

# Heart Rhythm Congress 2010: Cases and traces

## A challenging SVT case

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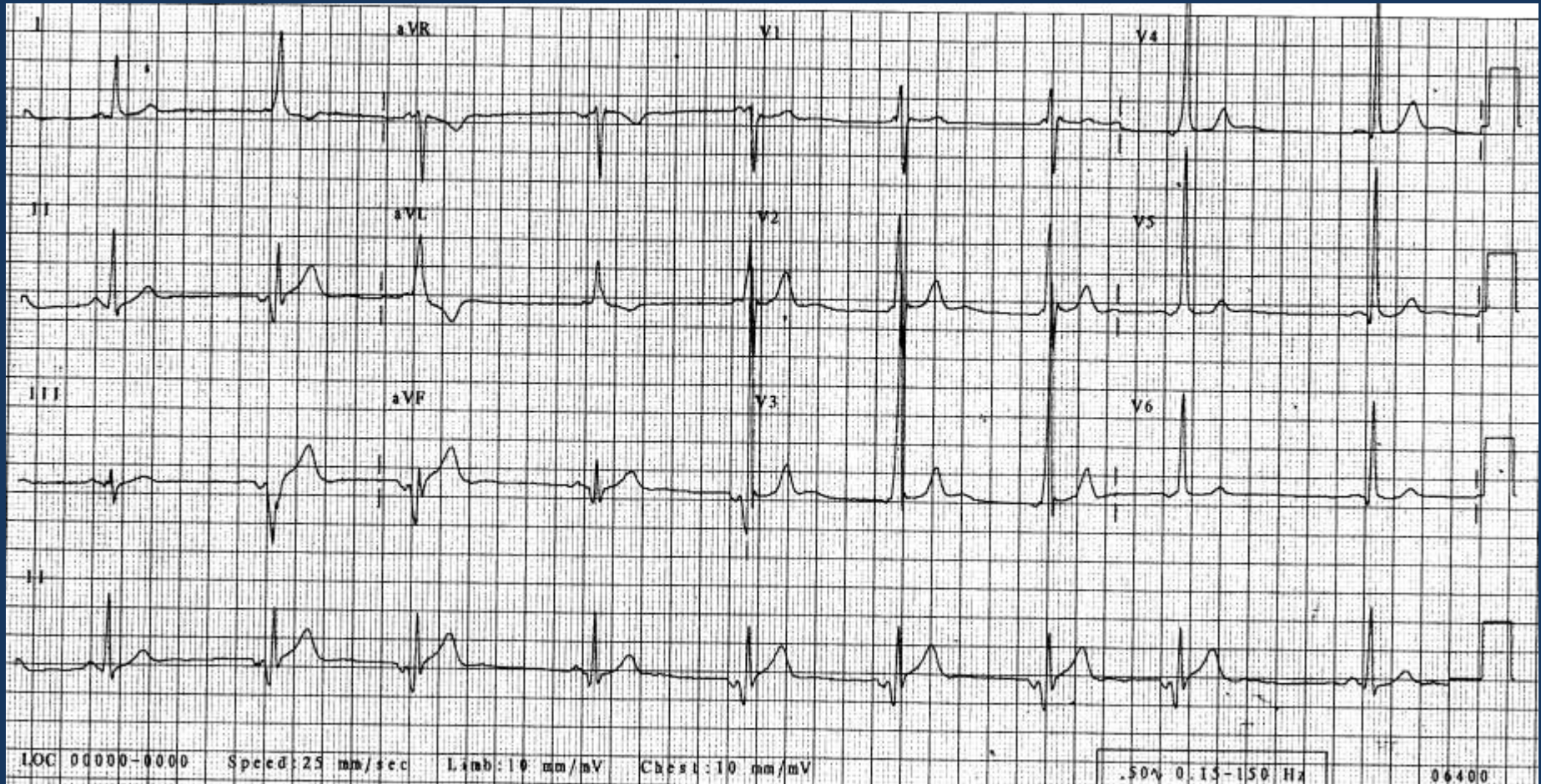
# Background

- 25 year male
- 1999; exertional palpitations and syncope
- 3xEPS
  - 1999
  - 2003
  - 2007

# EPS: Summary

- 1999
  - Non-decremental midline retrograde conduction
  - APBs initiated AVRT
  - Preexcitation with CS pacing
  - ?RFW; focal RF ineffective
  - AF; procedure abandoned
- 2003
  - Decremental midline retrograde conduction
  - Long RP tachycardia (? clinical)
  - No preexcitation
  - Adenosine in SR – AV block
- 2007
  - Tachycardia inducible
  - TV and MVA mapped; no good signals

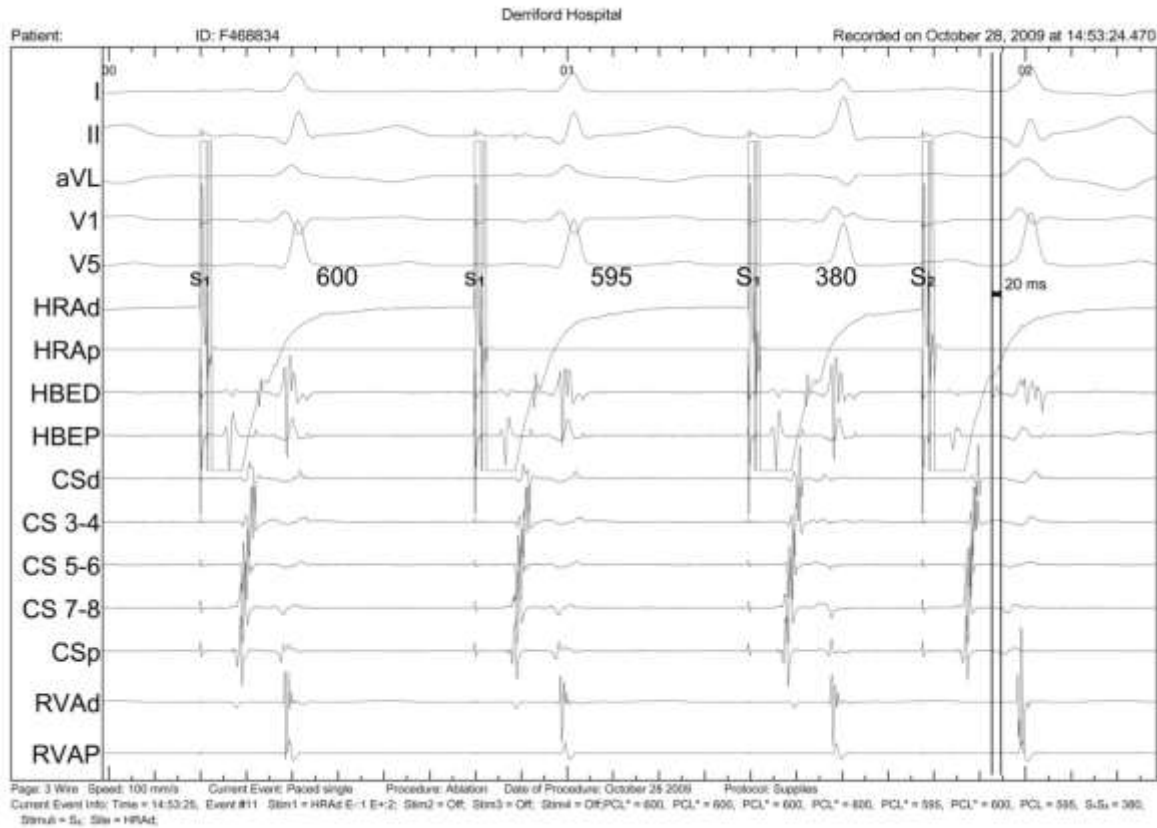
Q: What is the diagnosis?



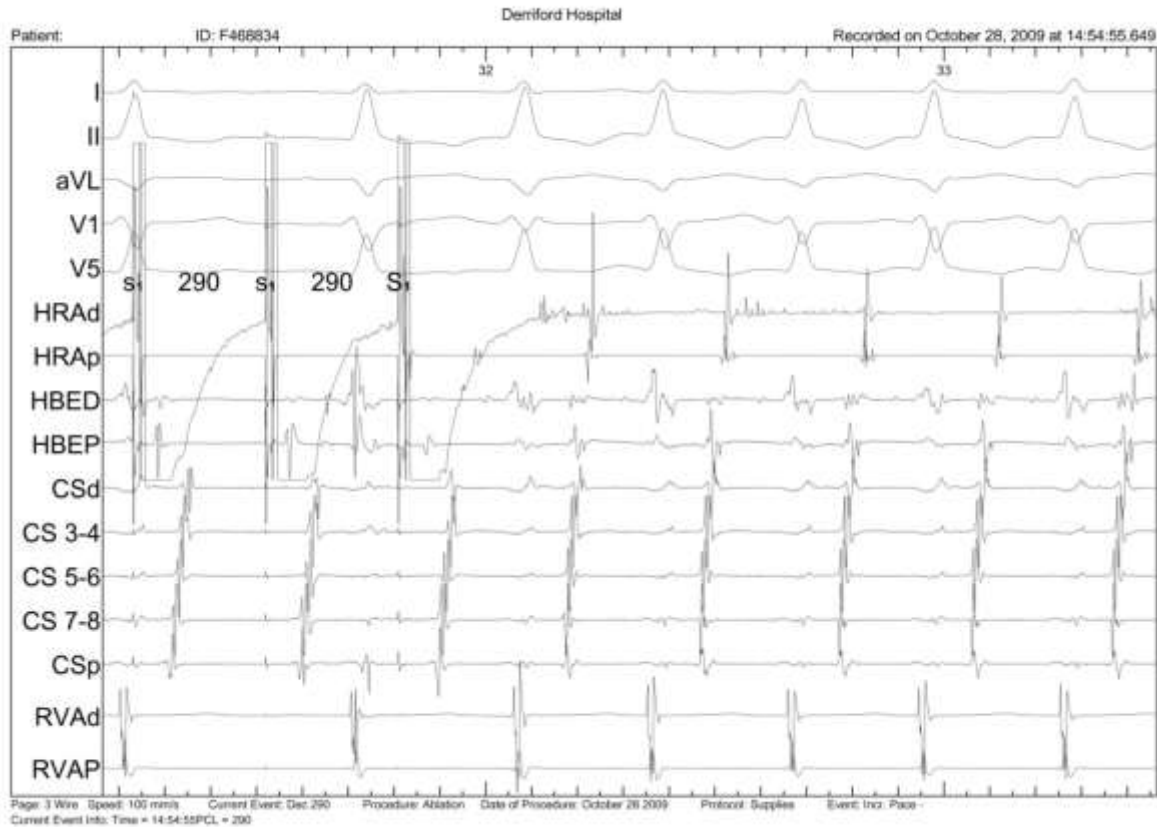
# Baseline ECG



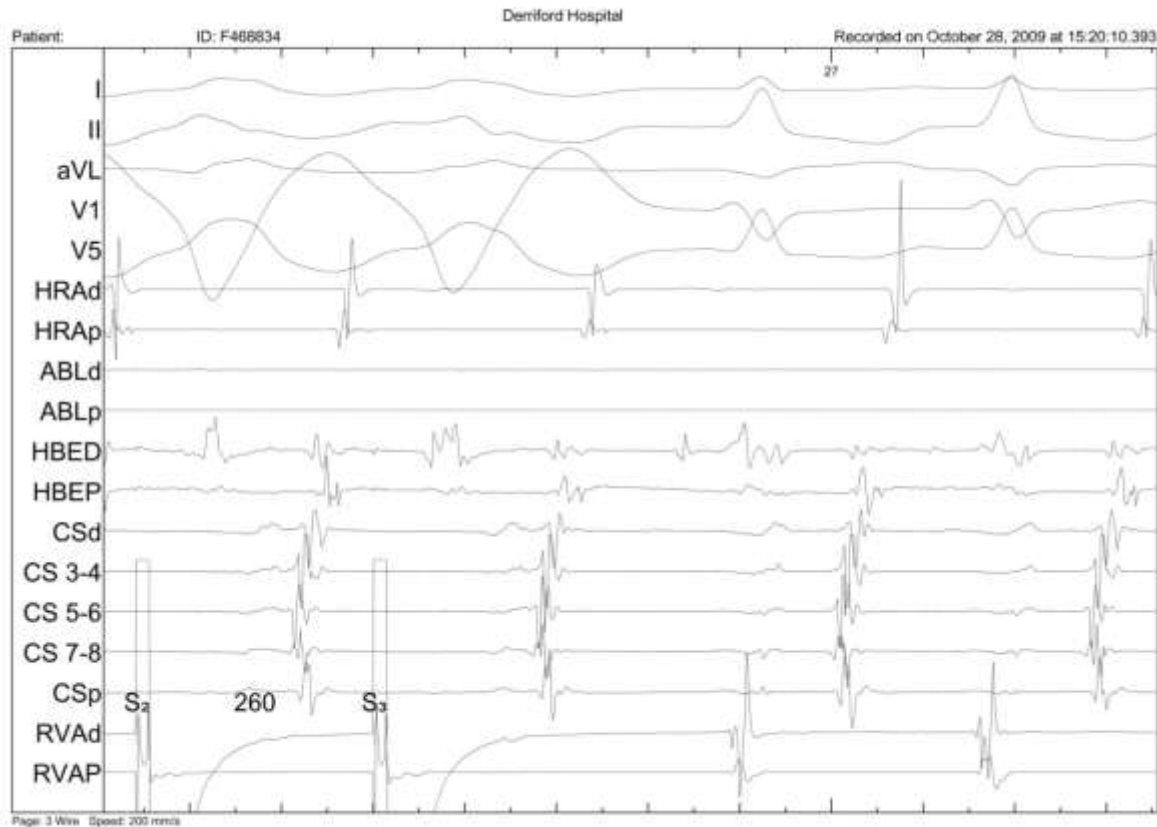
# Antegrade stimulation



# Tachycardia initiation



# Q: What is the diagnosis?



A: AVNRT

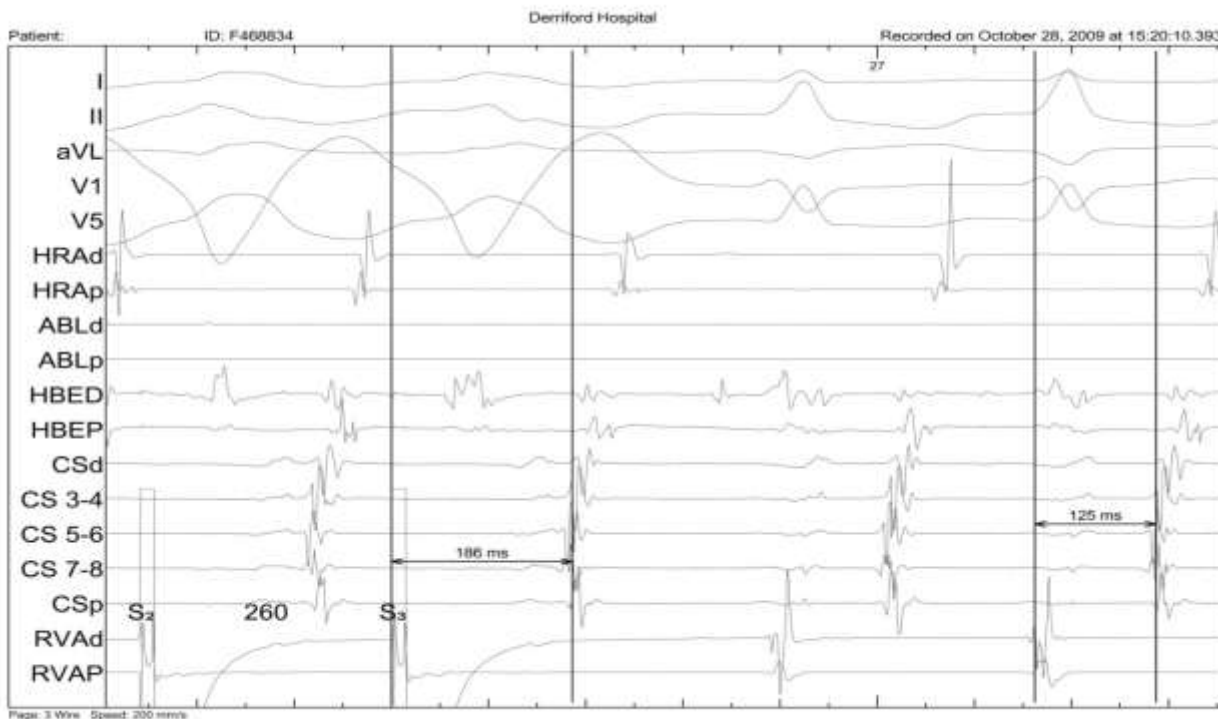
B: AVRT

C: Atrial tachycardia

D: None of the above

E: Can't tell

# Q: What is the diagnosis?



A: AVNRT

B: AVRT

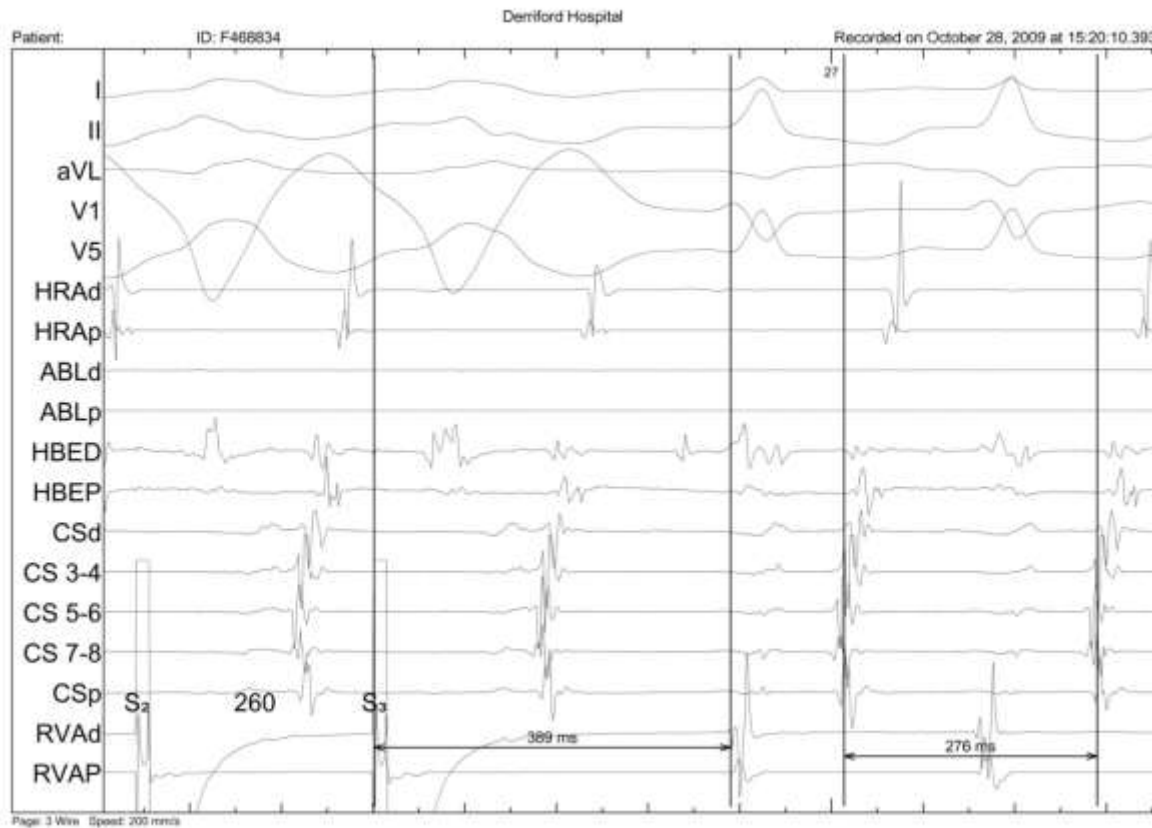
C: Atrial tachycardia

D: None of the above

E: Can't tell

# Q: What is the diagnosis?

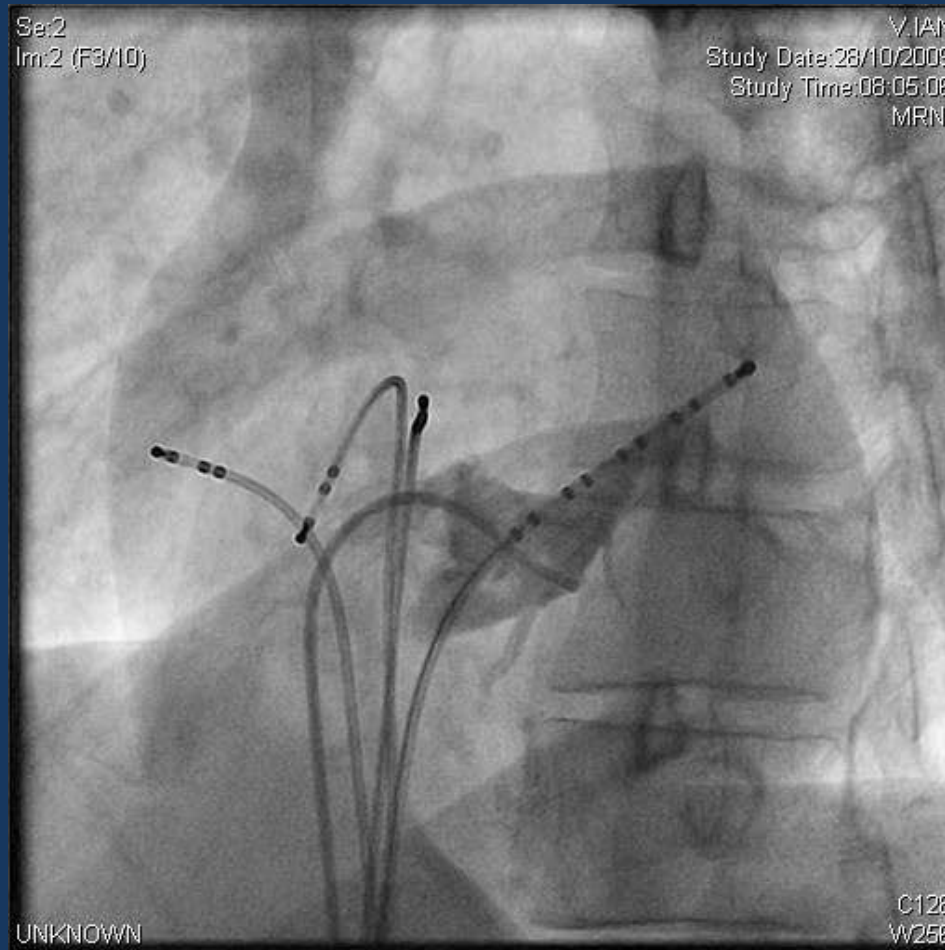
- A: AVNRT
- B: AVRT
- C: Atrial tachycardia
- D: None of the above
- E: Can't tell



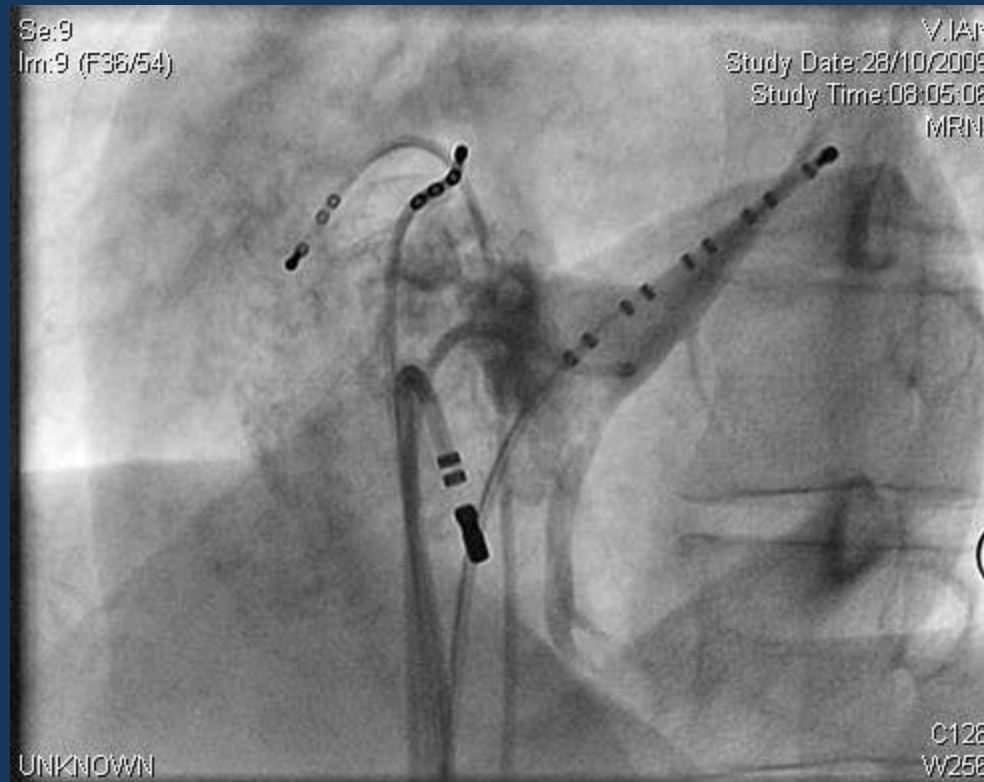
# Q: Approach to ablation?

- A: Map earliest V using non-irrigated RF catheter?
- B: Map earliest V using irrigated tip RF catheter?
- C: Map earliest A during tachycardia?
- D: Something else?

# CS anatomy

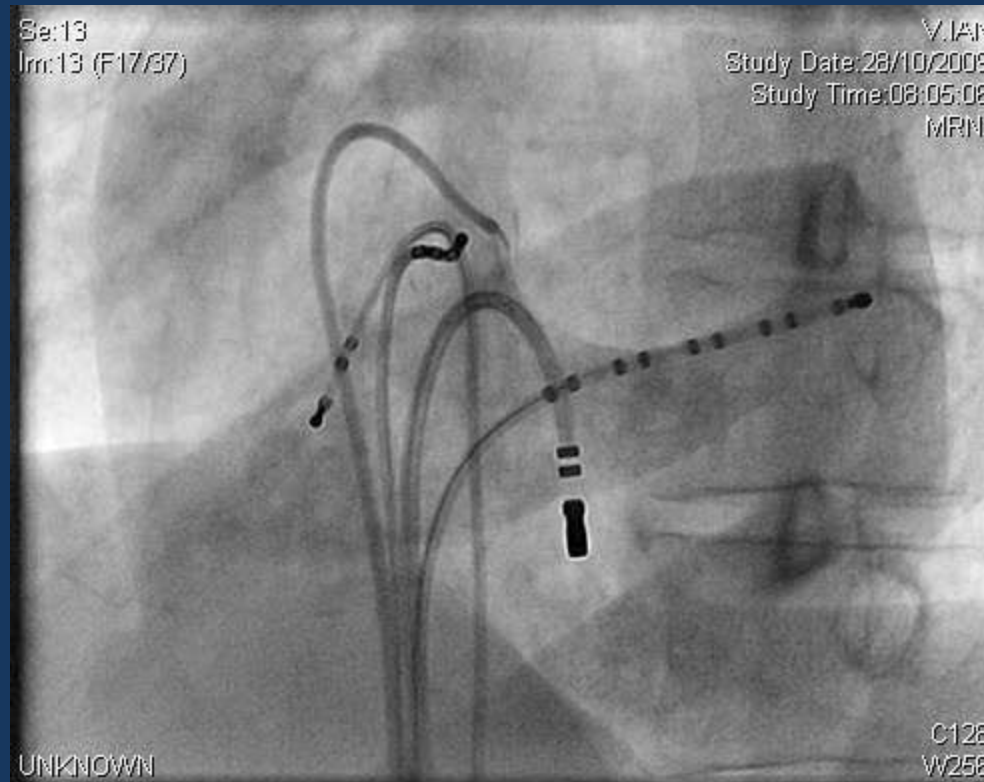


# Late V – catheter position

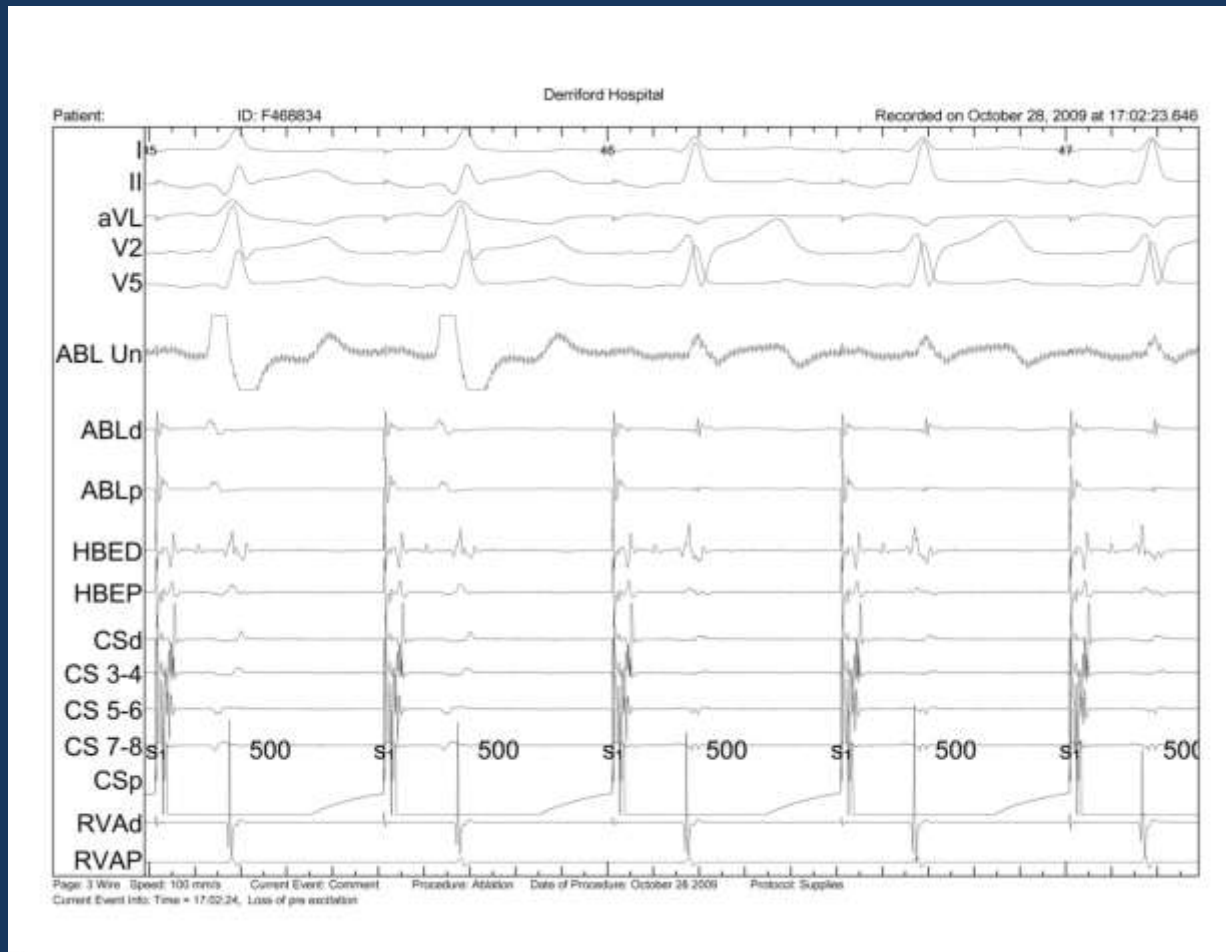




# Earliest V - catheter position



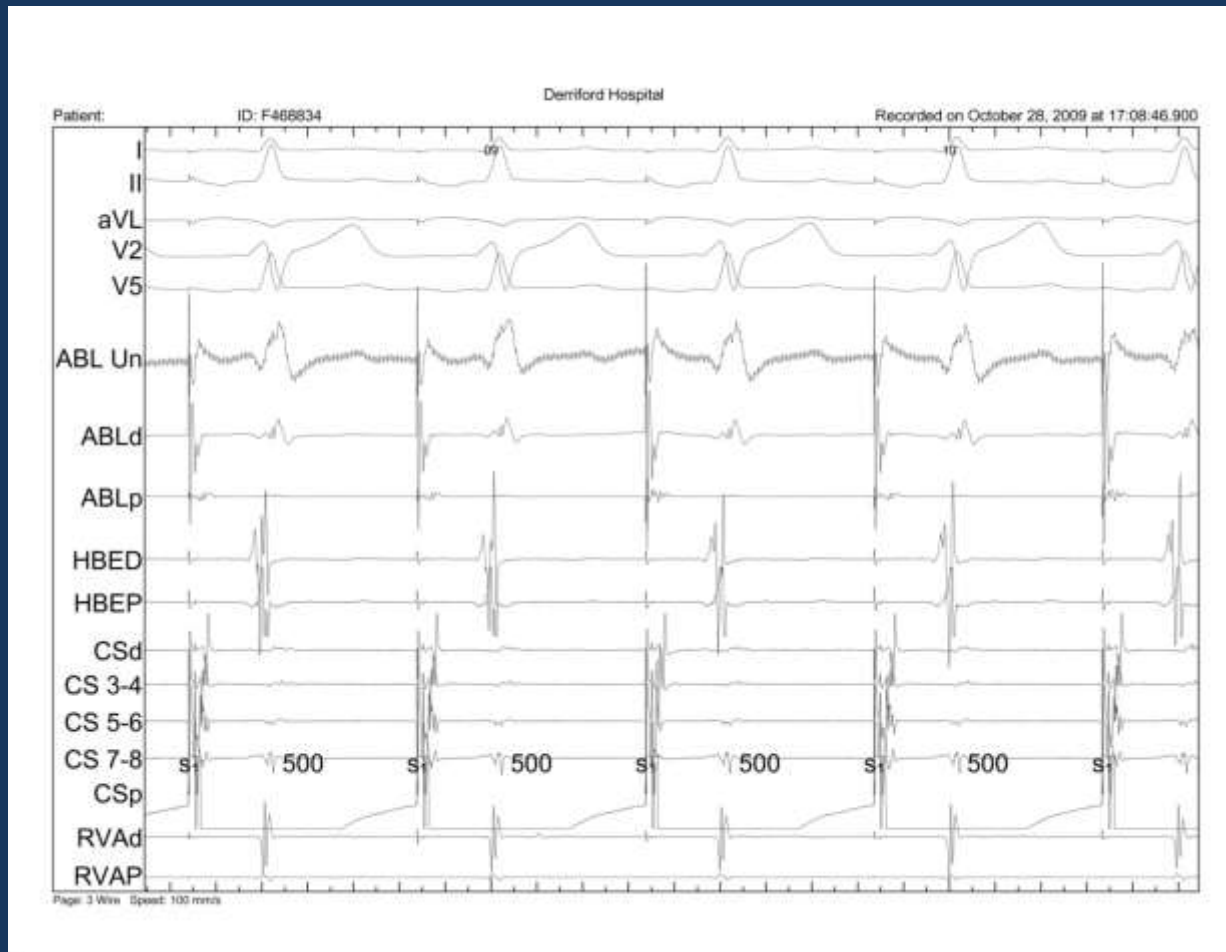
# Q: What has happened?



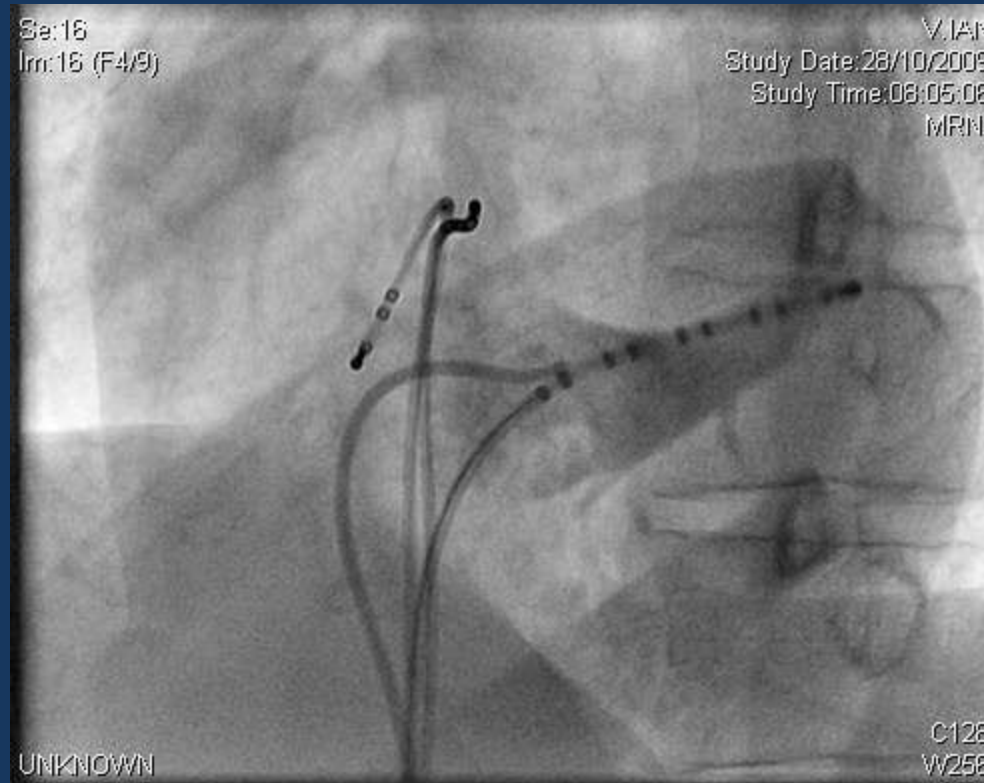
# Q: What do you do next?

- A: RF ON!
- B: Coronary angiography, then RF?
- C: Switch to cryo?
- D: Something else?

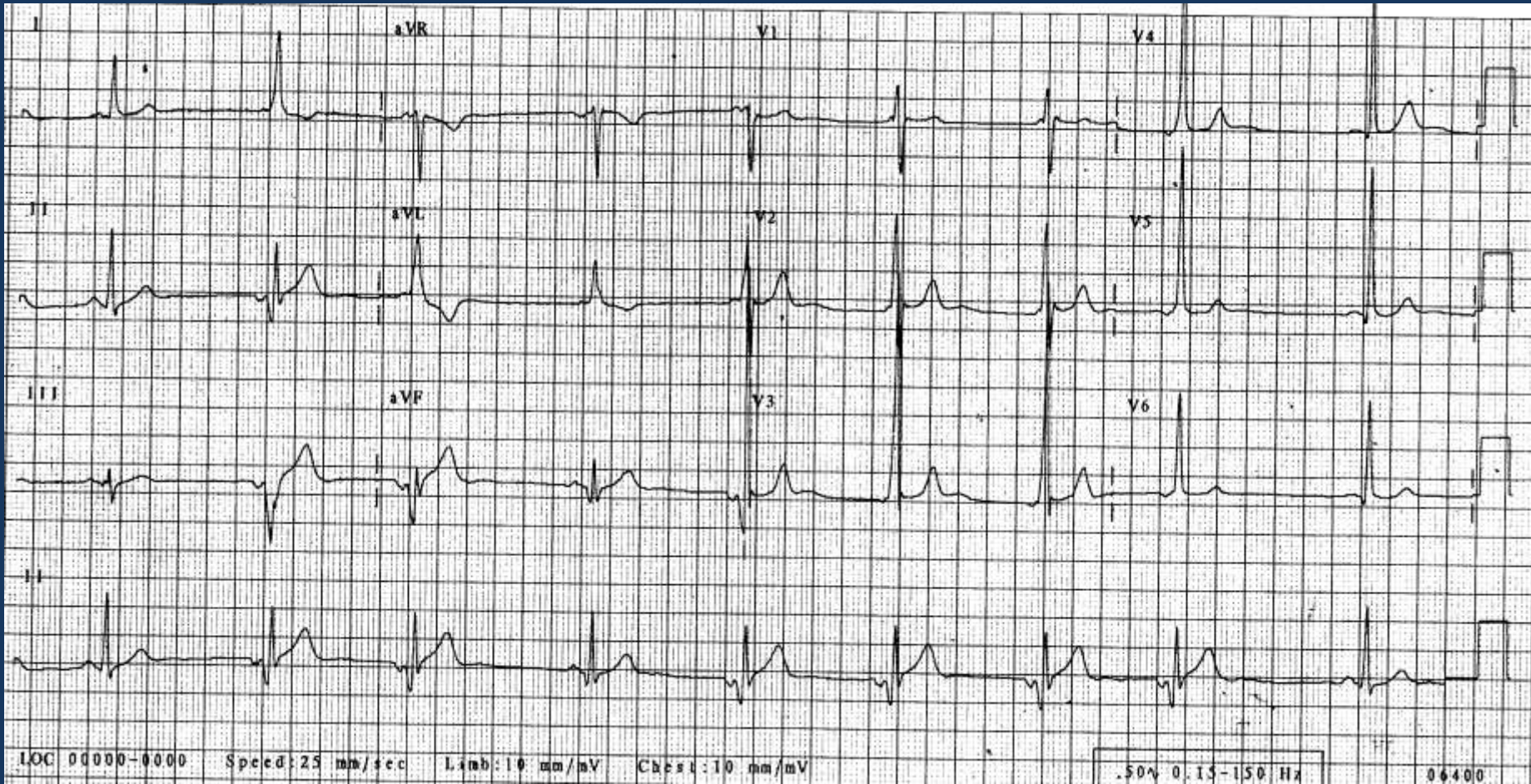
# Post-RF



# Post ablation



# Clue to location of AP provided by inferior arising atrial ectopics



# Epicardial accessory pathways

- Associated with CS diverticula
- PM study
  - 240 human hearts
  - CS myocardial coat extensions around:
    - MCV in 3%
    - PCV in 2%

von Ludinghausen M *et al*  
*Clin Anat* 1992;5:1–15

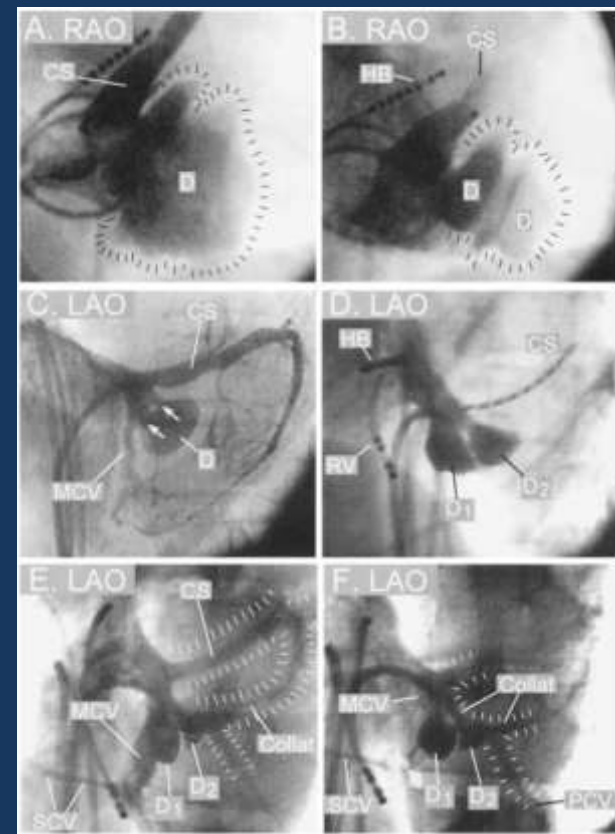
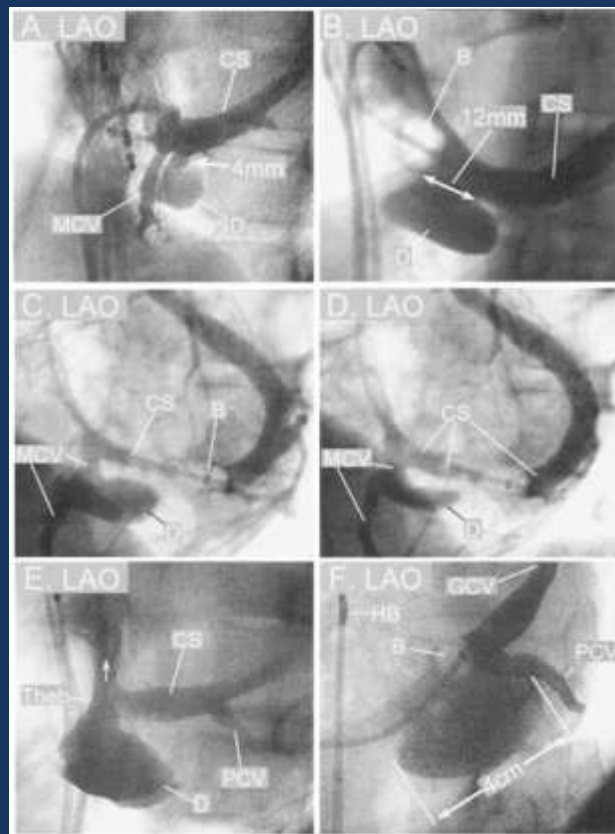
- CSAP found in 171/480 (36%)
  - 39 of 201 first time ablations (19%)
  - 132 of 279 previously failed ablations (47%)
  - Negative delta in lead II; 70%

Jackmann *et al* *Circulation* 2002;106:1362-67

# Anatomical findings: Diverticula

Diverticula in 36 patients (7.5%): 32 redo; 4/201 (2%) first time cases

## Complex anatomy



# CSAP locations

Anatomy	Totals	CSAP location N (%)				
		<i>Diverticulum neck</i>	<i>MCV</i>	<i>PCV</i>	<i>MCV and PCV</i>	<i>Other</i>
<i>Normal</i>	120 (70)	NA	98 (82)	13 (11)	6 (5)	CS floor: 3 (2)
<i>Diverticula</i>	36 (21)	34 (94)	0	1 (3)	0	Collateral between MCV and PCV: 1 (3)
<i>Fusiform enlargement SCV and/or MCV</i>	12 (7)	NA	SCV: 2 (17) SCV/MCV junction: 8 (67)	0	0	MCV access unavailable: 2 (17)
<i>Bulbous MCV</i>	2 (1.2)	NA	1 (50)	0	0	CS between MCV and PCV: 1 (50)
<i>Bulbous CS</i>	1 (0.6)	NA	0	0	0	At bulbous site: 1 (100)

# Conclusions

- CS (“epicardial”) APs occur in the minority of patients with PSAP.
- Negative delta in lead II ~70%.
- 70% patients have normal CS anatomy; MCV is commonest AP location.
- Otherwise map anatomical abnormality first.