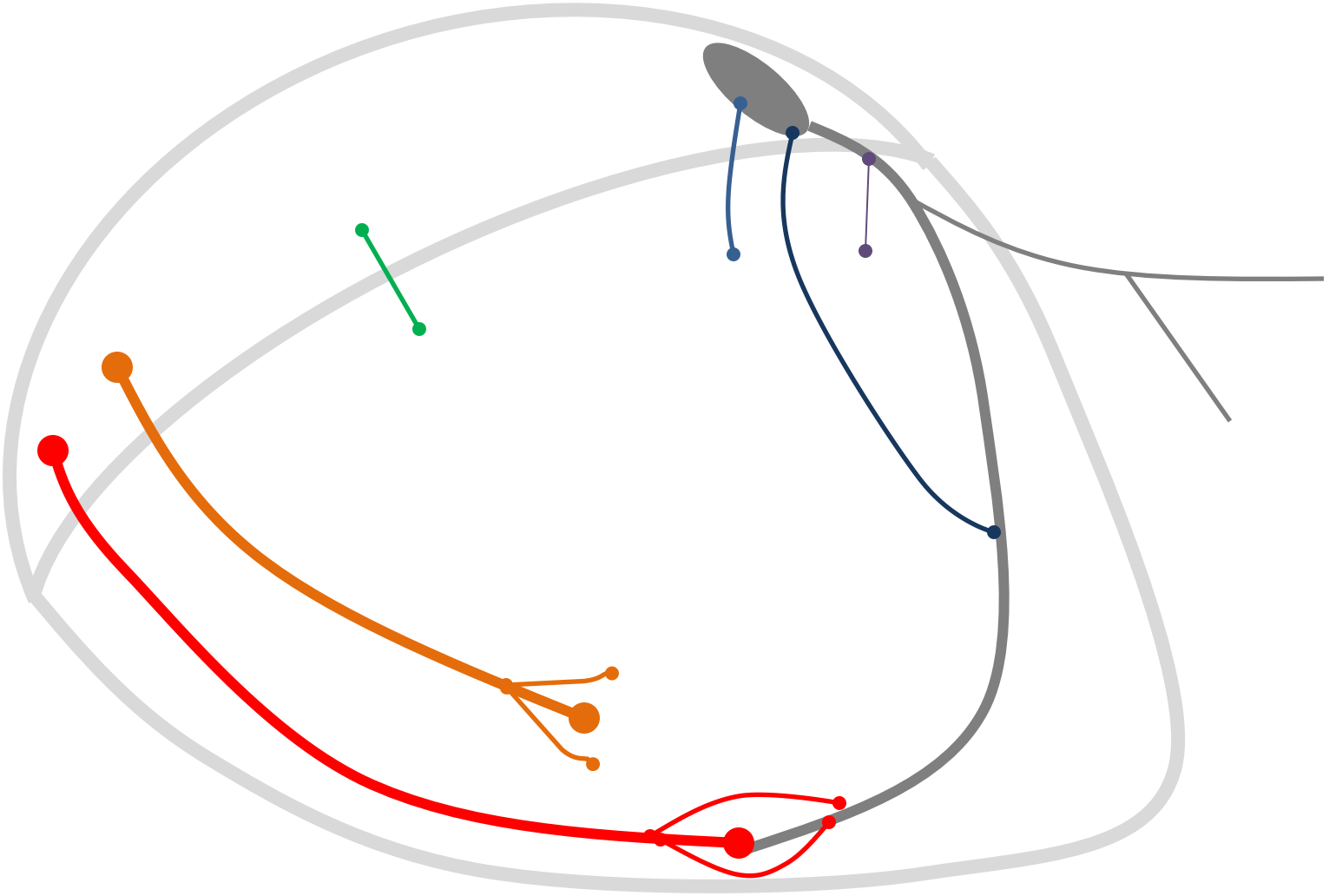
SVT rather than AVNRT, WPW, AVRT

- AF, AT, AFL
- Inappropriate sinus tachycardia, Postural Orthostatic Tachycardia Syndrome, Sinus Node Re-entry Tachycardia
- Junctional Tachycardia
- Permanent Junctional Reciprocating Tachycardia
- Variants of Preexcitation (=atypical bypass tracts, Mahaim fibers)

History

- In 1937, Mahaim and Benatt
  - during pathological examination
  - another conducting tissue from the His (or AV node?) into ventricular myocardium
- Subsequent electrophysiologic studies,
  - almost right side, long, decremental property, antegrade
  - atriofascicular, slow conducting long (or short) AV bypass tract, nodoventricular, nodofascicular, fasciculoventricular

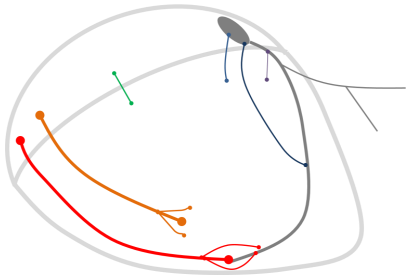
Variants of Preexcitation



Characteristics

- 3~5% of all BTs
- Dual AV node or multiple BTs: 40% of patients with variant of preexcitation
- Unidirectional conduction (anterograde)
- Slow conducting
- Decremental property

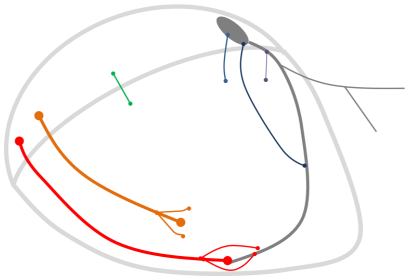
어떤 경우에 의심해야 하는가? **ECG features**



- Subtle preexcitation
- Relatively narrow (130~140ms)
  - -fascicular
- Like LBBB
  - no septal forces (no q wave in I ,aVL, V6), negative in III
- Late transition of precordial R wave
- Fasciculoventricular (vs. anteroseptal typical BT)
  - Longer PR (120ms), narrower R, smaller and notching S in V1

Oh et al. *PACE 2005*

EP study (1) - A pacing

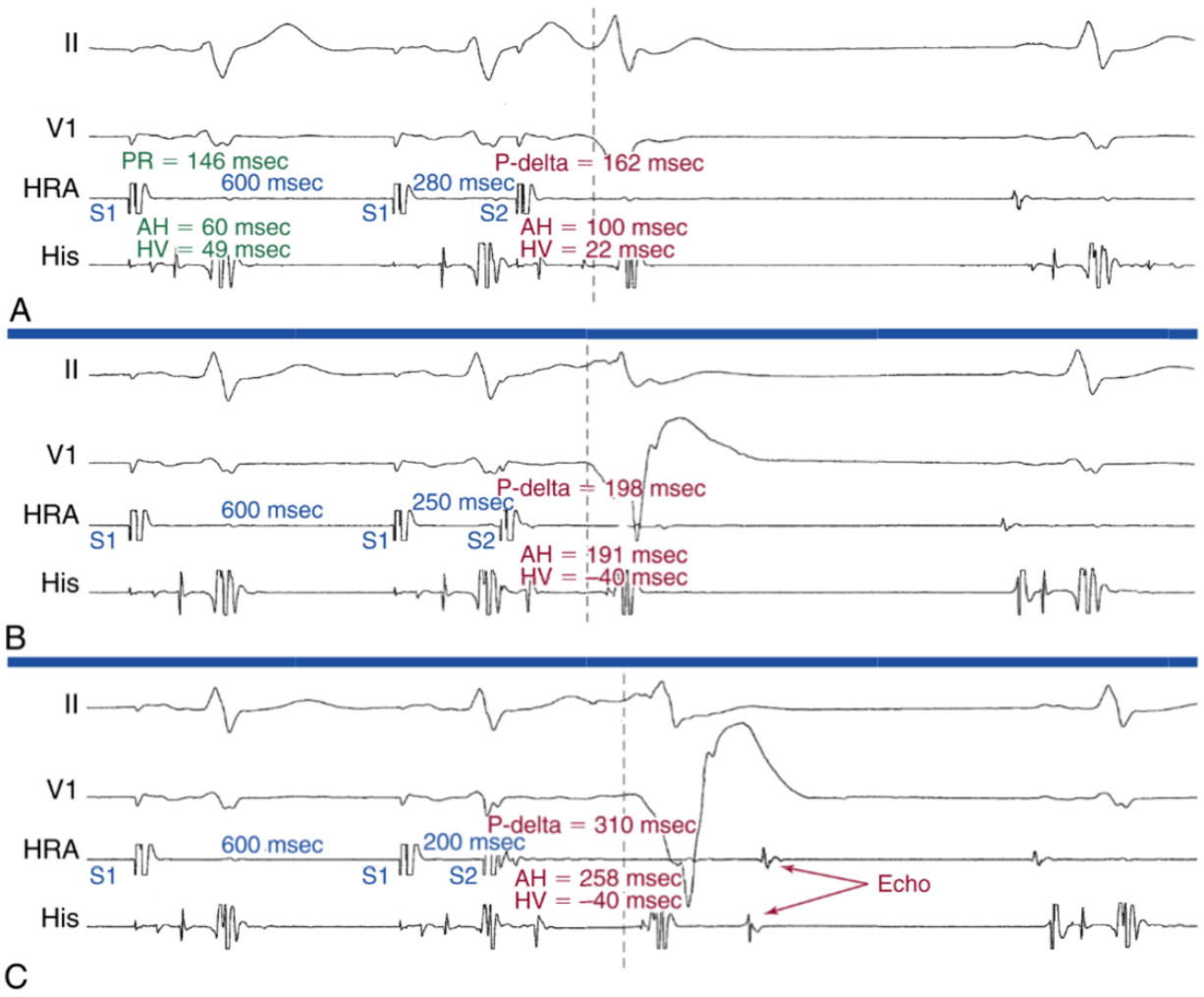


- During shorter A pacing
  - P-delta increase (+more preexcited QRS)
  - Fixed VH interval if -fascicular BTs

- Preexcitation change as A pacing sites

  ; atriofascicular, long AV BT

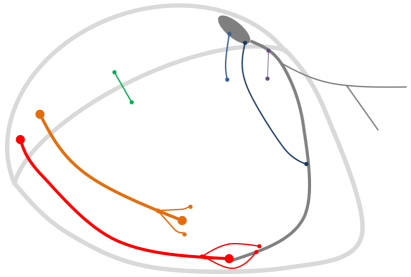
P-delta increase during AES



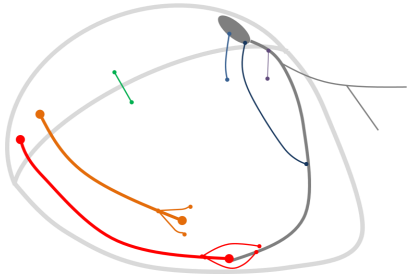
EP study (2) - V pacing

- Mostly useless…

- If fixed VA conduction, suspect another typical BT



EP study (3) – antidromic tachycardia features

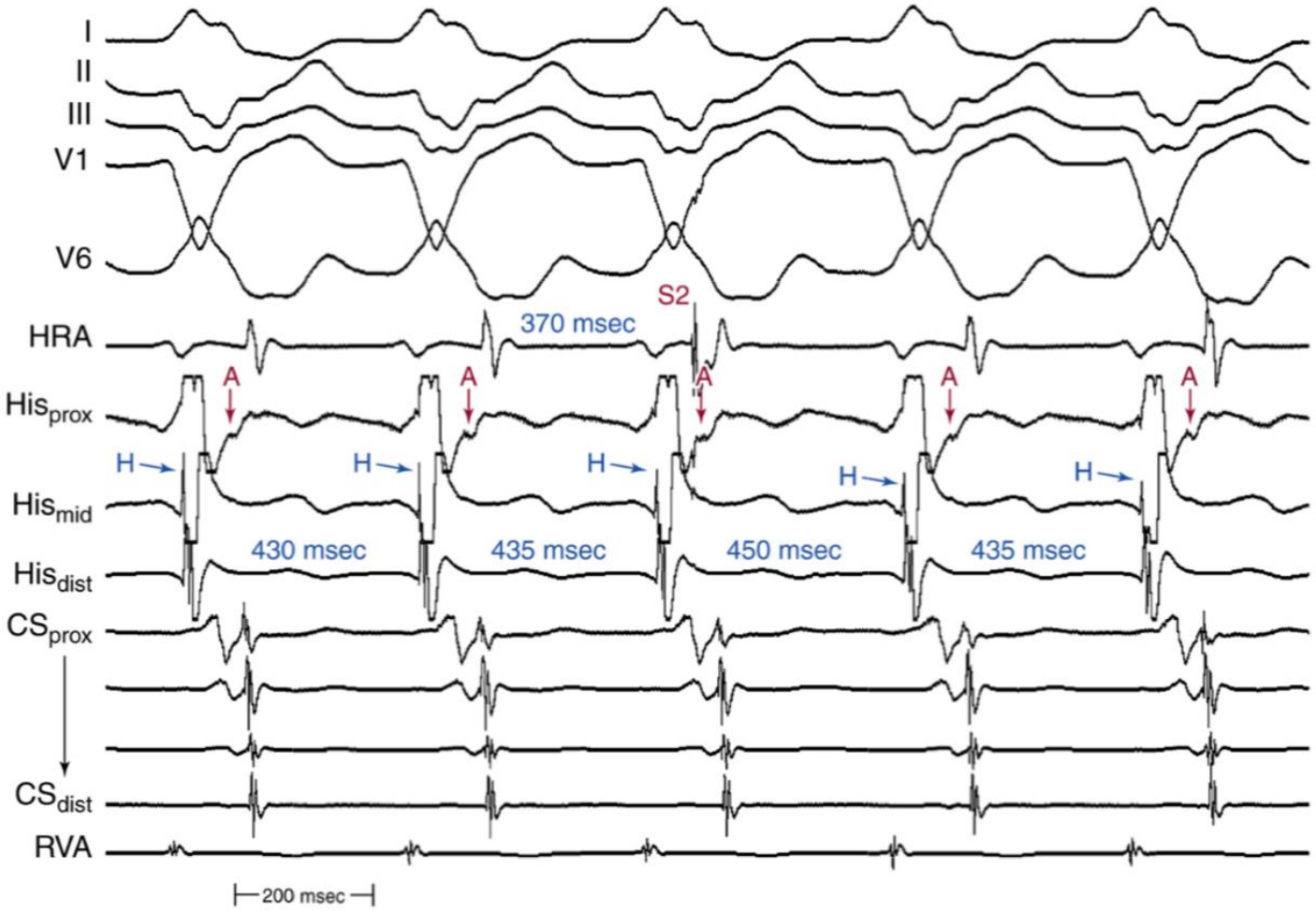


- VH

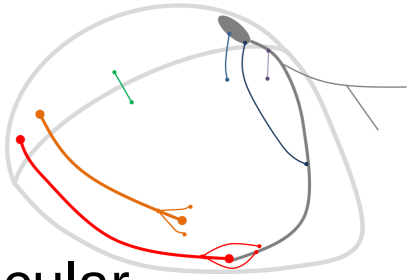
-fascicular (10~20ms) << long AV BT (40ms) < nodoventricular

- PAC during His refractory
  - advance or delay: atriofascicular, long AV BT
  - no change: nodo-, fasciculoventricular

PAC during His refractory

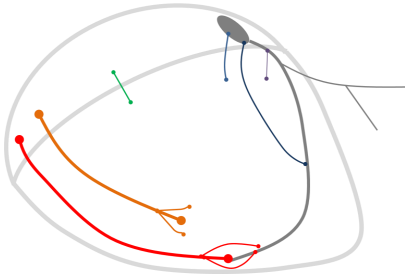


EP study (4) – miscellaneous



- Adenosine
  - more preexcited QRS except fasciculoventricular
- Sustained tachycardia even VA block
  - nodo~
- Persistent preexcitation during His pacing
  - fasciculoventricular

Summary



- Subtle preexcitation
- Relatively narrow QRS
- like LBBB
- Late transition

→ P-delta increases during shorter A pacing

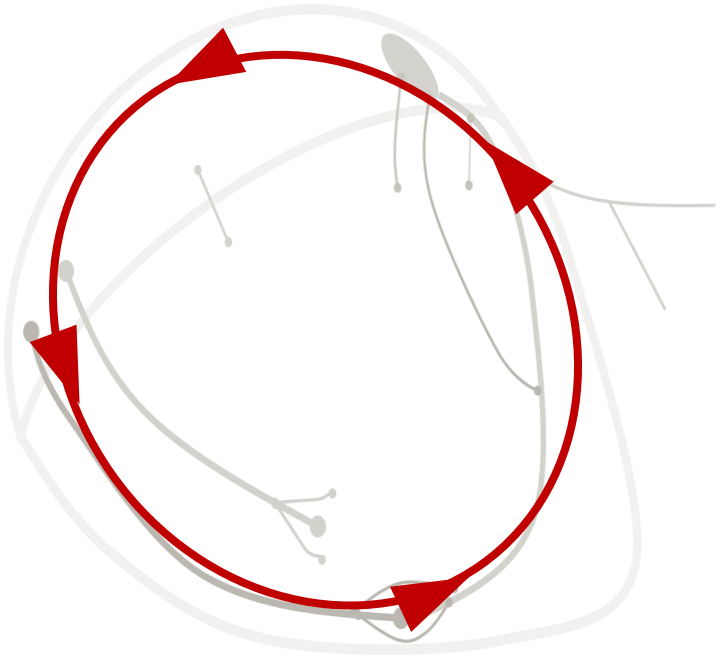
↓

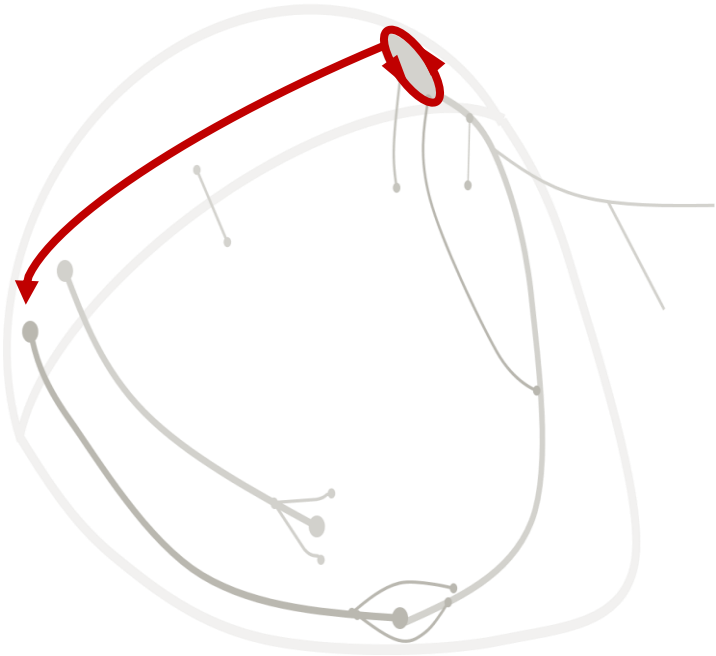
- Preexcitation change as A pacing site
- Cycle length change by PAC

Atriofascicular or Long AV BT → Short VH (10~20ms) tachycardia → **Atriofascicular** / **Long AV BT**

Nodo~, Fasciculoventricular → Short VH (10~20ms) tachycardia → **Nodofascicular** / **Nodoventricular**

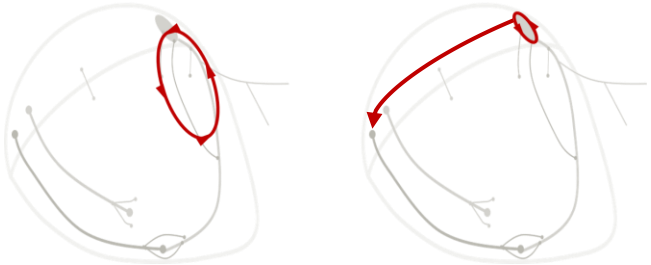
Antidromic AVRT vs. Preexcited AVNRT





Antidromic AVRT vs. Preexcited AVNRT

- ~~PAC during His refractory~~

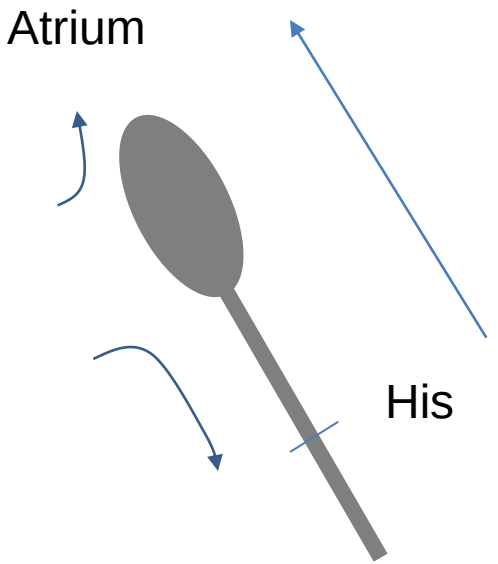


- Antidromic AVRT

  $HA_{pacing} \leq HA_{SVT}$

- Preexcited AVNRT

  $HA_{pacing} > HA_{SVT}$

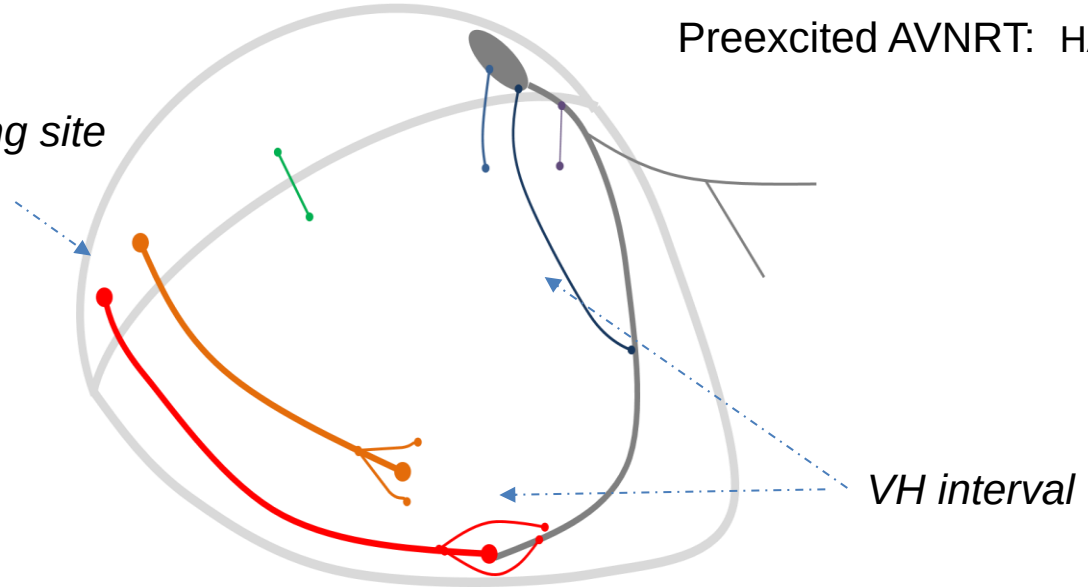


Take hospital message

- Variant of preexcitation
  - Unidirectional (antegrade), slow conducting, and right side (like LBBB)

Preexcited AVNRT: $HA_{pacing} > HA_{SVT}$

- *Prexcitation as pacing site*
- *PAC*



Preexcited AVNRT