

# Catheter Ablation of AF ... A strange complication ?

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# Worldwide survey on the methods, efficacy & safety of catheter ablation for human AF

Cappato et al Circulation 2005, 111:1100-05

- 777 hospitals questioned – data from 181 included
- 1995-2002 Timeframe
  - 1995-97 Atrial compartmentalisation
  - 1998-99 Trigger ablation
  - 2000-02 Pulmonary vein isolation
- Median = 37.5 per centre
- 8,745 patients; Follow-up: 11.6 ± 7.7 mths
  - 52% Asymptomatic without drugs
  - 24% Asymptomatic with previously ineffective drugs
- At least one major complication in 524 (6%)

# Major Complications of AF Ablation

Cappato et al Circulation 2005, 111:1100-05

<b>1995-2002 (N = 8,745)</b>	<i>Patient N</i>	<i>%</i>
Death	4	0.05
Tamponade	107	1.22
Sepsis / Abscess / SBE	1	00.01
Pneumothorax	2	0.02
Haemothorax	14	0.16
Permanent diaphragmatic paralysis	10	0.11
Femoral pseudoaneurysm	47	0.53
AV-fistula	37	0.42
Valve damage	1	0.01
Aortic dissection	3	0.03

# LA Ablation of AF: *Major Complications*

Cappato et al Circulation 2005, 111:1100-05

<b>1995-2002 (N = 7,154)</b>	<i>Patient N</i>	<i>%</i>
<b>Stroke</b>	<b>20</b>	<b>0.28</b>
<b>TIA</b>	<b>47</b>	<b>0.66</b>
<b>PV Stenosis (&gt; 50%) - Acute</b>	<b>23</b>	<b>0.32</b>
<b>- Chronic</b>	<b>94</b>	<b>1.31</b>
<b>PV Closure - Acute</b>	<b>2</b>	<b>0.03</b>
<b>- Chronic</b>	<b>15</b>	<b>0.21</b>
<b>PV Stenosis / Closure with symptoms</b>		
<b>- Acute</b>	<b>3</b>	<b>0.04</b>
<b>- Chronic</b>	<b>41</b>	<b>0.57</b>
<b>Patients undergoing intervention</b>		
<b>- Percutaneous</b>	<b>51</b>	<b>0.71</b>
<b>- Surgical</b>	<b>2</b>	<b>0.03</b>

## AF-Ablation: Newcastle in-hospital complications

Complications (11 patients)	RFA	RFA	RFA	RFA 4	Total
	1	2	3		
Cardiac tamponade	4	2		0	<b>6 (3.6%)</b>
Pericarditis / effusion	2	1	1		<b>4 (2.4%)</b>
Pain at catheter access site (delayed hospital discharge)	1	1			<b>2 (1%)</b>
Drug reaction (flecainide)	(1)				<b>(1)</b>
Iodine contrast allergy	(1)				<b>(1)</b>

## AF-Ablation: Newcastle late complications

<b>During follow-up (4 patients)</b>	<b>RFA 1</b>	<b>RFA 2</b>	<b>RFA 3</b>	<b>RFA 4</b>	<b>Total</b>
<b>Sudden cardiac death (at 6 mths)</b>	<b>1</b>				<b>1 (0.6%)</b>
<b>Stroke with resolution (<math>\leq</math> 72 hrs)</b>	<b>1</b>				<b>1</b>
<b>Pulmonary vein stenosis (75% - asymptomatic)</b>	<b>1</b>				<b>1</b>
<b>Pulmonary embolus (at 2 wks)</b>	<b>1</b>				<b>1</b>
<b>Localised thigh numbness</b>	<b>(1)</b>				<b>1</b>

# AF Ablation Complications in UK

## ■ **Newcastle Experience** (more recently)

- Death after hospital discharge from left main coronary artery embolus
- Pulmonary vein stenosis requiring balloon dilatation (2 patients)
- Homonymous hemianopia (1)

## ■ **Anecdotally from rest of UK**

- Multiple complications in same patients  
(stroke + aspiration pneumonia + cardio-oesophageal fistula & death)
- Phrenic nerve palsies (cryo- & RF-ablation methods)
- Other ...?

**Catheter Ablation of AF ...**  
**An unexplained complication ?**

# 43 yr old male

- **October 2010** began having episodes of
  - presyncope, feeling 'not right', no syncope but feeling lethargic
  - five episodes in 4-6 weeks & all self limiting all < 12 hrs
  - work stress but takes regular moderate exercise
  - ECG during one episode confirmed AF
- No past history of relevance & no regular medications  
20 Cigs / day & Alcohol ~ 20 units / week
- No abnormalities on examination - BP 100/60 mmHg; pulse 50/min SR  
CXR, ECG & echocardiogram – all 'normal'
- **November 2010**
  - Event recorder confirmed 5 episodes of AF over 2 weeks
  - Flecainide therapy started 50mg 12 hrly and referred for ablation

# 43 yr old male with frequent Px AF

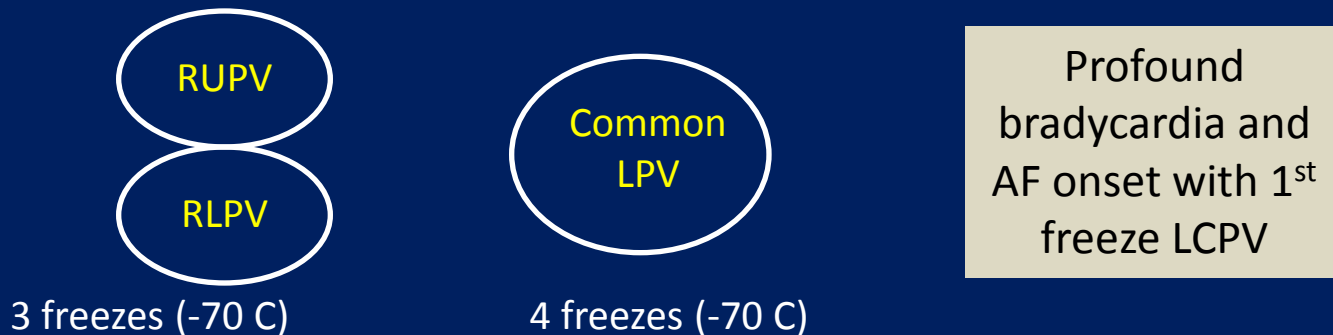
## ■ January 2011

Much improved on flecainide but keen to be off medications  
Oral anticoagulation started ahead of catheter ablation

## ■ February 2011

**Pulmonary vein isolation by balloon cryo-ablation** (28mm balloon)

- Midazolam & fentanyl sedation; INR 2.2; Heparin 13,000iu / ACT ~ 270s



- PVI achieved: Either no signals or dissociated signals on Lasso in each PV  
SR restored with flecainide iv bolus

# Post-operative course post cryo-PVI

- Uncomplicated recovery / echo & ECG satisfactory  
Discharged home the day post-procedure with planned 2 month review  
Flecainide to continue until review
- **March 2011** (1 month post procedure) - Unscheduled review
  - Continuous nausea / No vomiting or dysphagia / Unrelated to food
  - Chest discomforts without positional or respiratory influence
  - Dry cough
  - 'Giddiness' & feeling of unsteadiness without localisation
- No abnormalities on examination; BP 110/80; ECG SR 64 bpm  
No AF symptoms since discharge home

# Post-operative course post cryo-PVI

- Unexplained symptoms: ? chest pain / ? Nausea

**CXR:** *' haziness in right para-cardiac area; some peri-bronchial thickening'*

Echo: No pericardial effusion / unchanged from pre-op

- **Rx:**

- Flecainide discontinued
- Blood testing

# Post-operative course post cryo-PVI

## ■ 9 weeks post ablation

- Chest discomforts all resolved
- 'Giddiness' resolved after flecainide withdrawal
- Two bouts of symptomatic AF (longest ~ 4 hours)
- **Morning nausea still a major problem**
- No anorexia / retching or vomiting

## ■ Gastroenterology Assessment (4 months post ablation)

- Nausea bothersome / No associated tinnitus or vertigo
- Sometimes wakes in night feeling nauseous
- Feels '*...listless & uncharacteristically flat on a bad day...*'
- ?? Some associated depressive symptoms
- Trial of domperidone ....
  
- **Gastroscopy** : '*Some bile reflux / Biopsies showed only mild gastritis*'
- **Abdominal ultrasound**: Normal
- **H-pylori antibody**: Negative

# Blood Results

	Pre-RFA	2 mths post-RFA
Sodium	139	141
Potassium	5.0	5.0
Urea	75	5.8
Creatinine		83
Total protein		74
Albumin		50
Calcium		2.38
Phosphate		1.16
Bilirubin		6
Alk Phos		57
ALT		25
GammaGT		17
Amylase		116
Glucose	5.6	NA

	Pre-RFA	2 mths post-RFA
Hb	14.4	14.6
WCC	4.10	4.9
Plat	193	208

**All within normal ranges & unchanged over the entire post-ablation follow-up period**

# Post-operative course post cryo-PVI

## ■ 5 months post ablation

- Coping well with short lived bouts of AF fortnightly
- **Morning nausea still the major problem**
- **Possible visual deterioration / Not refreshed on waking**
- **MR-imaging of head arranged .....**

**No intra-cranial cause for nausea identified**

## What do you think is the cause of this patient's nausea...?

- No previous history or similar symptoms
- Timeframe strongly suggests AF-ablation & nausea causally related
- Cardiac possibilities:
  - Small cerebral embolus no longer evident on MR-imaging at 5 mths
  - Vagal nerve injury with effects on upper GI-tract
- Non cardiac possibilities:
  - Stress related / Anxiety / Depression
  - Raised intracranial pressure
  - Gastritis related (despite mild findings on endoscopy)