Atrial fibrillation ablation
how does it work and does it last?

Richard Schilling
Simple classification of AF

**Paroxysmal AF:**
recurrent AF (≥2 episodes), terminates spontaneously within 7 days

**Persistent AF:**
AF sustains >7 days, or needs pharmacologic or electrical cardioversion

**Permanent AF:**
AF accepted
The anatomy of the heart
AF mechanism

• AF usually from Left Atrium
PAF usually arises from PVs
What is AF?
Why does this happen?

• Large Mammals
• Age
• Genetic
• High blood pressure
• Alcohol
• Mostly random
• Individual factors
  – exercise
  – rest
PAF catheter ablation

X-ray free visualisation of catheter position

Barts Heart Centre
PAF ablation
PAF ablation
Location of ganglionic innervation
Does it work

- yes and procedures are getting faster and safer
Persistent AF

- Atrial remodeling makes non-PV tissue “fibrillatory”

PAF → Persistent → Permanent

Genetic and environmental factors influence the rate
Persistent

- More extensive treatment needed
- Challenging to know where to go - "random" activity
Patterns within the noise
What predicts success

- PAF
- Persistent AF:
  - Short time in persistent AF 6 months, 1 year, 3 years, 5 years
  - LA size (correlates with time in AF)
  - Other disease: MV disease, HOCM
Future strengths
Increasing evidence of cure

- Long term outcome of AF ablation

Hunter et al Heart 2010
Long term success for AF ablation

- follow up 2.5-4.7yrs

[Bar chart showing the percentage of patients free of AF over time for Persistent and Paroxysmal AF, with varying follow-up periods and success rates.]
Personal outcomes - procedure times

The London Atrial Fibrillation Centre
AF ablation fluoroscopy times
Success rates after single procedures

% 1st time success

2012/3  2013/4  2014/5
0.0  10.0  20.0  30.0  40.0  50.0  60.0  70.0  80.0  90.0

PAF
Persistent
All

The London Atrial Fibrillation Centre
Success rates after multiple procedures

% total success

PAF  Persistent  All

The London Atrial Fibrillation Centre
Conclusions

• AF ablation works by modifying the electrical properties of the atria and autonomic balance of the heart
• It does have a long-lasting effect for many people
• Results are getting better as technique improves and referrals are made earlier