

Rhythms of the HEARTLAND

15th Annual Heart Rhythm Symposium: Rhythms of the Heartland

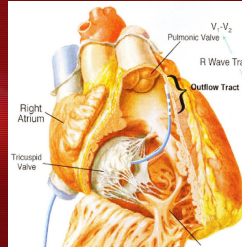
Success versus Failure: Ablation of PVCs

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Catheter Ablation

- Patient sedated in fasting state
- Multiple, steerable catheters are placed via femoral access sites
- High burden of PVCs desirable to allow for precise mapping
 - Activation Mapping
 - Pace-mapping
- Ablation is performed at sites with “earliest” activation and/or “perfect” pacemaps



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Manual Catheter Ablation of PVCs

TABLE 1 Patient Characteristics (N = 1,185)

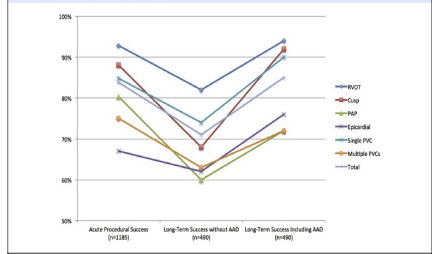
Age, yrs	52 ± 15
Female	55
Hypertension	57
Diabetes	8
Coronary artery disease	9
PVC burden (pre-ablation), %	20 ± 15
Ejection fraction (pre-ablation), %	55 ± 10
PVC-induced cardiomyopathy	21
Site of origin	
RVOT	45
Cusp	15
PAP	5
Epicardial	11
Other	24
Single PVC configuration	82

Values are mean ± SD or %.

*The ablation PVC burden and ejection fraction data were available in 70% and 90% of the population, respectively.

PAP = papillary muscle; PVC = premature ventricular complex; RVOT = right ventricular outflow tract.

FIGURE 1 Acute and Long-Term Ablation Success

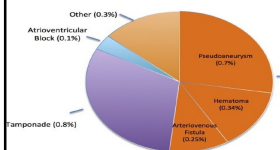


Latchamsetty R, et al. J Am Coll Cardiol EP 2015;1:116-23

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Manual Catheter Ablation of PVCs



Overall complication rate 5.2%

Minor complications 2.8%

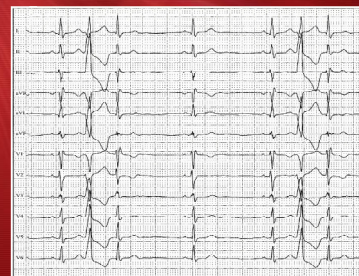
Major complications 2.4%

Latchamsetty R, et al. J Am Coll Cardiol EP 2015;1:116-23

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PVC Case # 1

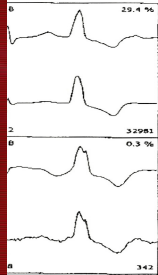
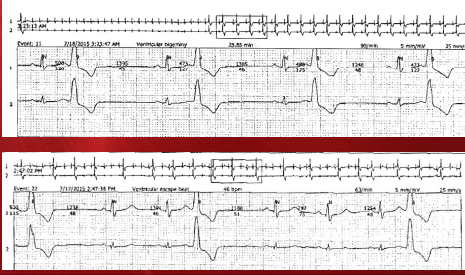


- 32 y/o WF with frequent PVCs for years
 - Sx: palp, fatigue, LH
 - No response to BB
- Holter: Monomorphic PVCs (25-30%)

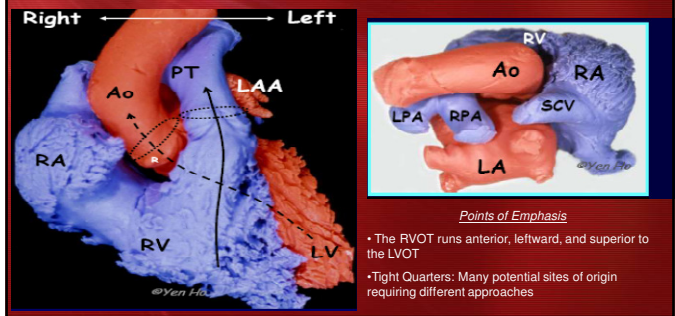
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Holter Monitor

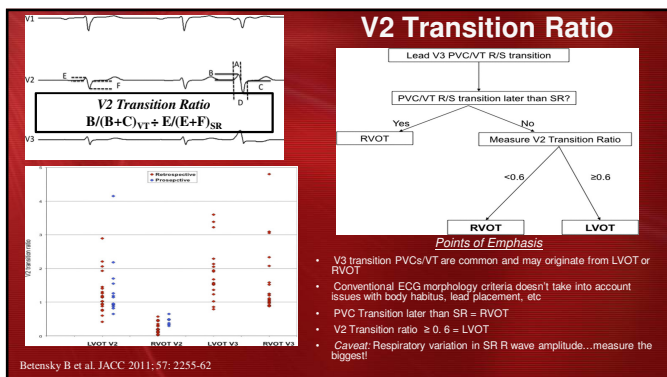
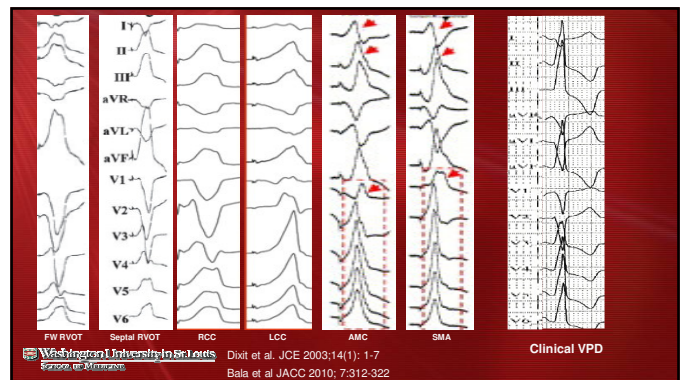
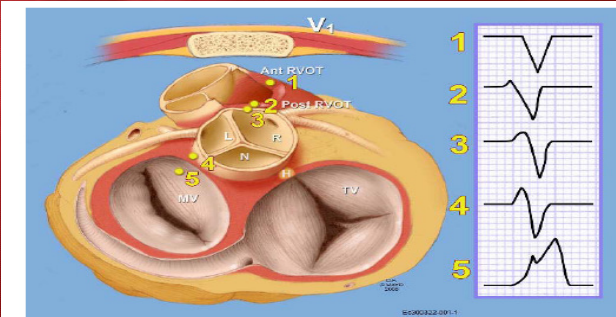
1. Basic Rhythm: Sinus. Rate 40 to 100/min. Average 70/min.
2. PVCs = mostly in the form of bigeminy - Atrial interpolated - few couplets/skewed/No V tach. Total 1/100 of beats scanned.
3. Rare PACs.
4. No ST-T wave changes.
5. Activity Log = No correlationship.



Idiopathic Inferior Axis VTs: Anatomy



Idiopathic Inferior Axis PVCs



Beware the precordium...

Limbs leads are reliable...

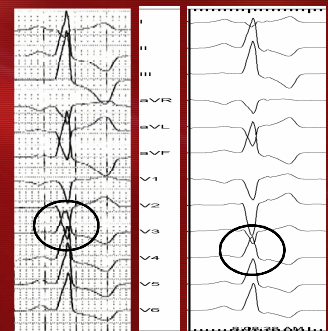
"Transition" is not...

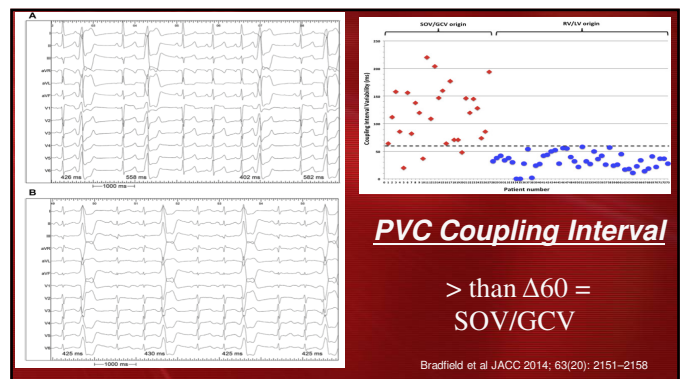
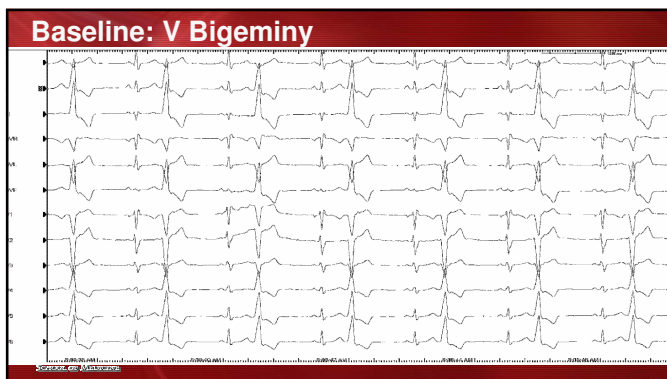
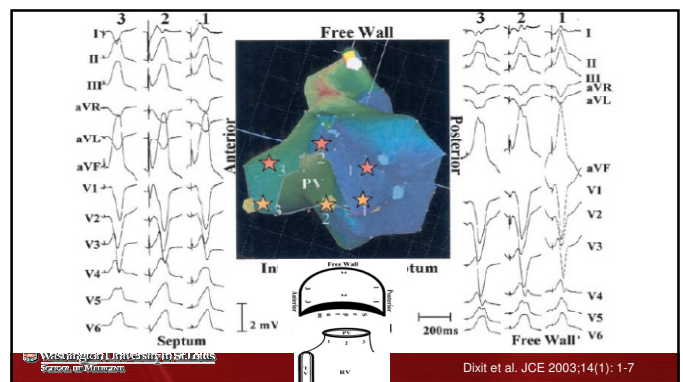
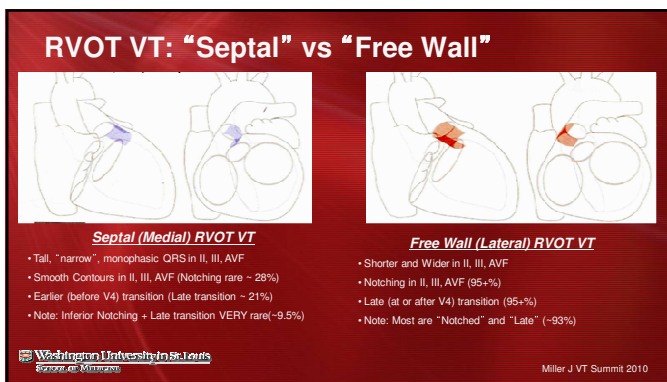
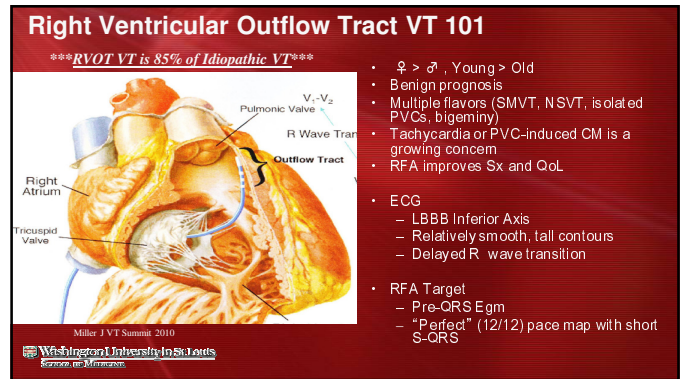
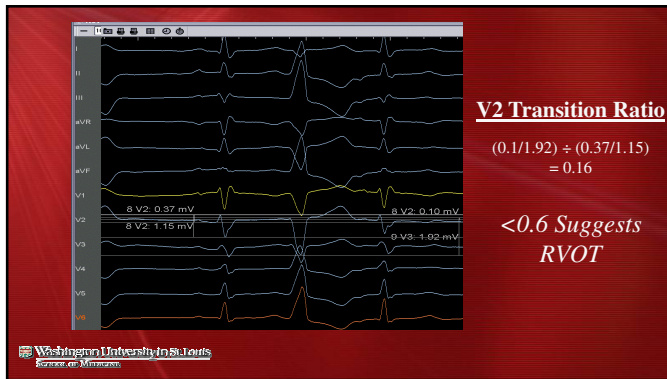
QRS Morphology "Clues"...not Rules!

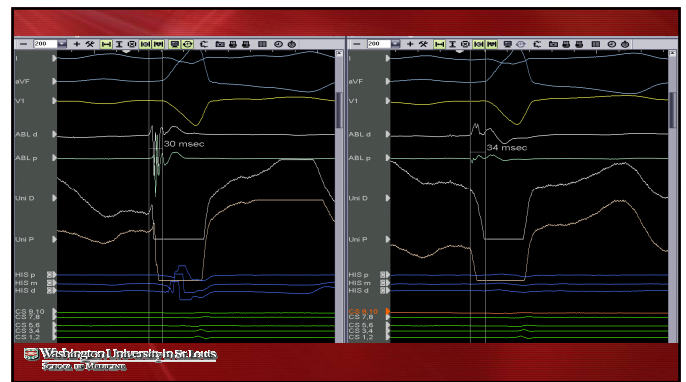
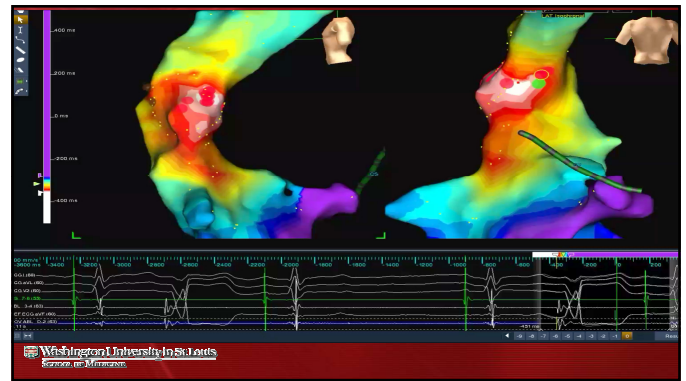
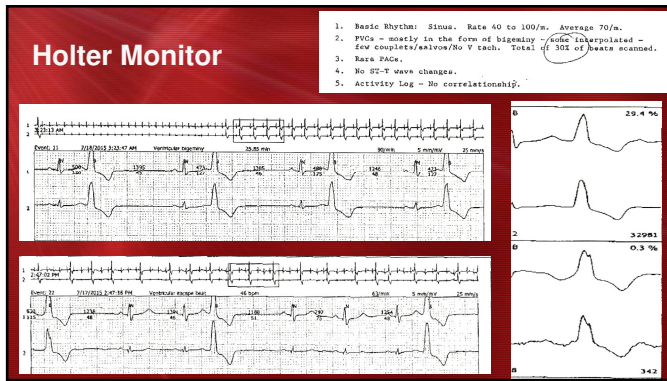
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Bala et al JACC 2010; 7:312-322

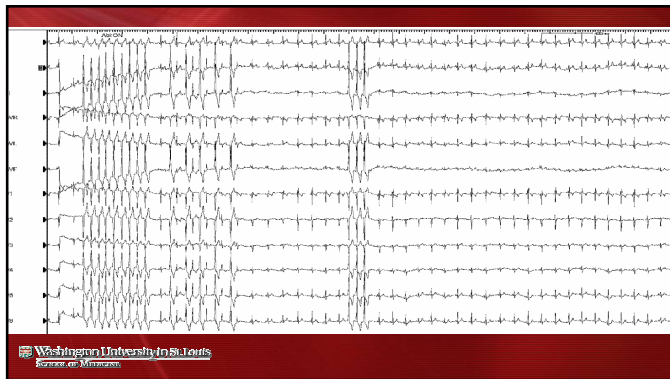
Clinic ECG

EPS ECG









Now what...

Frequency

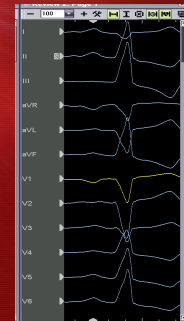
Origin

Clinical or nonclinical

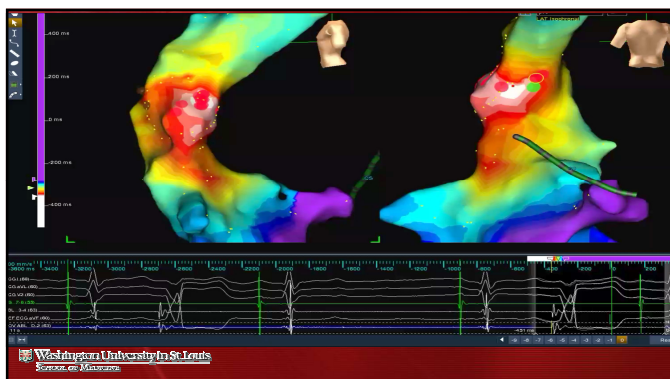
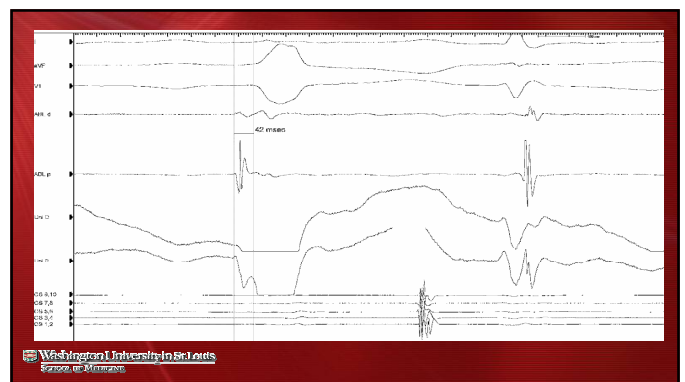
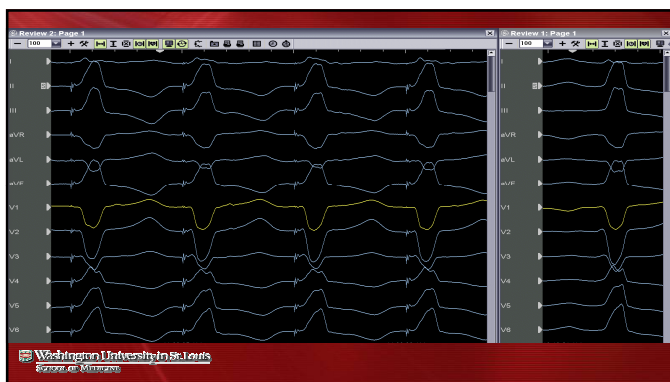
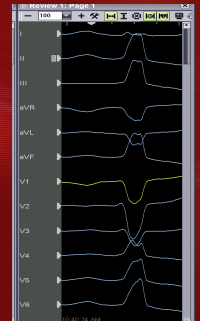
Stability and Procedure Length

Recurrence

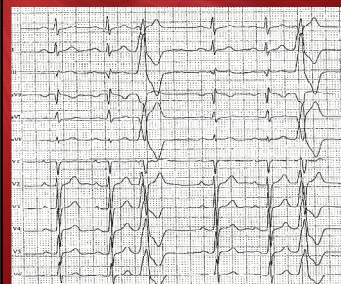
PVC 1



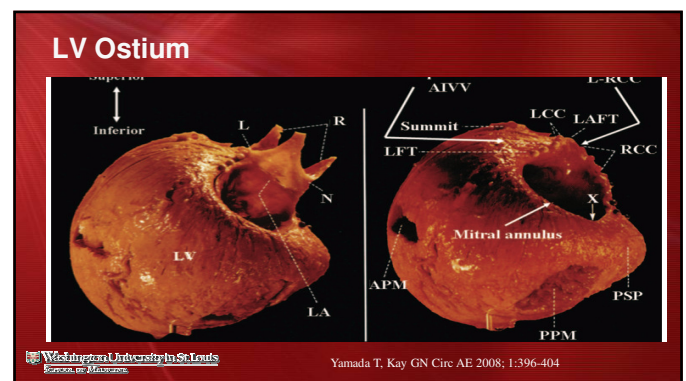
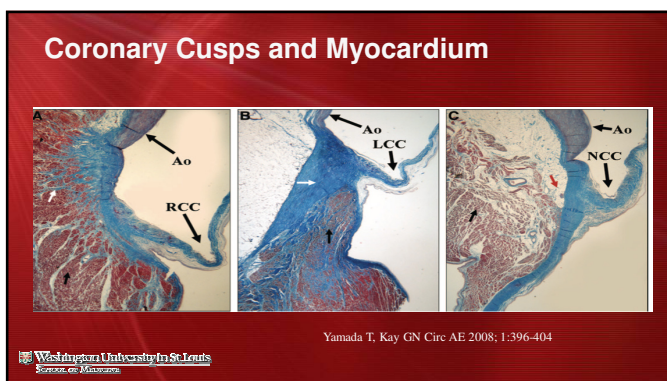
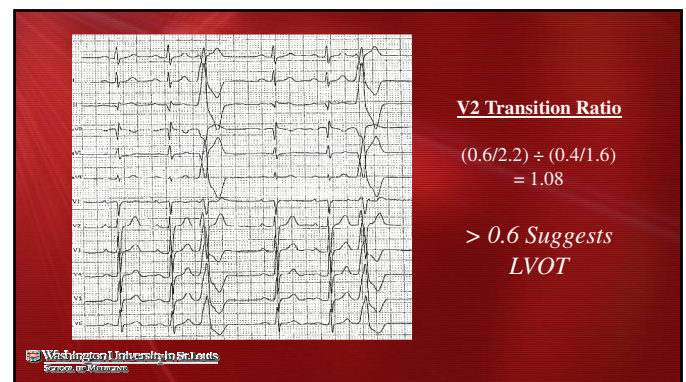
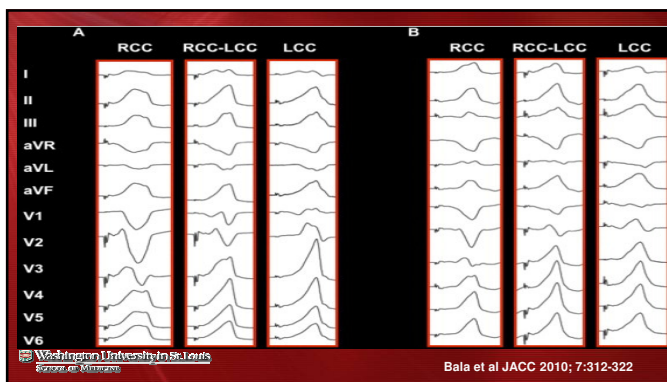
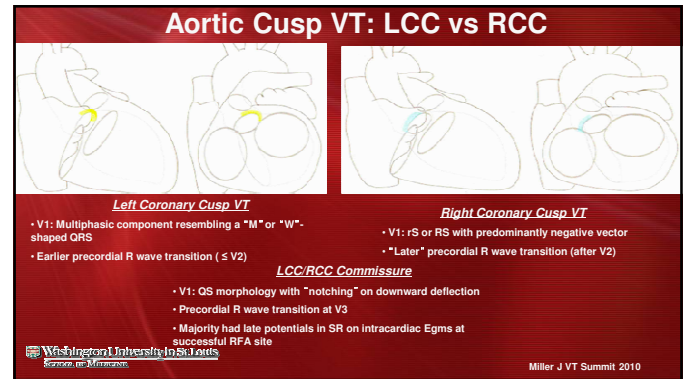
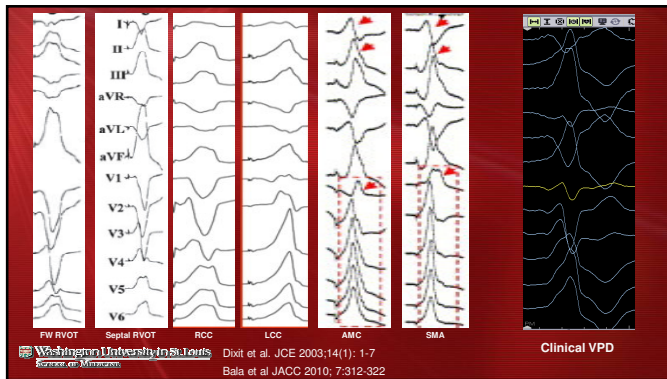
PVC 2

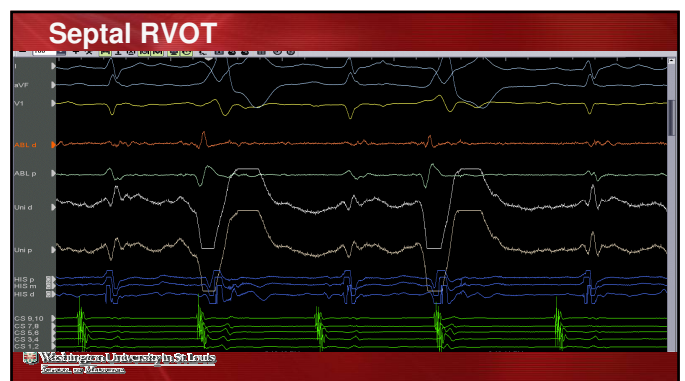
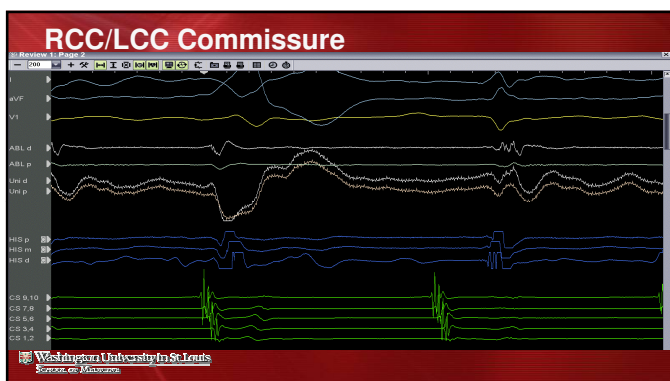
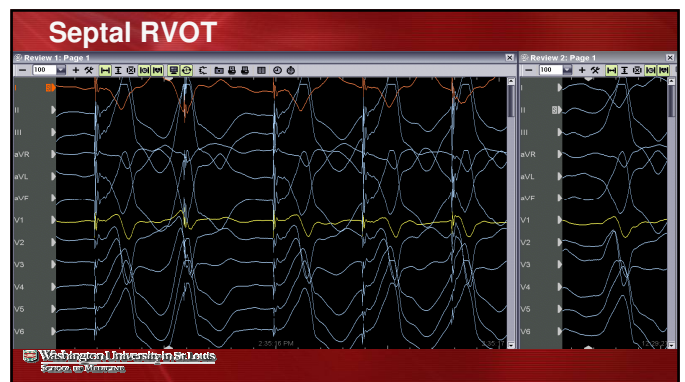
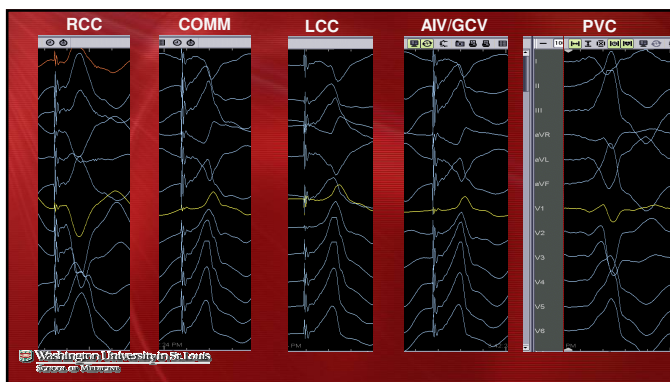
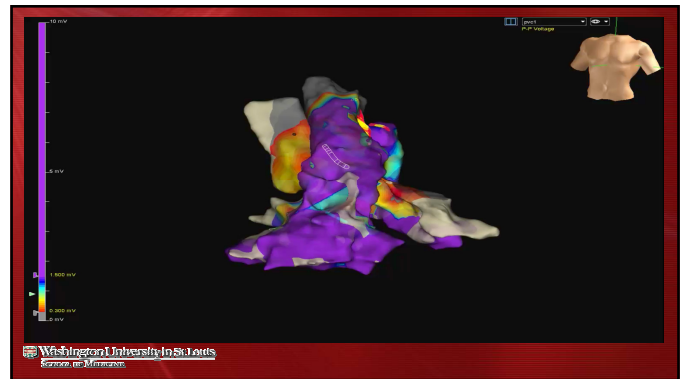
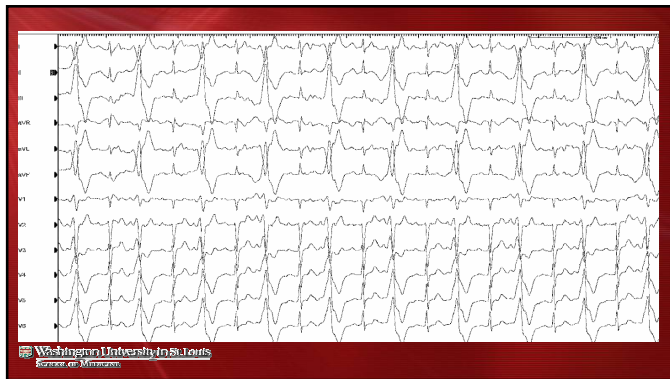


PVC Case # 2

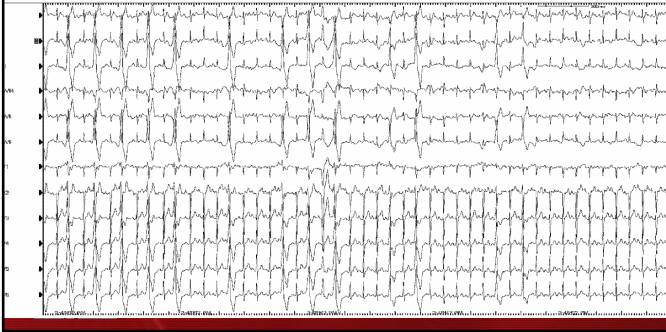


- 52 y/o WM with frequent PVCs
 - Sx: palp, fatigue, LH
 - No response to BB
- Holter: Monomorphic PVCs (25-30%)

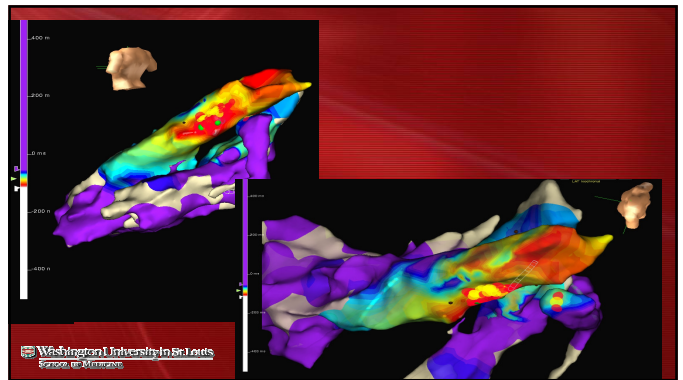




Late Success (RVOT)



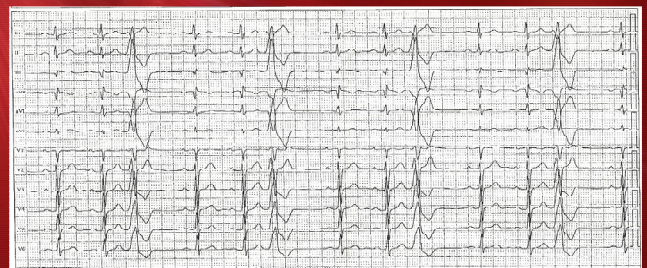
Late Success (AIV/GCV)



Keys to success...

- Don't be afraid to look everywhere...esp if referred after ablation failure
- EARLY activation (>30ms)
- QS on unipolar EGMs
- "Perfect" (12/12) Pace map
 - Less reliable in SOV (esp LCC)
- Stay safe...but use "enough" power
 - Varies on location
- "PVC-RFA's are like snowflakes..."
 - No 2 ablations are exactly the same
 - QRS Morphology "clues" not "rules"
 - Keep an open mind!

3 weeks later...Case #2



Time for Introspection...

Case # 1: Why did we succeed?

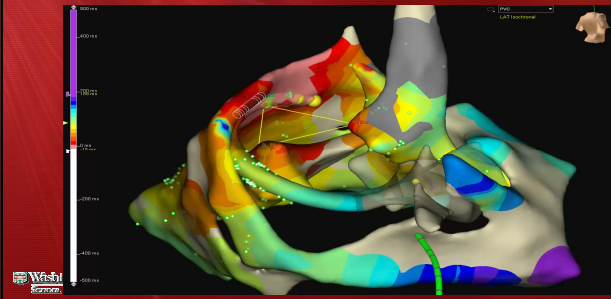
- High Burden for Mapping
- Early!!! 30-40ms
- Perfect (12/12) PM
- TTK short
- Accelerated VT during RFA
- Adequate Power/Duration
- Targeted PVC 2 as well

Case #2: Why did we fail?

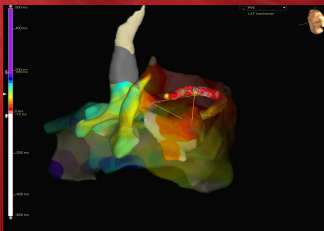
- High Burden.... ✓
- Early.... ✓
- 12/12.... ✓
- Termination during RFA....but late termination despite high power.
- Termination late from AIV/GCV
- Morphology Concerns...
- Did we look everywhere?

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What anatomy positions you closest to presumed origin deeper in tissue?



Is it “deeper”? Triangulate and Ablate



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Comments/Questions



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