Experiences with Ultracinch and Ultrawand HIFU Techniques for Ablation Therapy

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Declared Interests - Honoraria
St. Jude Medical and Maquet

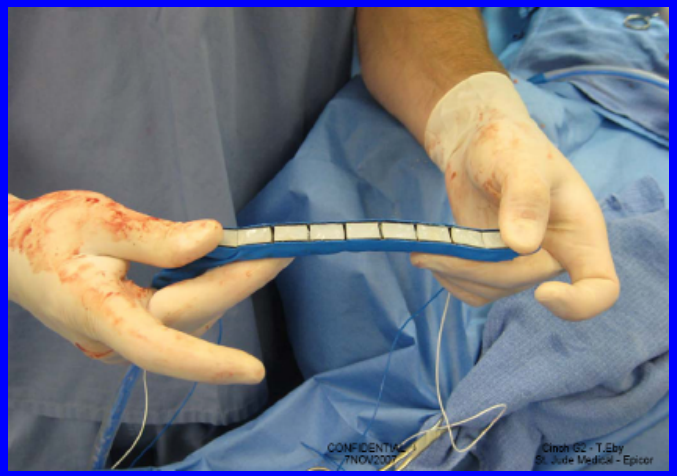
Experiences with New Techniques for Ablation Therapy

Ultracinch LP and Wand

Lower Profile

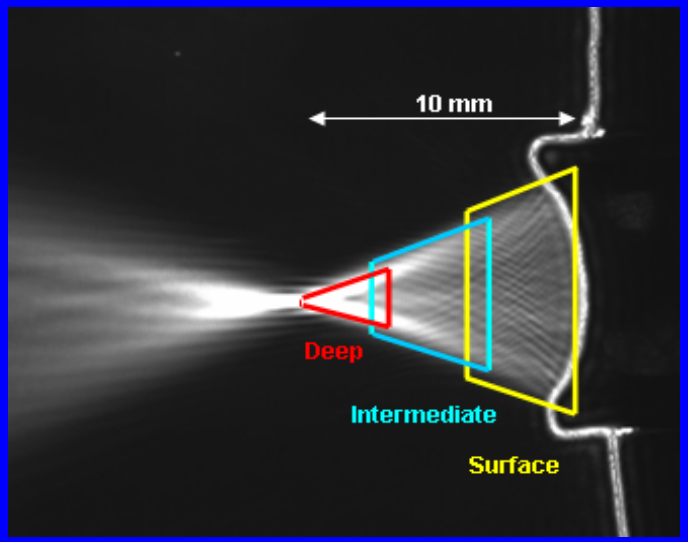
Gradual dilation system

Snares encased in dilation system



Experiences with New Techniques for Ablation Therapy

HIFU

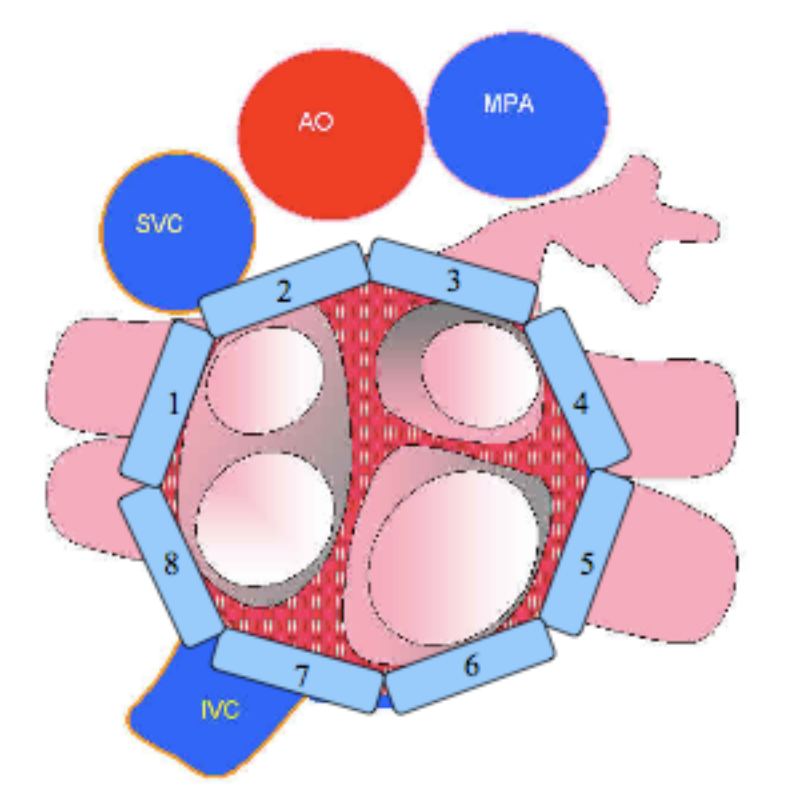


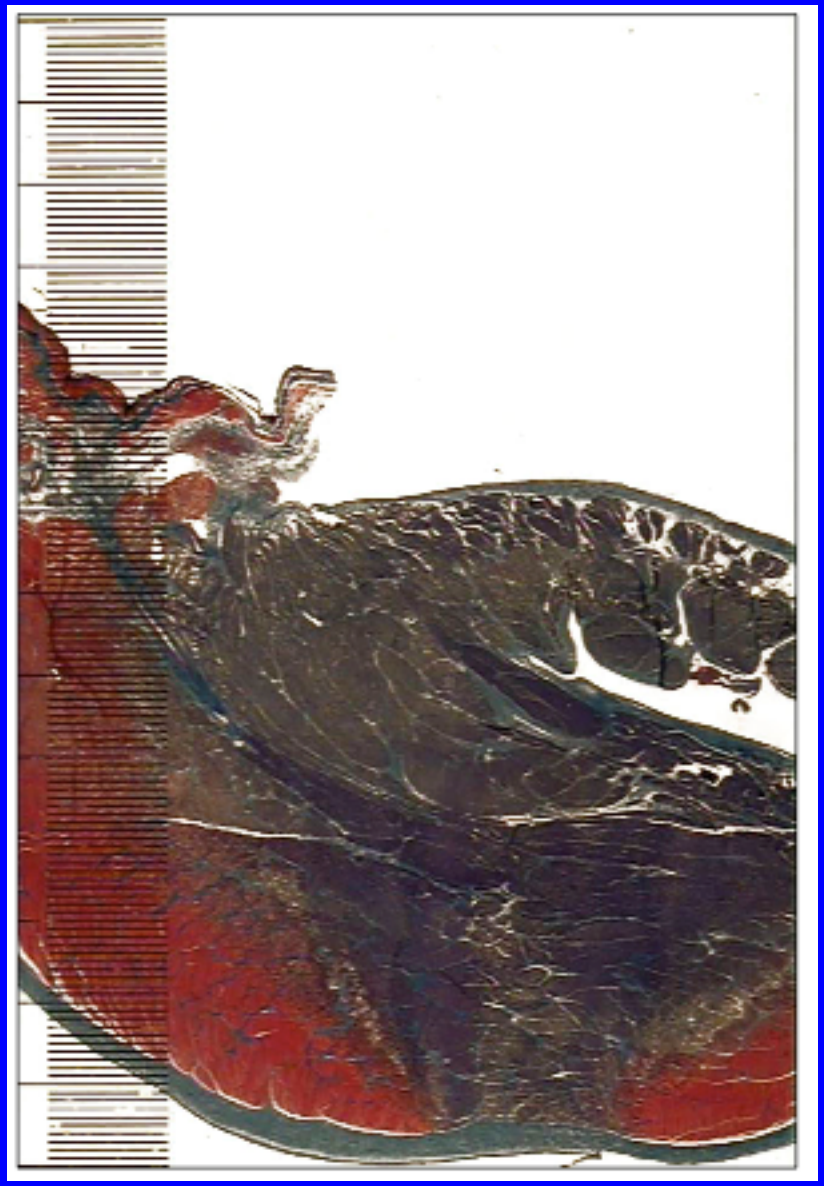
- Variable wattage and frequency through the ablation cycle

Focus:	Deep	Intermediate	Surface
Mode:	Pulse	Pulse	Continuous
Frequency:	Low (~3.8 MHz)	High (~6.4 MHz)	High (~6.4 MHz)
Pulse Power:[a]	130 W (acoustic)	60 W (acoustic)	15 W (acoustic)
Duration:	1200 ms	2000 ms	40 s
Average Power:[b]	3 W	3 W	15 W
Total Energy:	5 pulses per cell	4 pulses per cell	

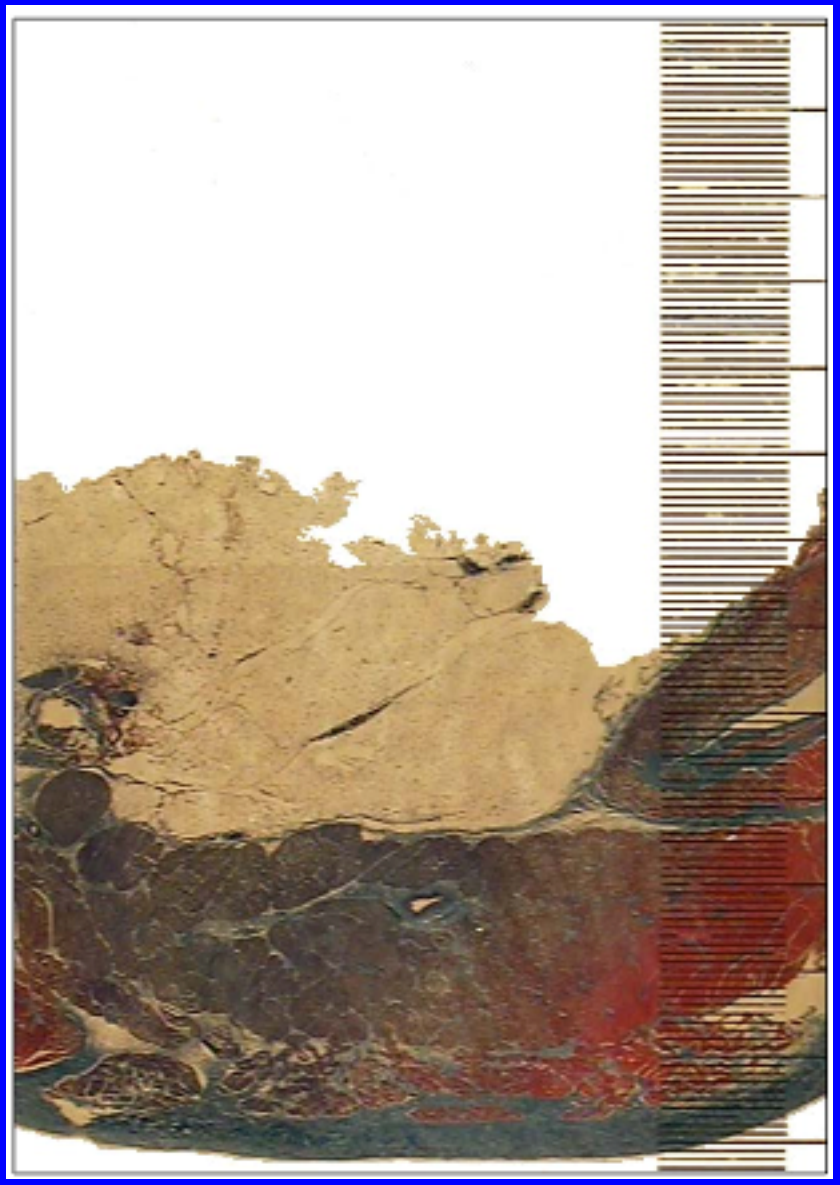
Transmurality

- **Date:** April 24, 2008
- **Device:** UltraCinch LP, 8 Cell
- **Animal:** Bovine, 107kg
- **Histology:** 98% Transmural (285 Slides total)

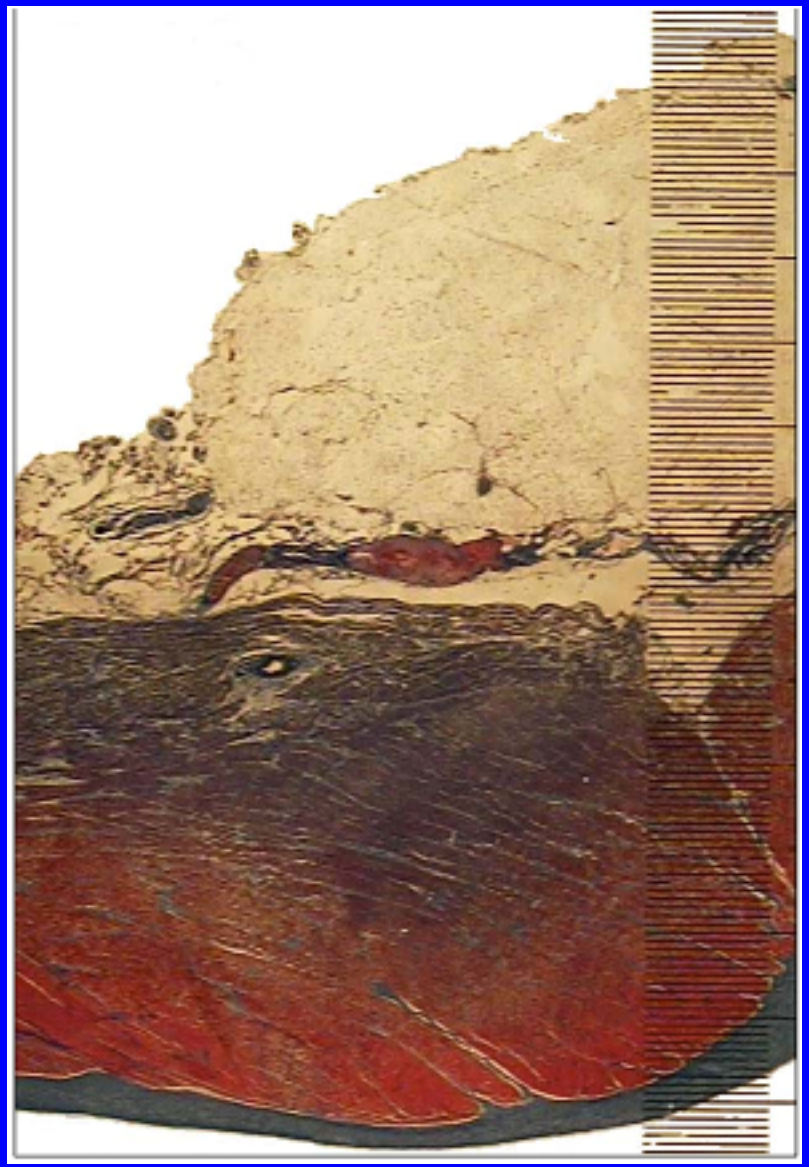




- 100% Transmural
- Total Thickness 8.2mm
  - 0.0mm Fat
  - 8.2mm Myocardium



- 100% Transmural
- Total Thickness 8.0mm
  - 4.0mm Fat
  - 4.0mm Myocardium



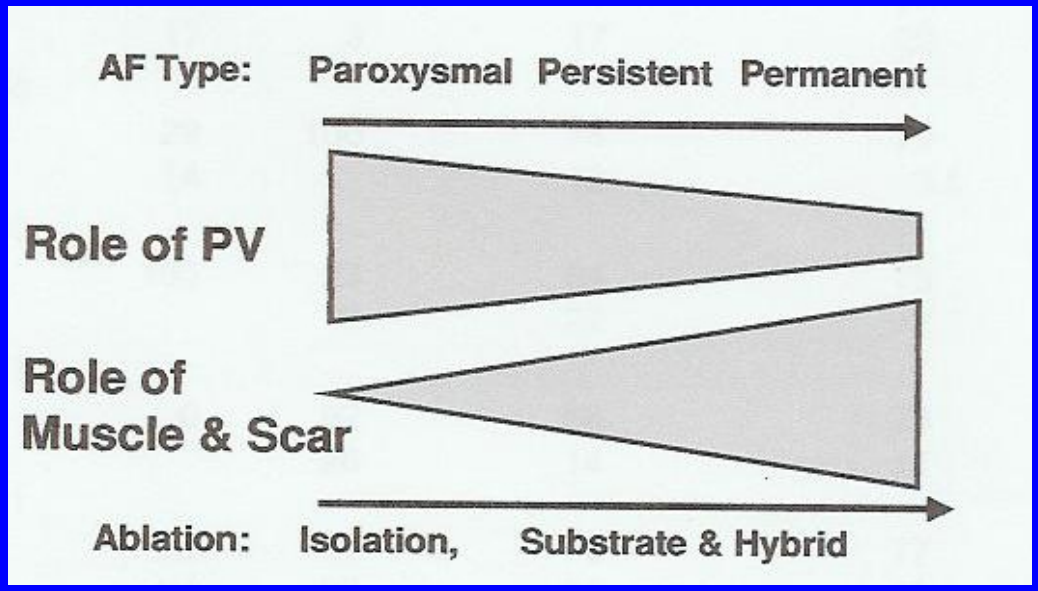
- Non-transmural
- 83% lesion depth
- Total Thickness 12.6mm
  - 6.2mm Fat
  - 6.4mm Myocardium
  - 2.1mm Gap
- Out of Range (>10mm)

98% Transmural

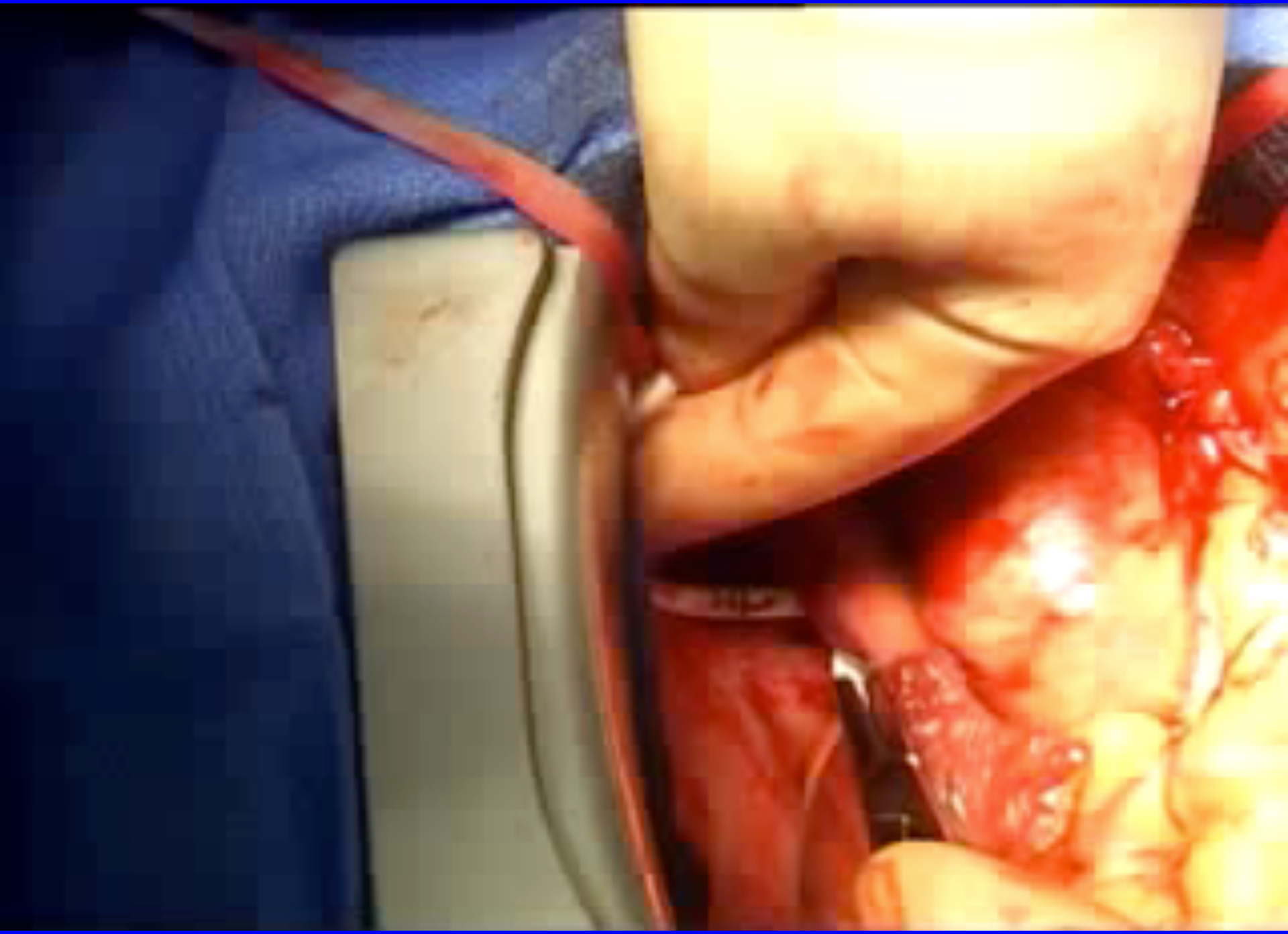
Experiences with New Techniques for Ablation Therapy

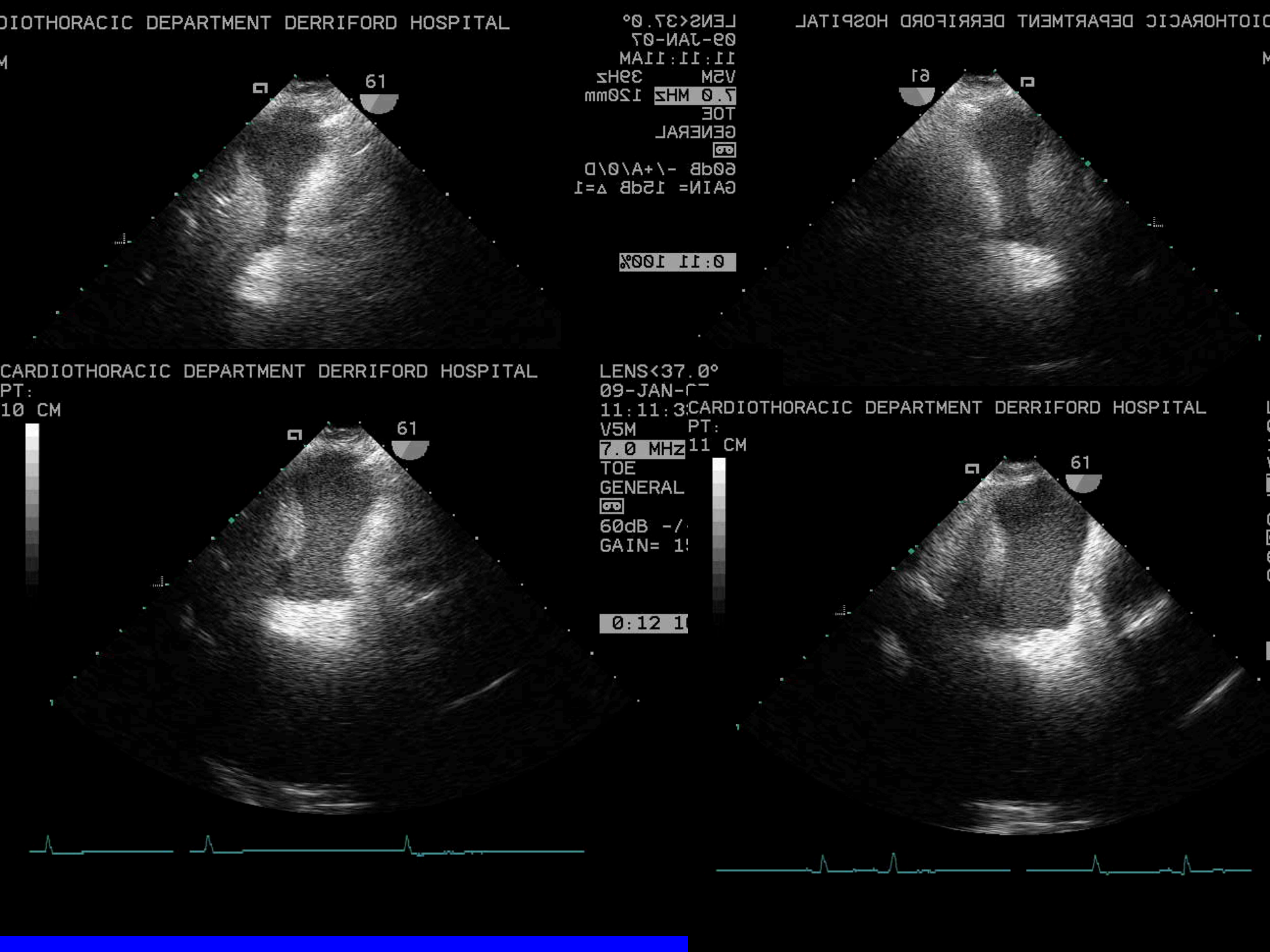
Epicardial Off Pump Application

– Change closed heart to open heart procedure
– Perform additional myocardial incisions



Sanders P et al. J Cardio Electrop 2006;17:965-72
Sahadevan et al. Circulation 2004;110:3293-9




CARDIOTHORACIC DEPARTMENT DERRIFORD HOSPITAL
PT:
10 CM
61
LENS<37.0°
09-JAN-
11:11:3
V5M
7.0 MHz
TOE
GENERAL
60dB -/
GAIN= 1
0:12 1
CARDIOTHORACIC DEPARTMENT DERRIFORD HOSPITAL
PT:
11 CM
61

Experiences with New Techniques for Ablation Therapy

Protocol

- 12 week OPD - ECG
- Sinus rhythm discontinue AAD
- AF – Cardioversion

- 6 months with recent 24 hour tape (of AAD)
- No AF 24 Hr. tape – TTE - Mitral transport
  A wave velocity greater than 10 cm/s

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Patient Demographics

- 28 July 08 – 29 Oct 08
- 17 patients
  - 11 concomitant indication
  - 6 lone indication
- 15 (88%) male, 2 female
- Mean age 66.7 yrs
- Mean Euroscore 4.88 (2-9)

Experiences with New Techniques for Ablation Therapy

- Lone AF 6
- Concomitant ablation 11
  - MVRepair n = 1
  - CABG n = 7 (2 pt's CABG x 1)
  - AVR n = 1
  - AVR + CABG n = 1
  - AVR + MVRepair n = 1

Experiences with New Techniques for Ablation Therapy

Characteristics

- Lone AF 6
  - LA size 4.5cm (range 3.6-5.3)
  - Duration AF – mean 5.7yrs (range 3-11yrs)
  - EF
    - Poor LV (<30%) – 2
    - Mod LV (30-50%) – 1
    - Good LV (>50%) - 3
- Concomitant ablation 11
  - Mitral valve surgery LA 5.7 cm and EF 55%
  - CABG LA > 5cm – one patient. EF mean 42.2% (26-57%)
  - Aortic valve surgery LA > 5cm – one patient. EF mean 46.2% (42-58%)

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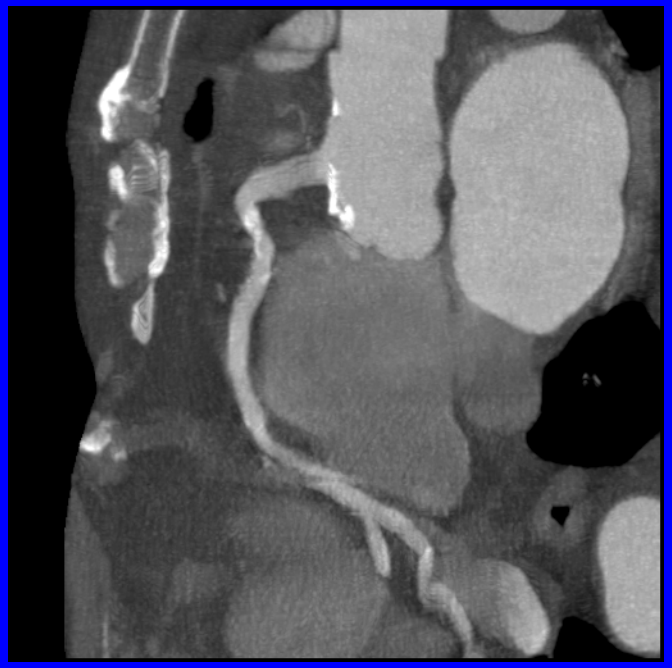
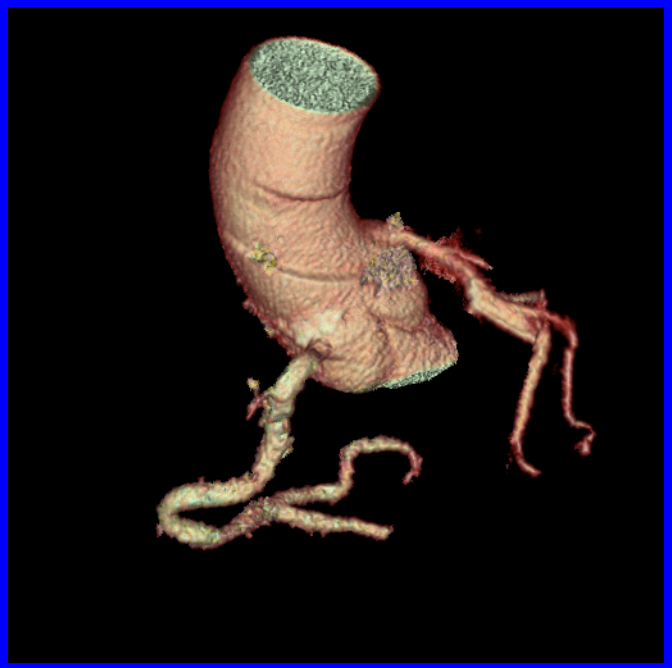
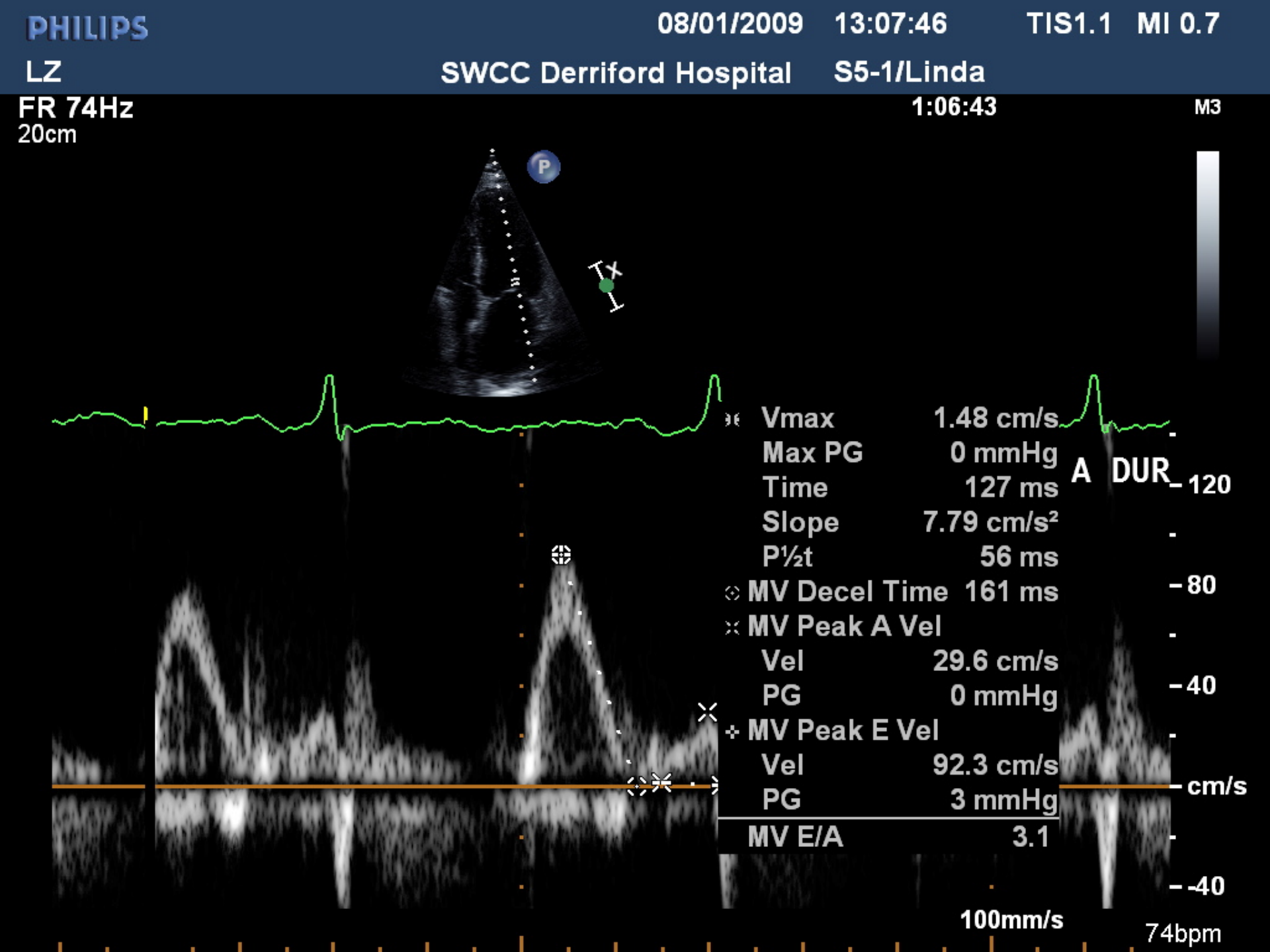
Results

- Freedom from AF (Lone) – 5/6 (87%)
  - Other patient flutter – AF 5.5yrs, LA 5.4cm
- 2 required DC cardioversion at three months

- Freedom from AF (Concomitant) – 9/11 (81%)
  - One flutter (CABG) (4yrs LA 5.1cm), one AF (AVR + CABG) (11yrs LA 4.9cm)






PHILIPS
08/01/2009 13:07:46 TIS1.1 MI 0.7
LZ
SWCC Derriford Hospital S5-1/Linda
FR 74Hz
20cm
1:06:43
M3
P
Tx
Vmax 1.48 cm/s
Max PG 0 mmHg
Time 127 ms
Slope 7.79 cm/s²
P½t 56 ms
MV Decel Time 161 ms
MV Peak A Vel
Vel 29.6 cm/s
PG 0 mmHg
MV Peak E Vel
Vel 92.3 cm/s
PG 3 mmHg
MV E/A 3.1
A DUR
120
80
40
cm/s
-40
100mm/s
74bpm

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Conclusion

- Short term results
- Restoration SR majority patients
- Easy and safe to use
- Sustained LA function following ablation