

# What have we learned after 10 years and 120,000 cryoablations?

Richard Schilling

conflicts - speaker fees and research grants Medtronic, Biosense Webster



# Talk outline

Brief procedure description

What have I learned

anecdote, personal experience

What have we learned

data and studies

What have we yet to learn

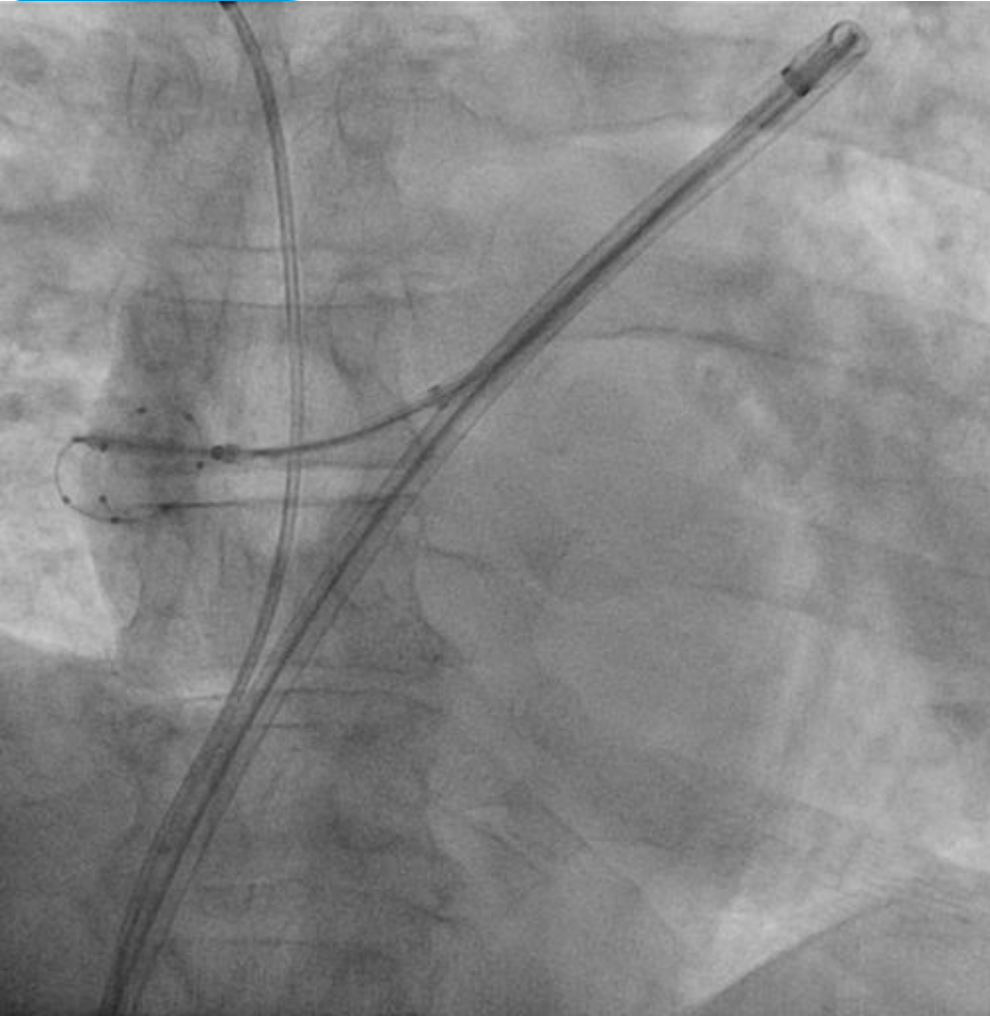


# Cryoablation-the procedure

- Pt on anticoagulation
- No TEE/TOE (unless CHADSVasc >2 or no pre-op OAC)
- Heparin IV
- +/- ACT
- Pacing wire in SVC



# Cryoablation-the procedure

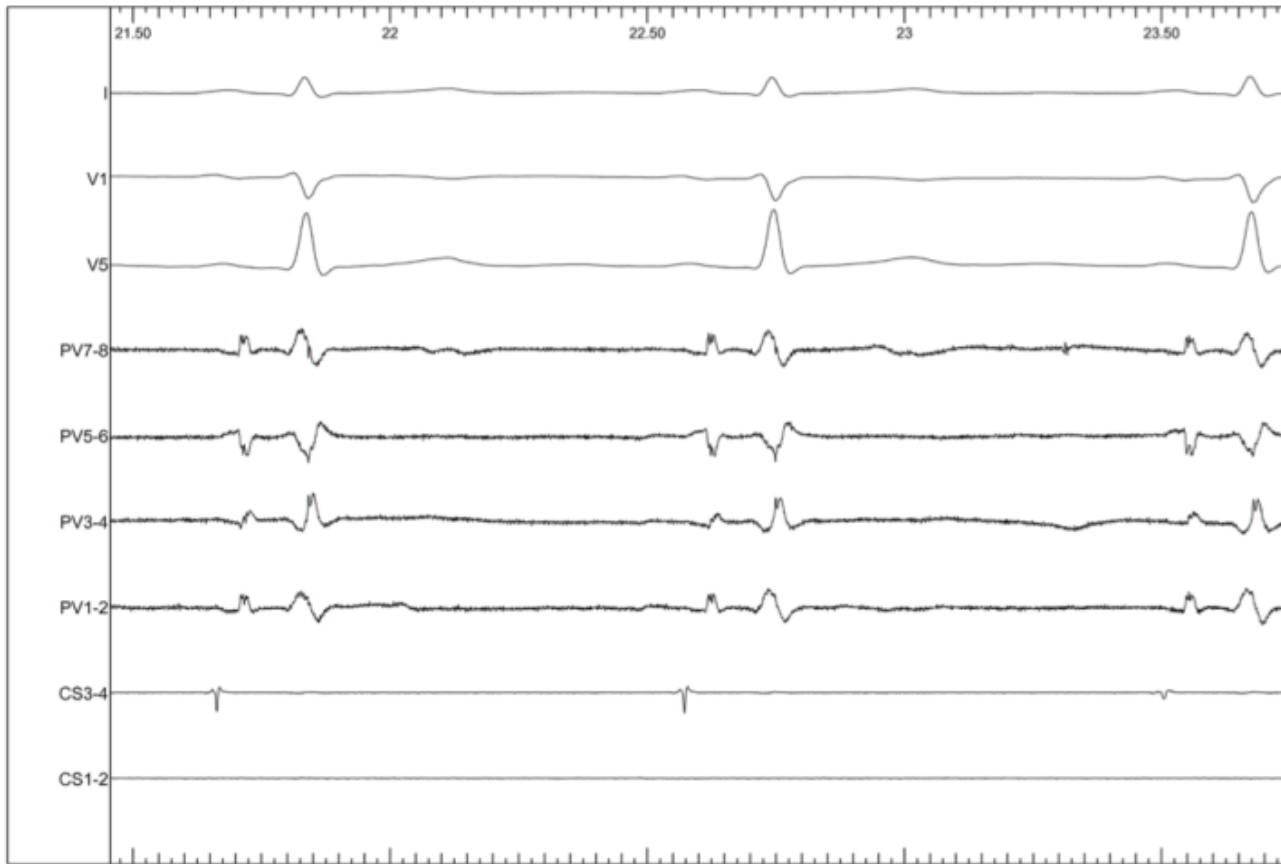


- Transeptal puncture
  - Either conventional needle and exchange for cryo-sheath
  - Safesept - needle free TS wire PV mapping/guidewire
- Monitoring of PV signal during freeze



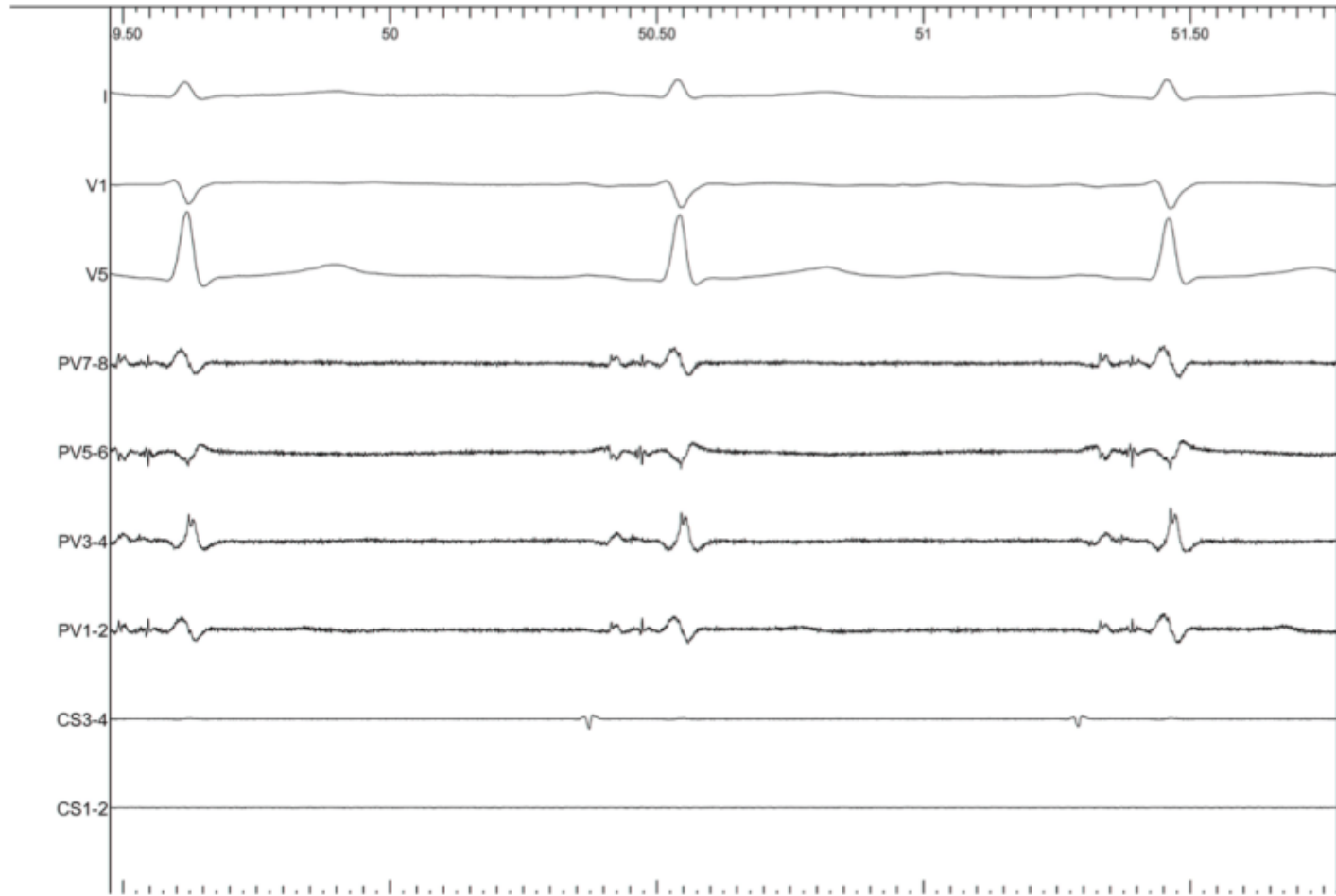
# Technology - energy delivery

RIPV pre-cryoablation using PV mapping guidewire



# Technology - energy delivery

## RIPV mid ablation



# Cryoablation

- Sheath removed and femstop applied
- +/- protamine
- Post op echo
- Day case discharge



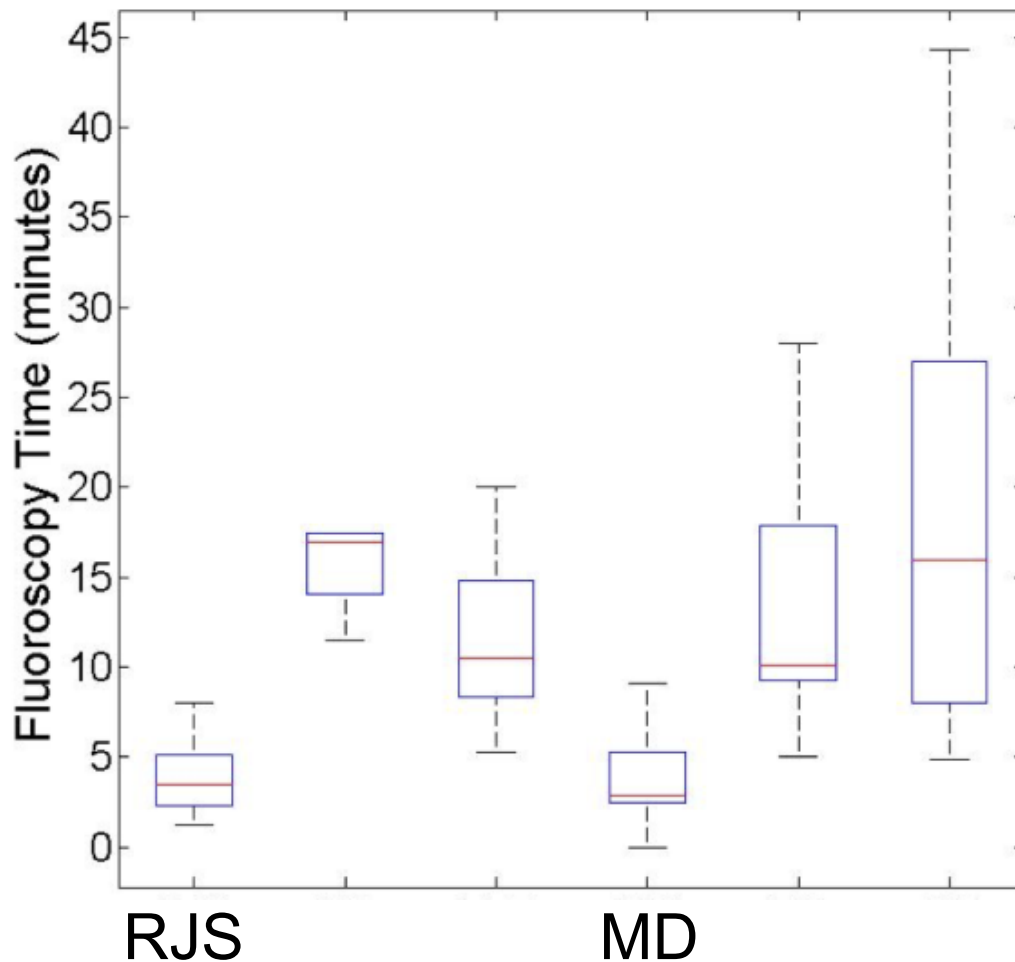
# There is always a learning curve

- Achieving isolation
- Avoiding phrenic nerve damage
- Reducing fluoroscopy time





# Fluoroscopy times unaffected by absence of EA mapping



Operator

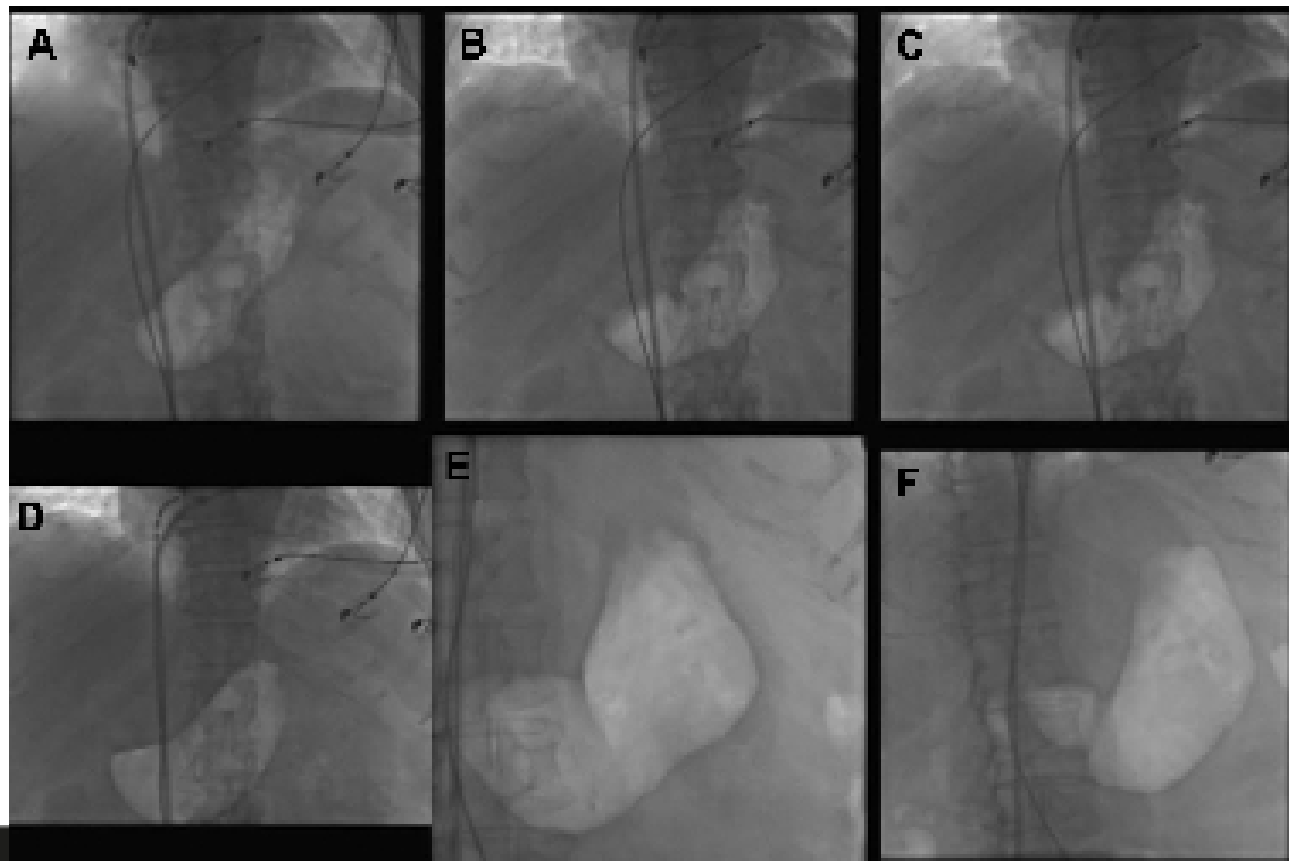
RJS

MD



# The greater the success... the greater the risk

- Gastroparesis in 104 pts Cryo vs RF
- 10% vs 2%



- A-Oesophageal fistula reported for both generations of Cryoballoon



# What have we learned?

- Cryoablation of PVs is superior to RF ablation using old technology
- The pulmonary veins may not be the source as often as we thought

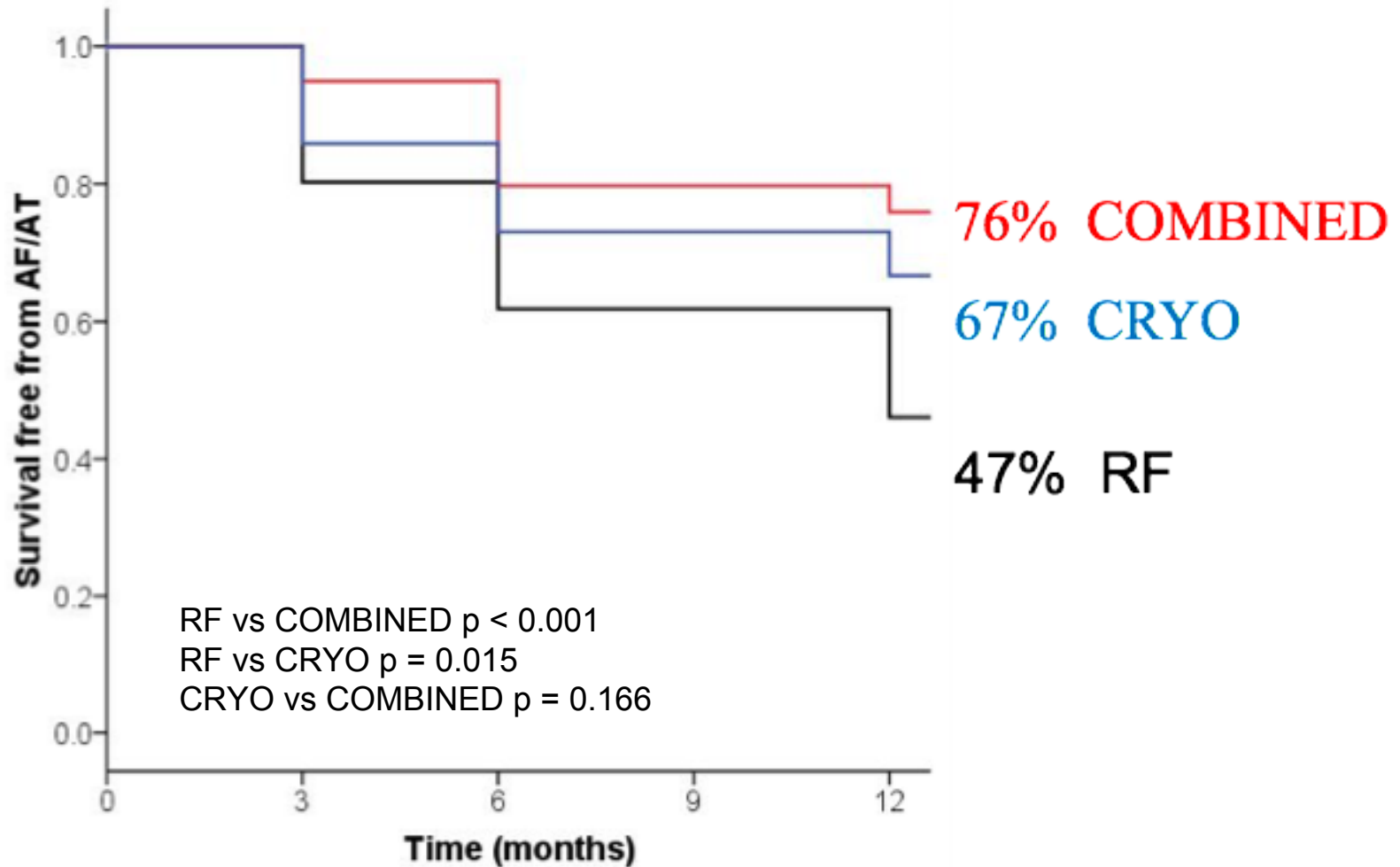


# Cryoballoon trial

- Single centre prospective RCT
- Symptomatic drug resistant PAF
- 79 pt/group to detect 20% difference
- Randomised 1:1:1
  - - WACA
  - - Cryoballoon
  - - WACA then Cryoballoon
- No routine imaging



# 1 year outcome off drugs any AF



# The PVs are not as often the culprit as we thought

- PVs reconnected in pts with recurrent AF/T 1st vs 2nd gen balloons

	<b>CB1</b> <b>(n = 22)</b>	<b>CB2</b> <b>(n = 18)</b>	<b>P-value</b>
.....			
PVs reconnected per patient			
0	0/22	6/18	0.048
1	4/22	9/18	0.046
2	6/22	2/18	0.257
3	6/22	1/18	0.104
4	6/22	0/18	0.02
At least one PV reconnection	22/22	12/18	0.048



# How has my practice changed?

- De novo Paroxysmal AF - all done with cryoablation
- Persistent AF and redo PAF - RF with force sensing





# Dedicated PAF service

- Streamline care
- Separate team with no experience
- Repetition of procedure to help process
- Pre-admission by the booking clerk completing a questionnaire
- Cryoablation with 28mm balloon and 20 mm achieve wire



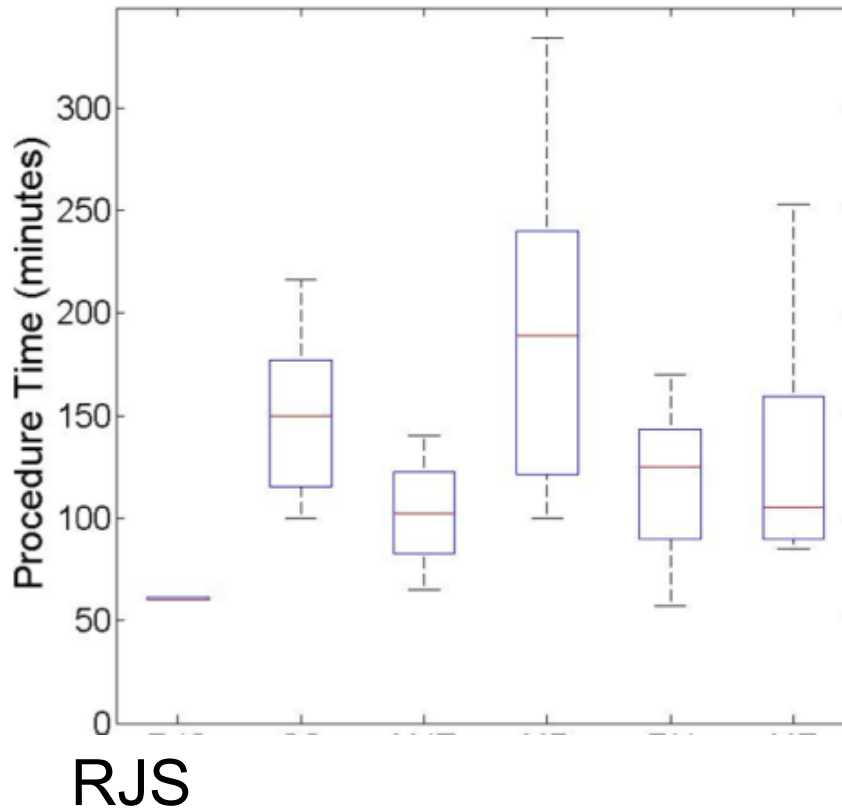
# Outcomes

- 90 procedures (6 persistent)
- Success 70% complete, 15% improved
- Complications - 2 phrenic nerve (resolved), 1 haematemesis (normal OGD)



# procedure times related to the process - not the operator

PAF ablation times - Barts heart centre audit for 2014/5



Waiting list from 20 weeks to <6 weeks (time for anticoagulation)



# What have we yet to learn?

- Next generation Cryo vs contact force RF?
- Best patients for cryoablation?
- How long/often should we freeze?
- How do we balance cost, efficacy, and safety for a generation of patients and referrers expecting a good outcome



# Conclusions

- Cryo appears to deliver more consistent results across different operators
- Like any technology it has some risk
- Acknowledging a learning curve mitigates this risk and improves outcomes
- Building processes around technology can have a big impact on procedures and their outcomes



# Cryo vs contact force

	Cryo	CF	p value
Procedure (mins)	109	123	0.003
Fluoro	18	19	0.1
major comps	0%	2.5%	0.03



# Cryo vs Contact force

- n=190 (CF) vs 178 (CB)

