

AF ablation –

This house believes that one size  
fits all

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# What is the primary aim of AF ablation?

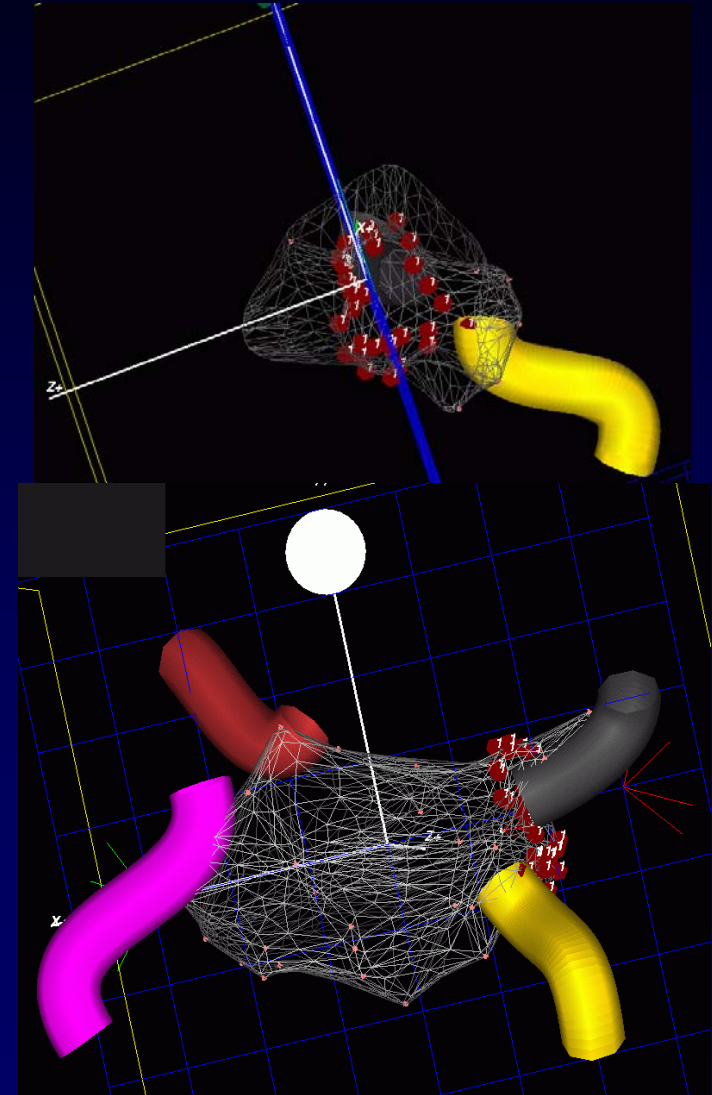
- PAF - Electrical isolation of all PVs
- Persistent AF – Electrical isolation of all PVs and substrate modification

# Is isolation of the target PV enough?



LIMITED BY:

- Absence of spontaneous ectopy
- Multiple triggers

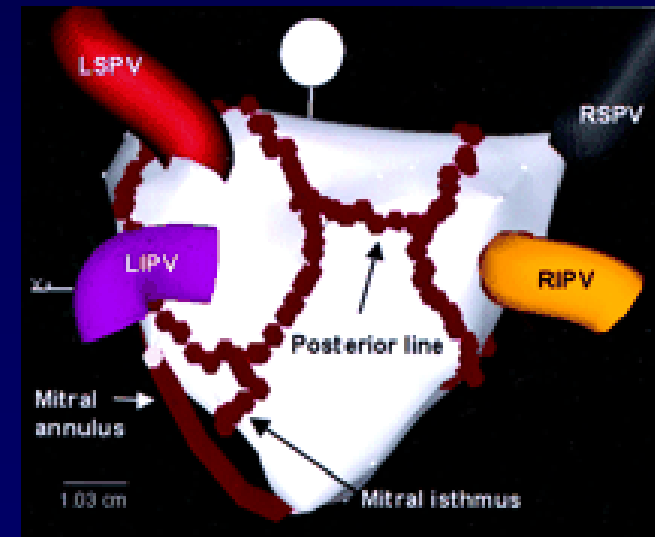
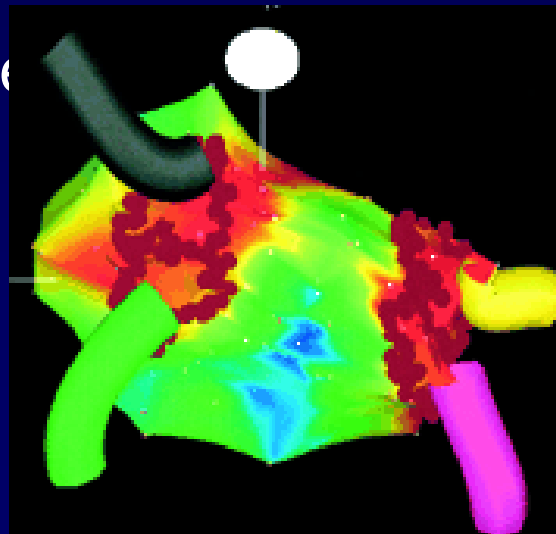
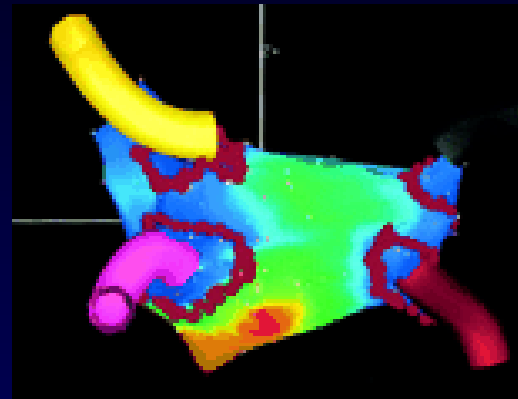


# Isolation of all PVs is necessary

- Is electrical isolation necessary?

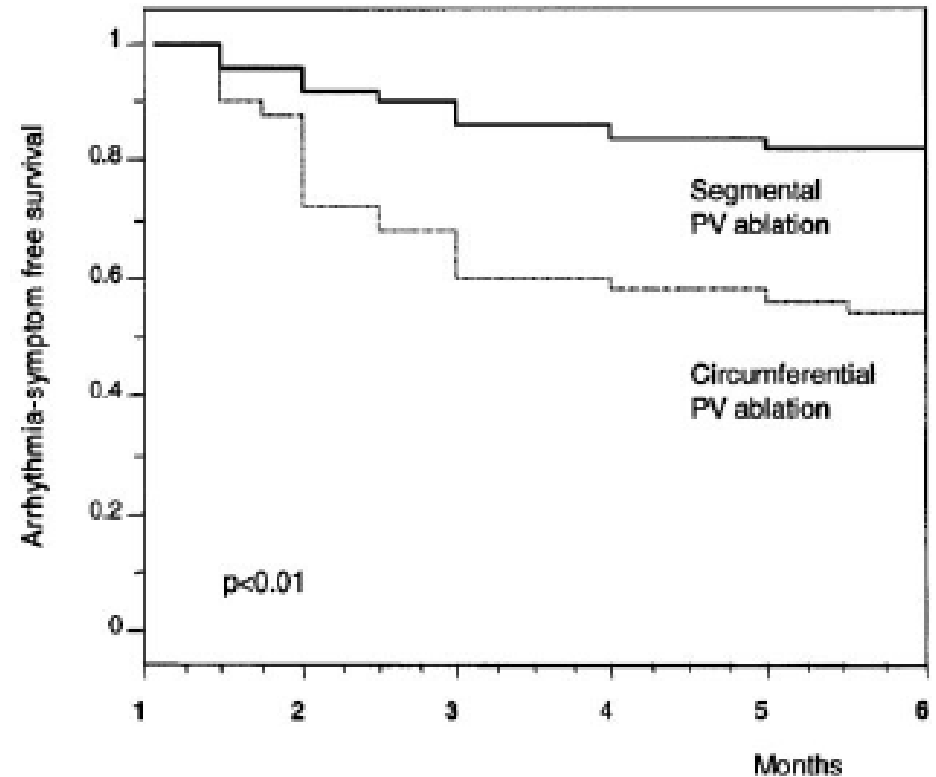
# Wide encirclement without isolation

- Pappone 2002 n=72
  - 68% success (32 on drugs)
  - Overall complications (permanent and parox) 0.8% (2 tamponade)
  - Atachy not reported follow up by transtelephonic monitoring



# Is electrical isolation necessary

- N=100

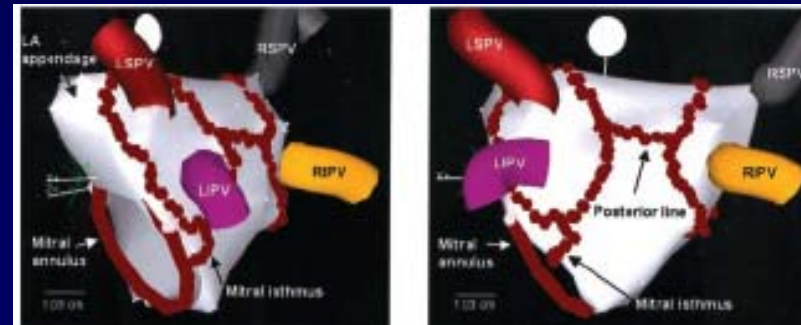
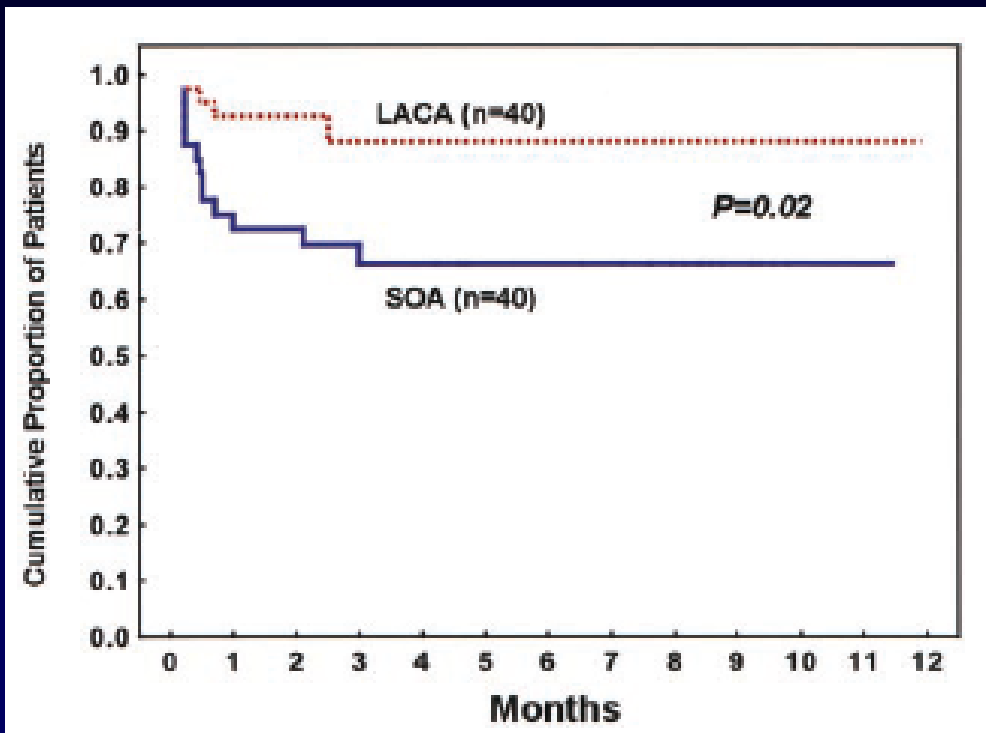


### Patients at risk

Segmental PV ablation	50	46	41
Circumferential PV ablation	50	43	27

# Is electrical isolation necessary

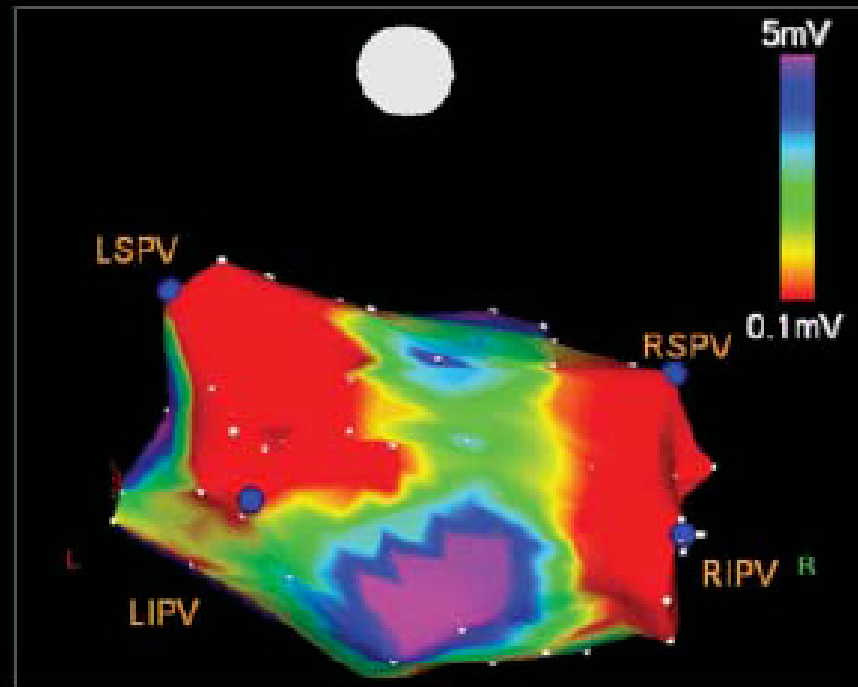
- 8mm tip
- 50W
- Ablation of signal within lines



# Is electrical isolation necessary?

- N=20
- No ablation within lines
- Veins isolated individually
- 45% isolated

Bipolar voltage map after anatomical ablation



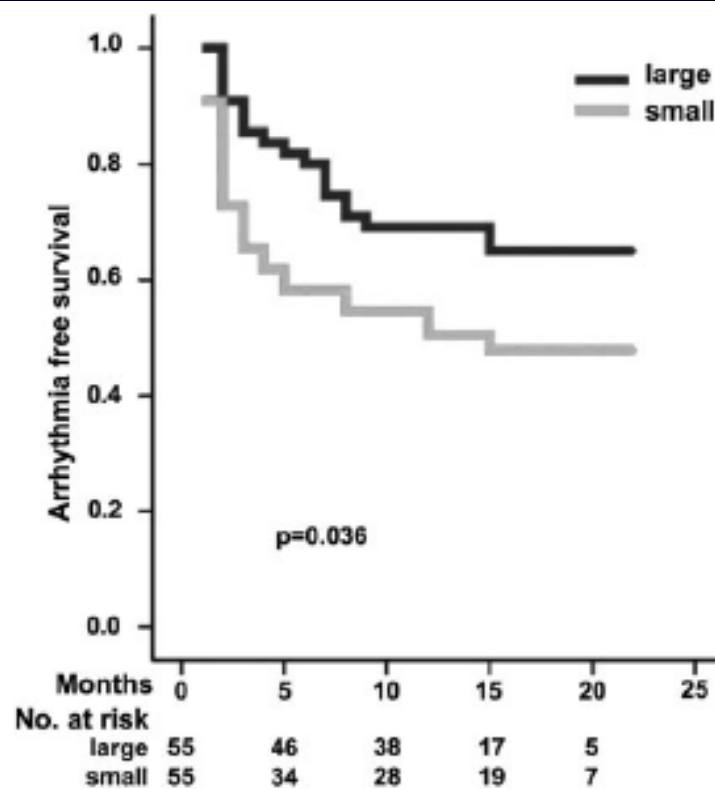
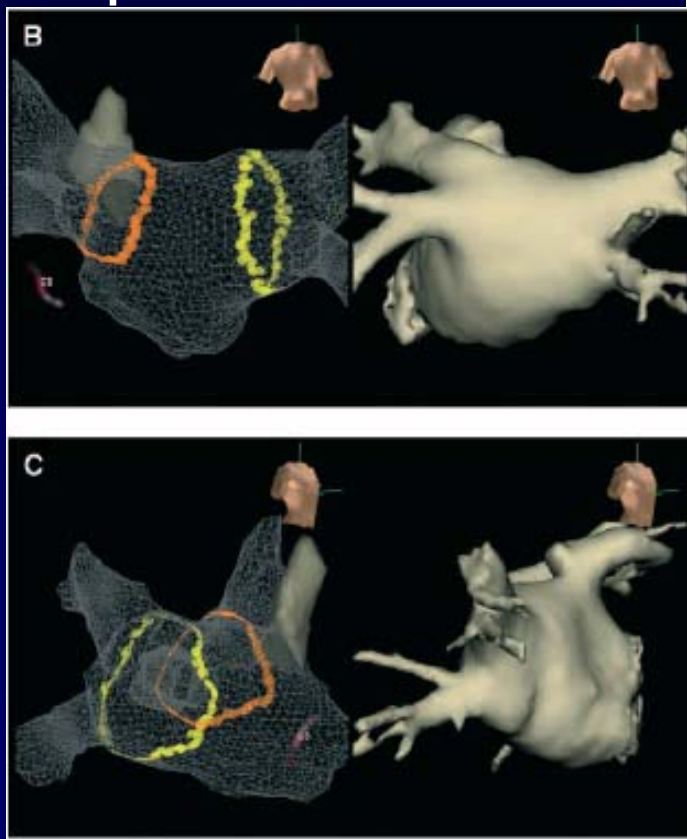
Posterior-anterior projection

# AF ablation

- Proven electrical isolation of all PVs is the cornerstone of AF ablation

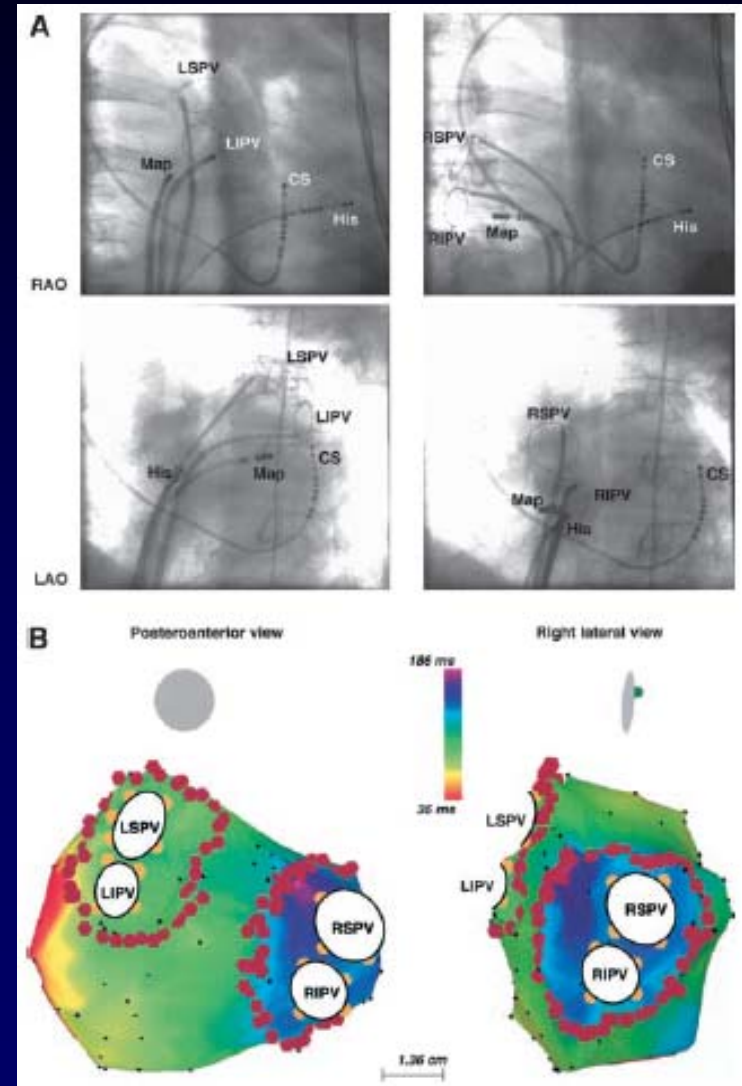
# Segmental vs Wide encirclement - with electrical isolation

- Single PV cath – irrigated, same powers for both
- PAF and persistent



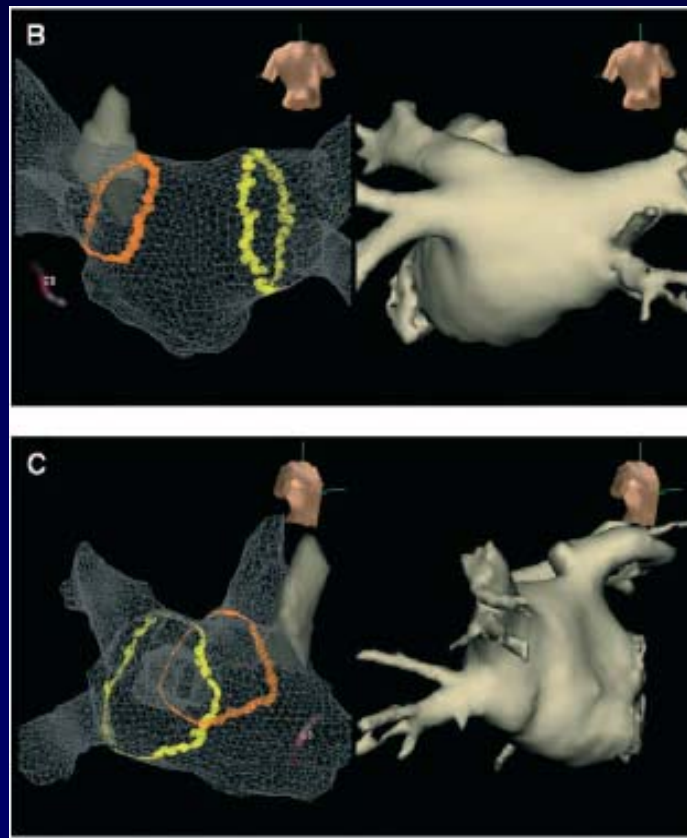
# How to achieve PVI

- Point by point ablation
- Double lasso technique
- N=41
- Recurrence 25%
- PV reconnection in all undergoing repeat procedure



# Problems with point by point ablation

- Procedure  $260 \pm 57$ mins vs  $229 \pm 66$  mins
- Fluoro  $40 \pm 12$
- Learning curve



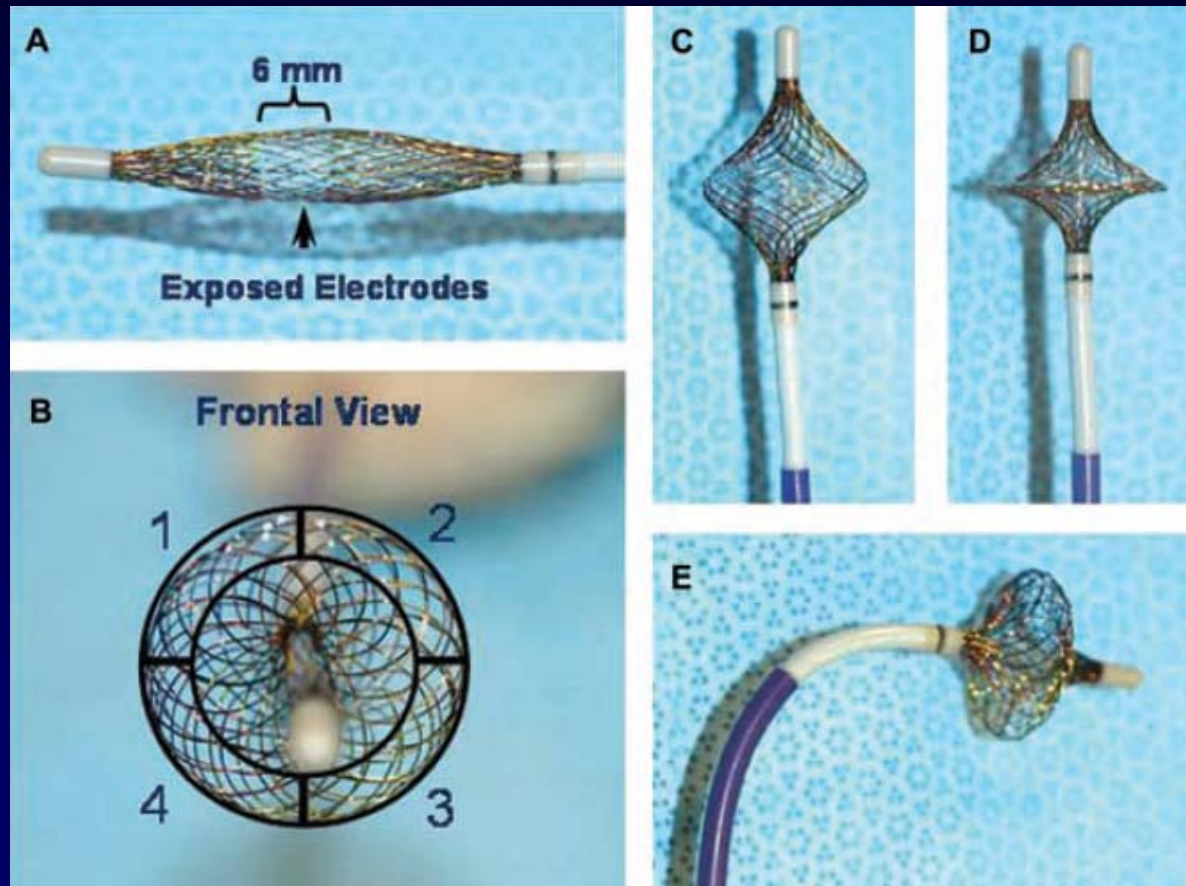
# Alternatives to point-by-point

## - One size fits all options

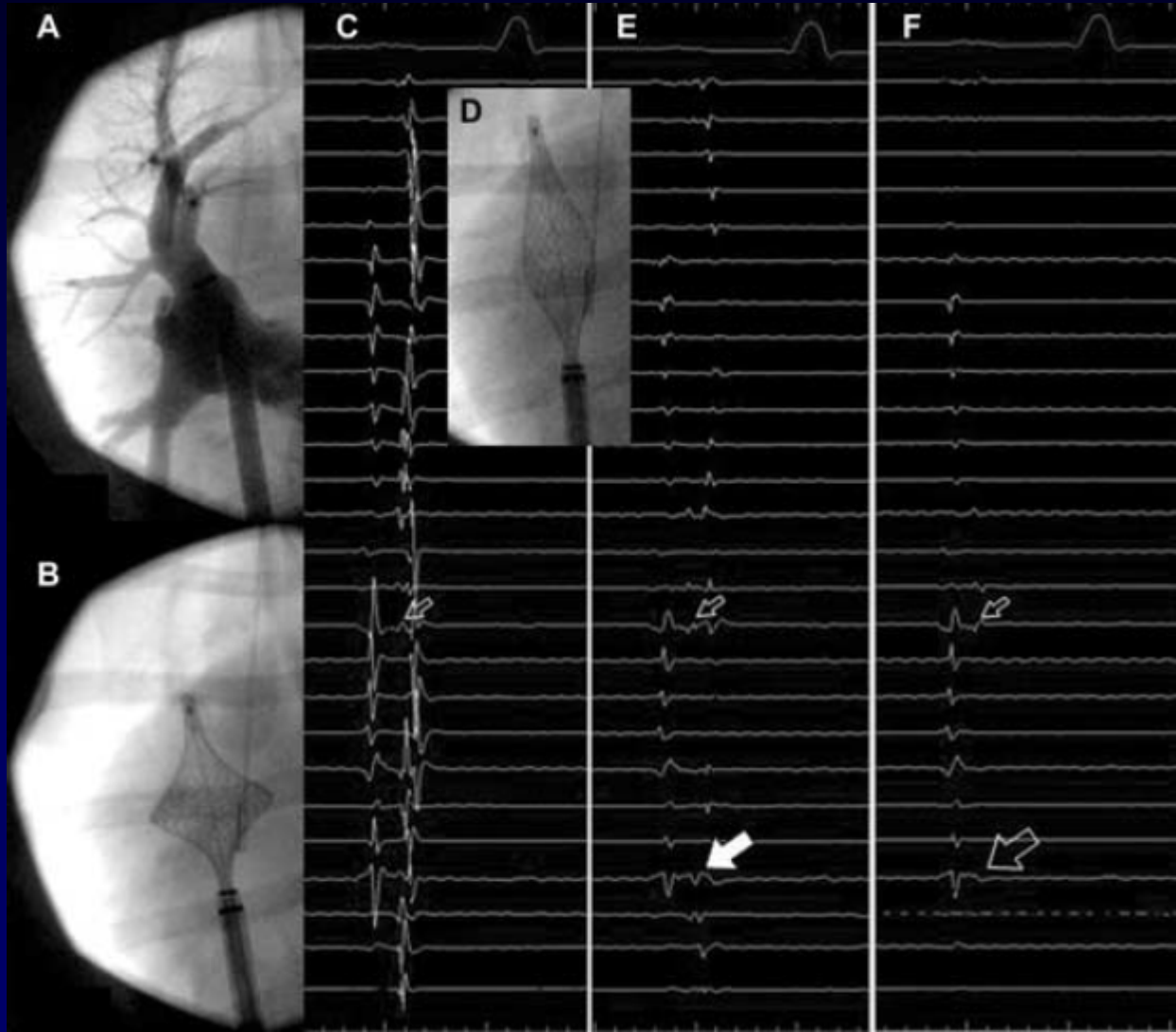
- Mesh ablator – Bard
- Cryo Balloon – Cryocath
- Ablation frontiers - Medtronic

# Mesh ablator

- PV mapping
- Circumferential ablation
- Selective energy application by quadrant

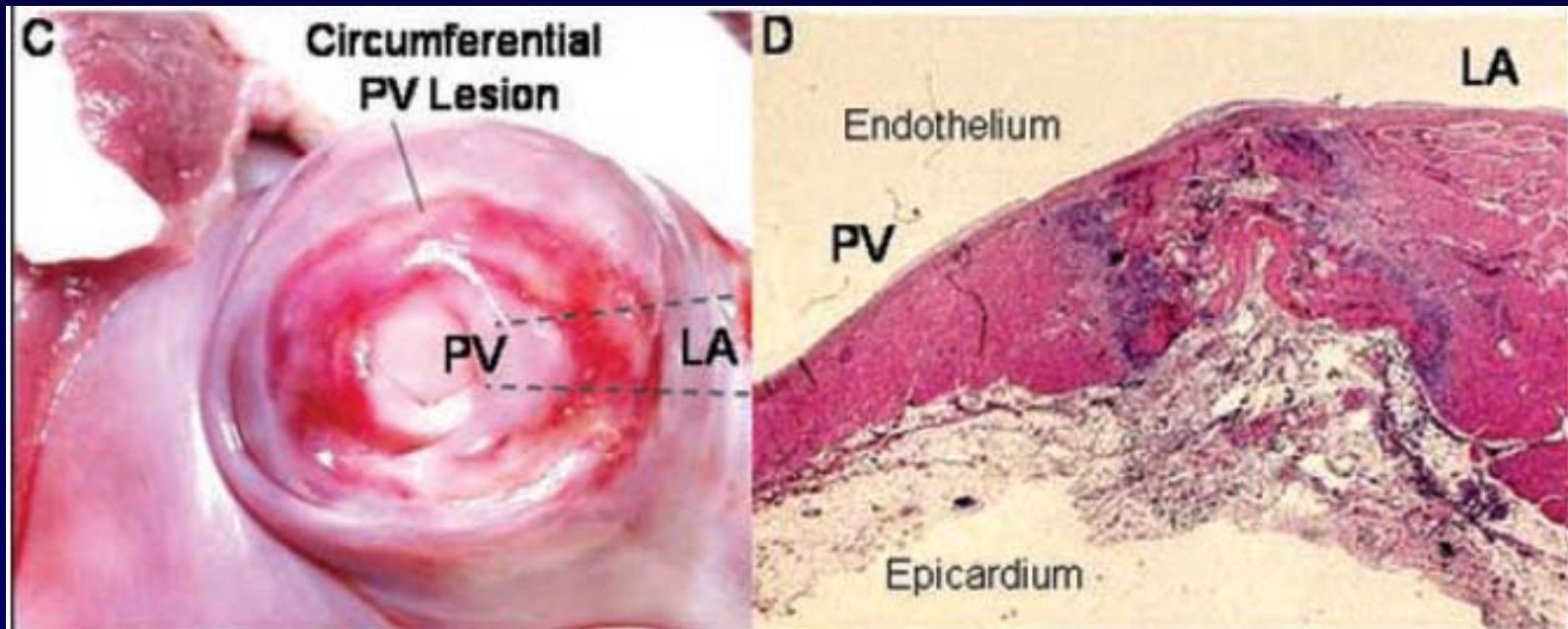


# Mesh ablator



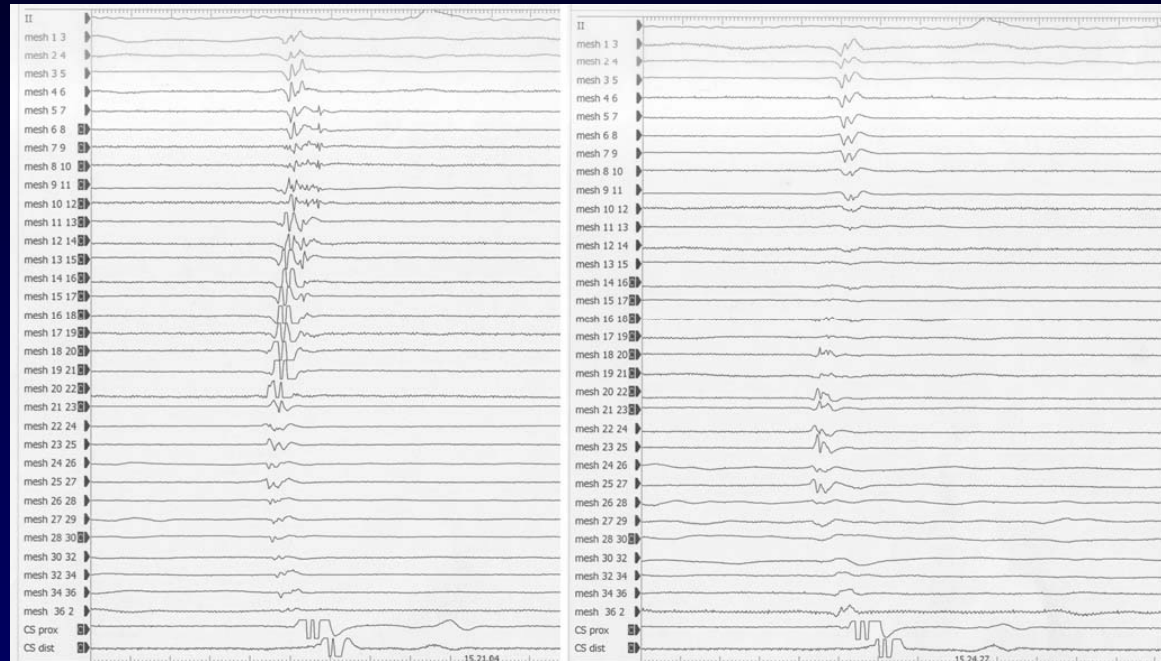
# Mesh ablator

- Porcine model - circumferential transmural lesion



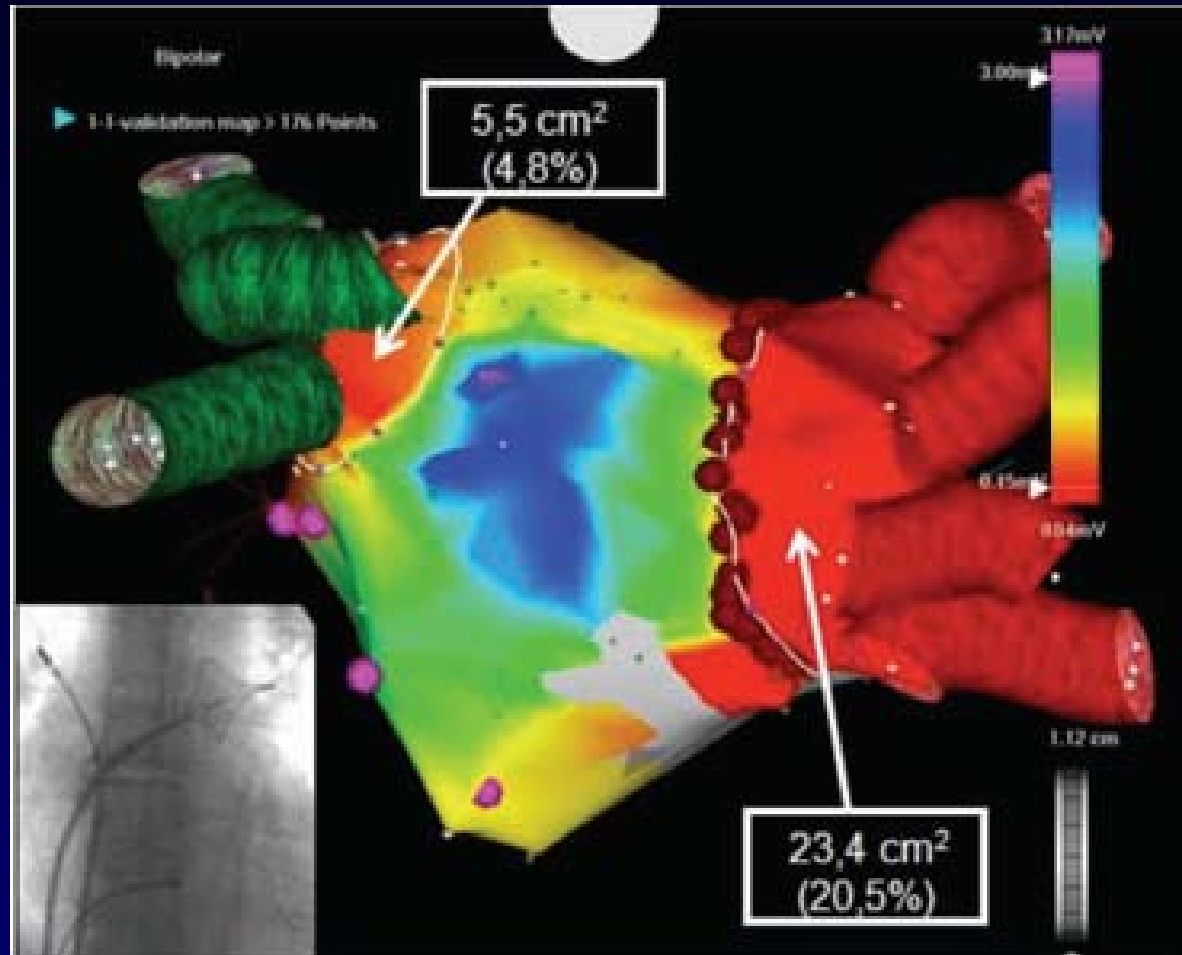
# Mesh mapper

- 100% PVs isolated
- No complications
- Procedure  $93 \pm 17.1$  min
- Fluoro  $13.7 \pm 4.0$  min
- No follow up yet



# Mesh mapper

- Much less unnecessary ablation



# Ablation Frontiers

- PV catheter
- Custom RF generator
- Bipolar/unipolar cycles

4:1, 2:1, 1:1

Boersma et al Heart Rhythm 2008



# Ablation Frontiers

- Porcine thigh muscle

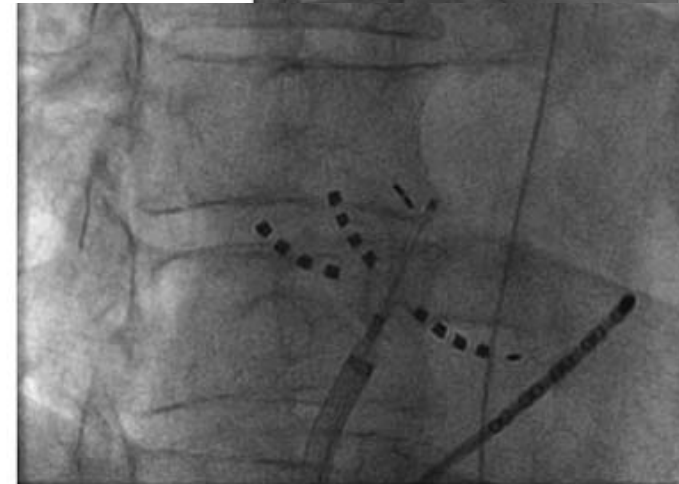
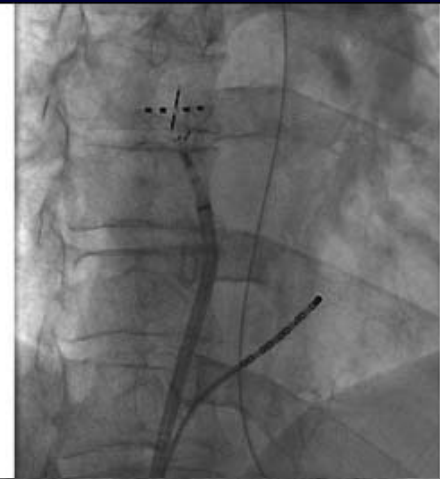


# Ablation Frontiers

- Results n=98
- Procedure time  $84 \pm 29$
- Fluoro  $18 \pm 8$
- 100% of PVs isolated
- 53 6 months f/u off AAD
- 82% AF free
- No complications

# Ablation Frontiers

- Persistent AF

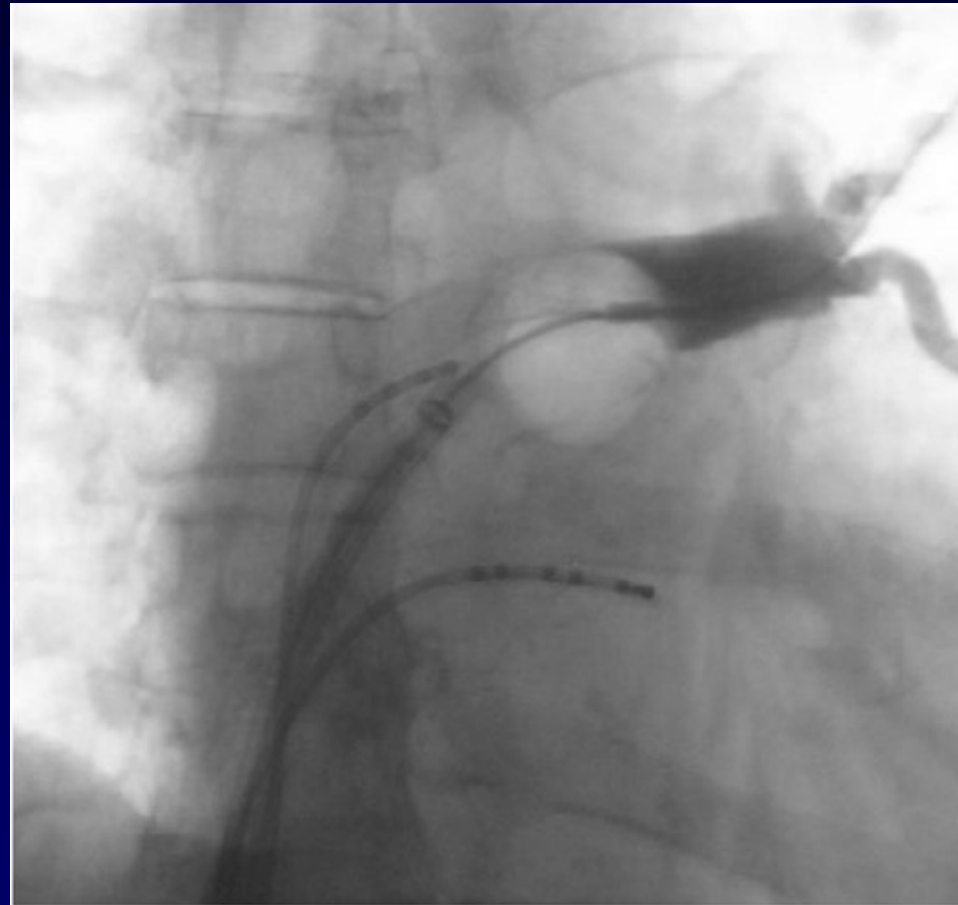


# Ablation Frontiers

- Procedure  $155 \pm 40$  min
- Fluoro  $55 \pm 35$  min
- “demonstrates a 80% short-term and 66% success rate at 20 months”
- Free of AF off AAD
  - primary 27 (54%)
  - last follow up 21 (45%)
- Comps:
  - CVA
  - AV fistula
  - Heart failure
  - Pericardial effusion

# Cryoablation

- Gentle
- No risk of char

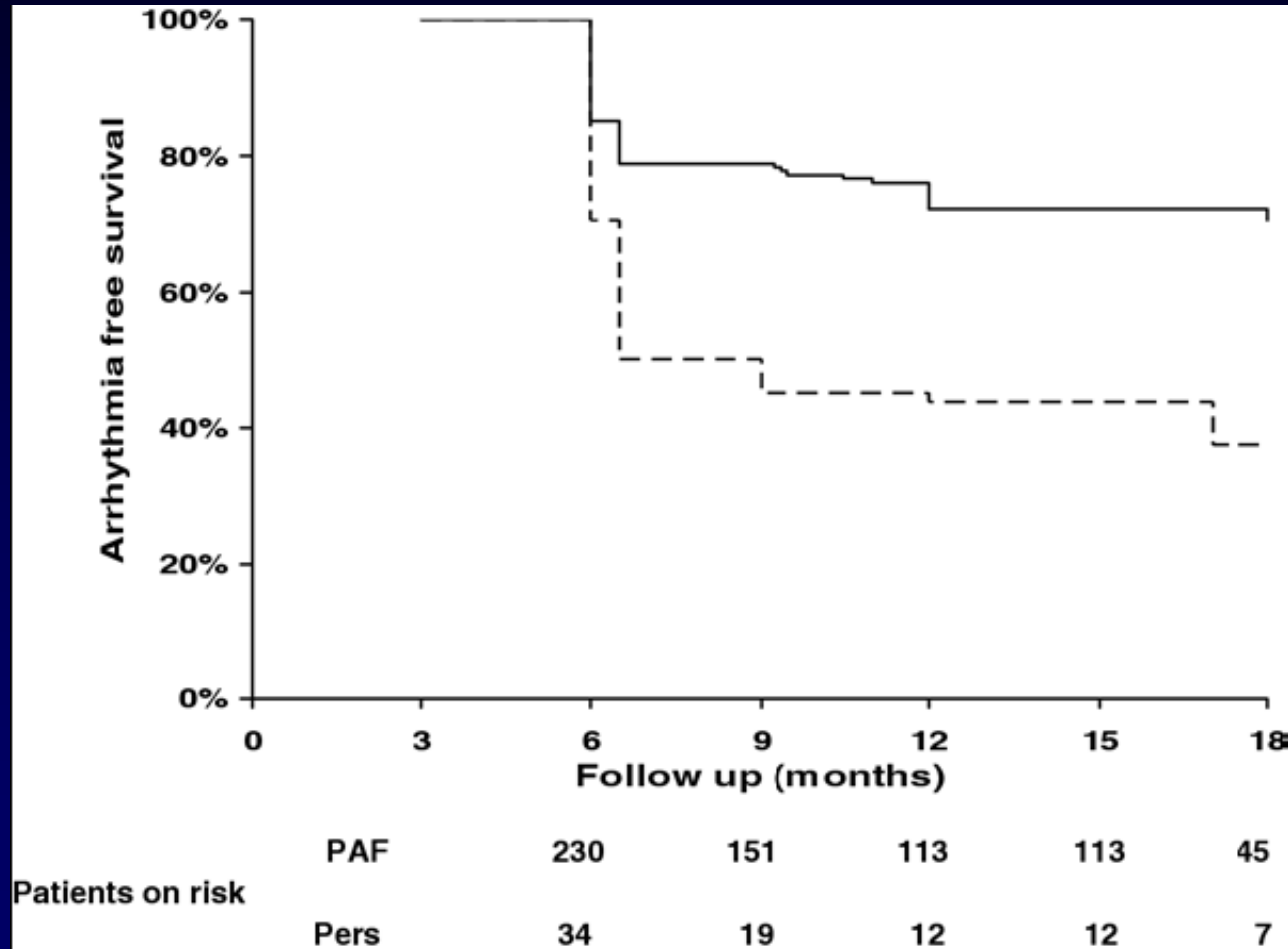


# Cryoablation

- N=346 PAF and persistent
- Median procedure 140 mins
- Median fluoro 40mins
- PVI in 97%
- Complications
  - 2 tamponade
  - 1 av fistula
  - 2 aneurysm
  - 7.5% phrenic nerve (all recovered)

# Cryoablation

- Results



# Cryoablation

# Cryoablation

- N=21 PAF
- Procedure  $165 \pm 35$  min
- Fluoro  $39 \pm 9$  min
- Acute success 95%
- 6 month success 86%
- Complications 3 (14%) phrenics

# Cryoablation

- N=27
- Procedure 220
- Fluoro 50
- Acute success 98%
- Follow up 271 days – 70%
- Complications 11% (PN)

# Is there a disadvantage to point-by-point?

- Long procedures
- High fluoro dose
- Results no better than the faster OSFA technologies
- Greater complications

# Point-by-point

- Is the refuge of the old fashioned
- Unable to embrace new ideas and technologies
- Trying to limit procedural expansion
- Maintaining complexity of procedure

# Don't take my word for it

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THE 1000  
LONDON'S MOST INFLUENTIAL PEOPLE 2007

The skills of our doctors and nurses are arguably the most influential things in London as they save lives. When you add to this the medical research taking place in the capital, and its role in healthcare worldwide, London's influence is remarkable. Here we reveal the names that matter.

**Dr Anthony Chow, 41**  
UCL HOSPITAL, CARDIAC  
CONSULTANT

The world leader in electro physiology - the treatment of heart rhythm problems. He has made surgery safer and developed specialised pace makers for heart failure.



# Words from an expert

- **What about the new technology from Ablation Frontiers?**
- They have really simplified which is a good thing, the process of AF ablation, and potentially streamlined procedure times because it is a very simple tool.

AW Chow – Cardiology HD

# Conclusions

One size fits all:

The only way of delivering the therapy to all who need it at cost and safety/efficacy level that is acceptable