14th Edition of VeniceArrhythmias

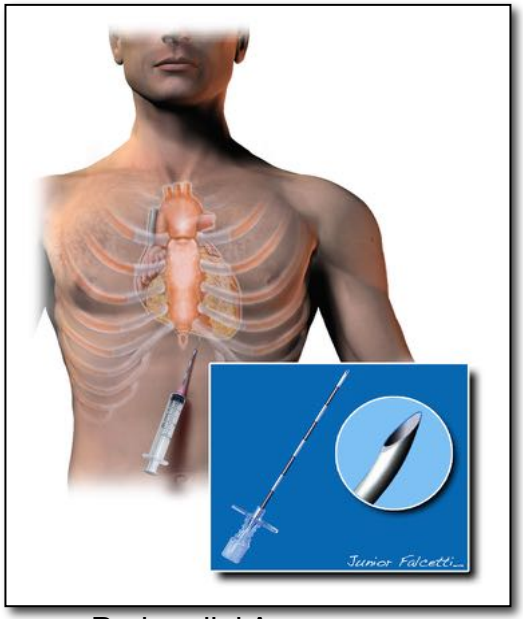
October the 16th-18th, 2015

October 17th – Cenacolo Room: 08.30-10.30 AM

Brazilian Corner: Epicardial ablation around the world

- The Brazilian Experience -

What have we learned after 20 years performing epicardial mapping and ablation of cardiac arrhythmias?



Pericardial Access

Heart Institute (InCor) University of Sao Paulo Medical School

Mauricio Scanavacca, M.D., PhD.

October 16 - 18
14th EDITION 2015

MY CONFLICTS OF INTEREST ARE

- Electrophysiologist Interventionist
- Support for Clinical Studies
  - J&J, St. Jude Medical, Bohering, Bayer, Pfzier
- Support for Fellow training
  - J&J, St. Jude Medical, Medtronic
- Honoraria for lectures and consulting
  - J&J, St. Jude Medical, Medtronic, Bayer and Daichii Sankyo

Surgical VT Ablation guided by EPS

Heart Institute (InCor) University of São Paulo Medical School

(1979 - 1986)

Eduardo Sosa

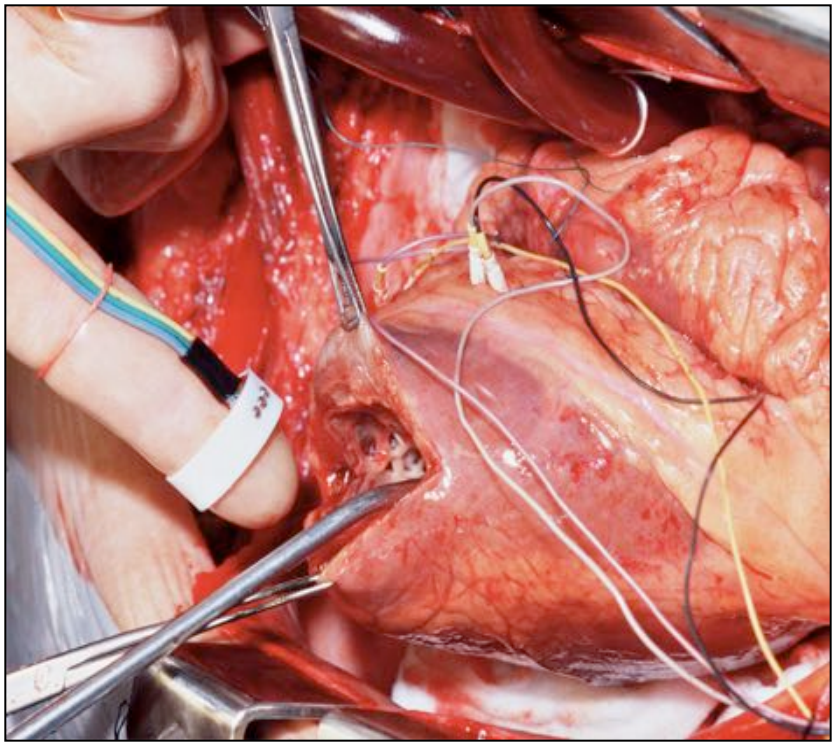
- Electrophysiologist -

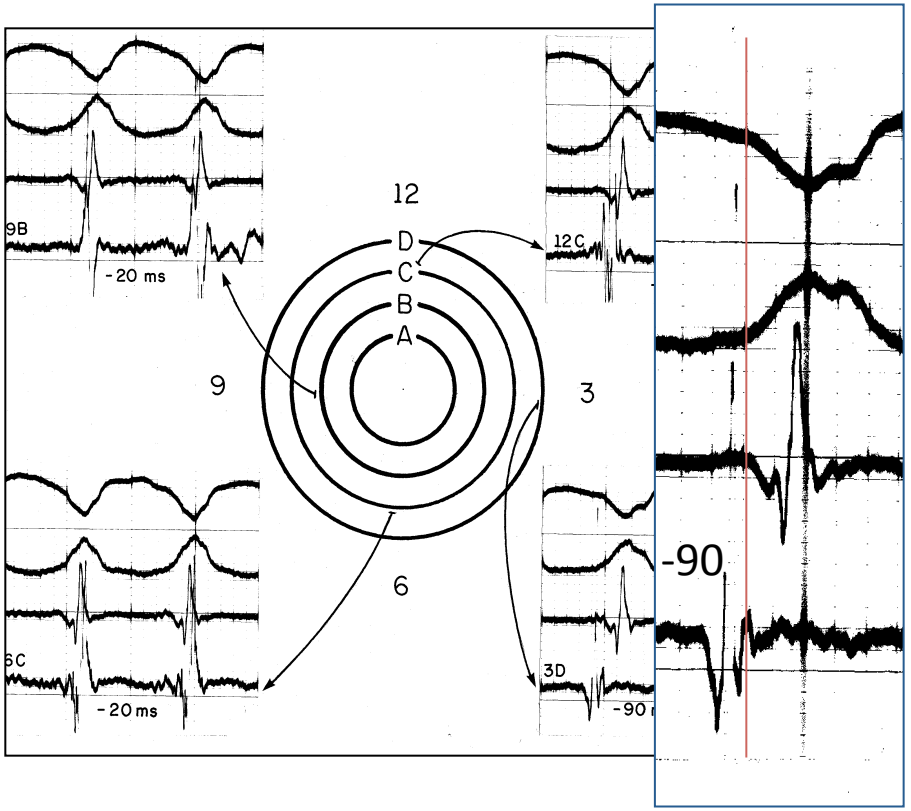
Miguel Barbero

- Cardiac Surgeon -

Chagas disease, Recurrent VT, Refractory to AA drugs

N: 20; F: 11; 45± 6years; LVEF: 58± 10%

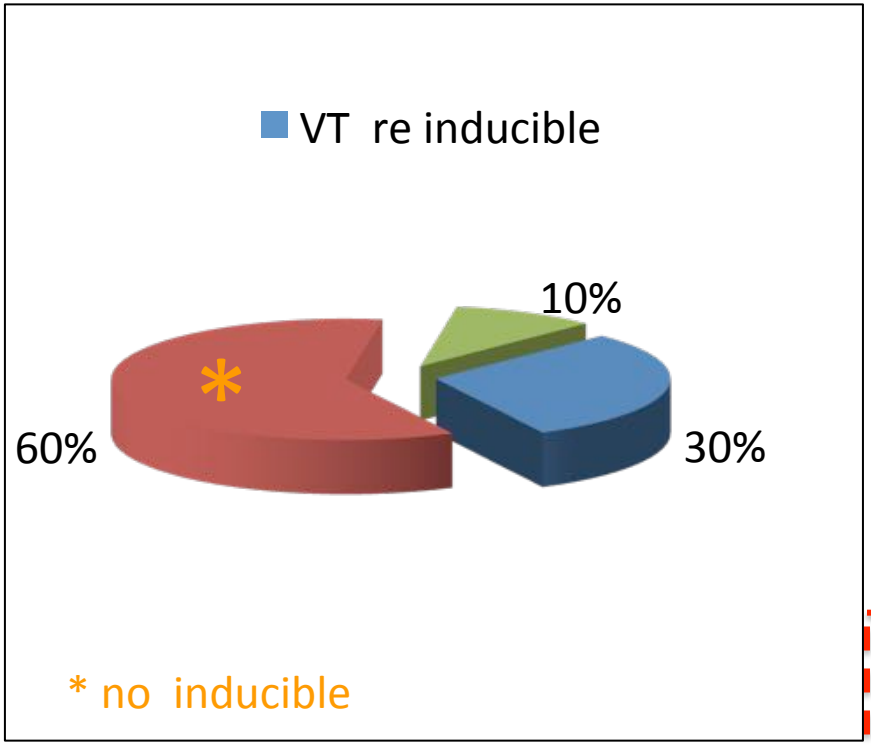


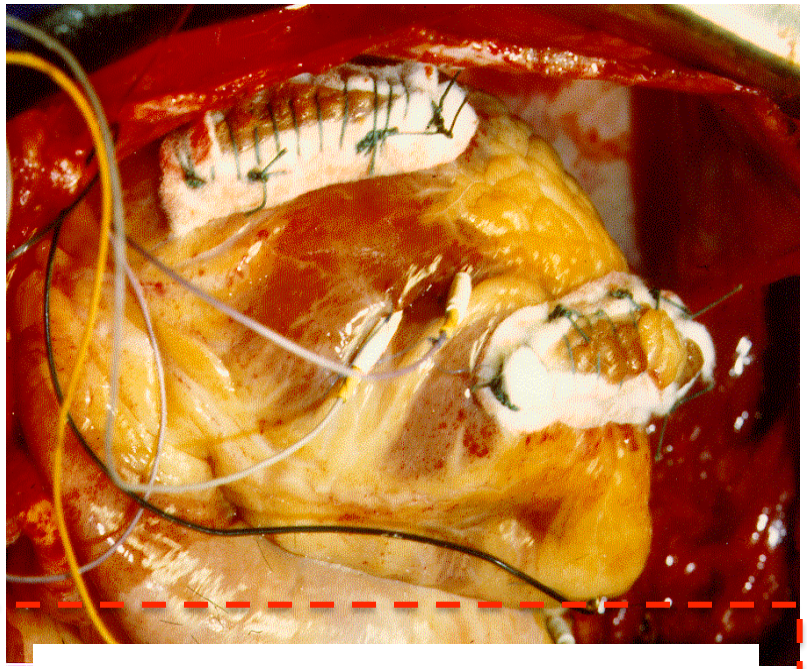


Intra-operative endocardial mapping

EP Guided VT Surgical Ablation in Chagas Disease
InCor – (1979 – 1986)

Recurrent sustained VTs, refractory to AA
N: 20; F: 11; 45years; LVEF: 58%





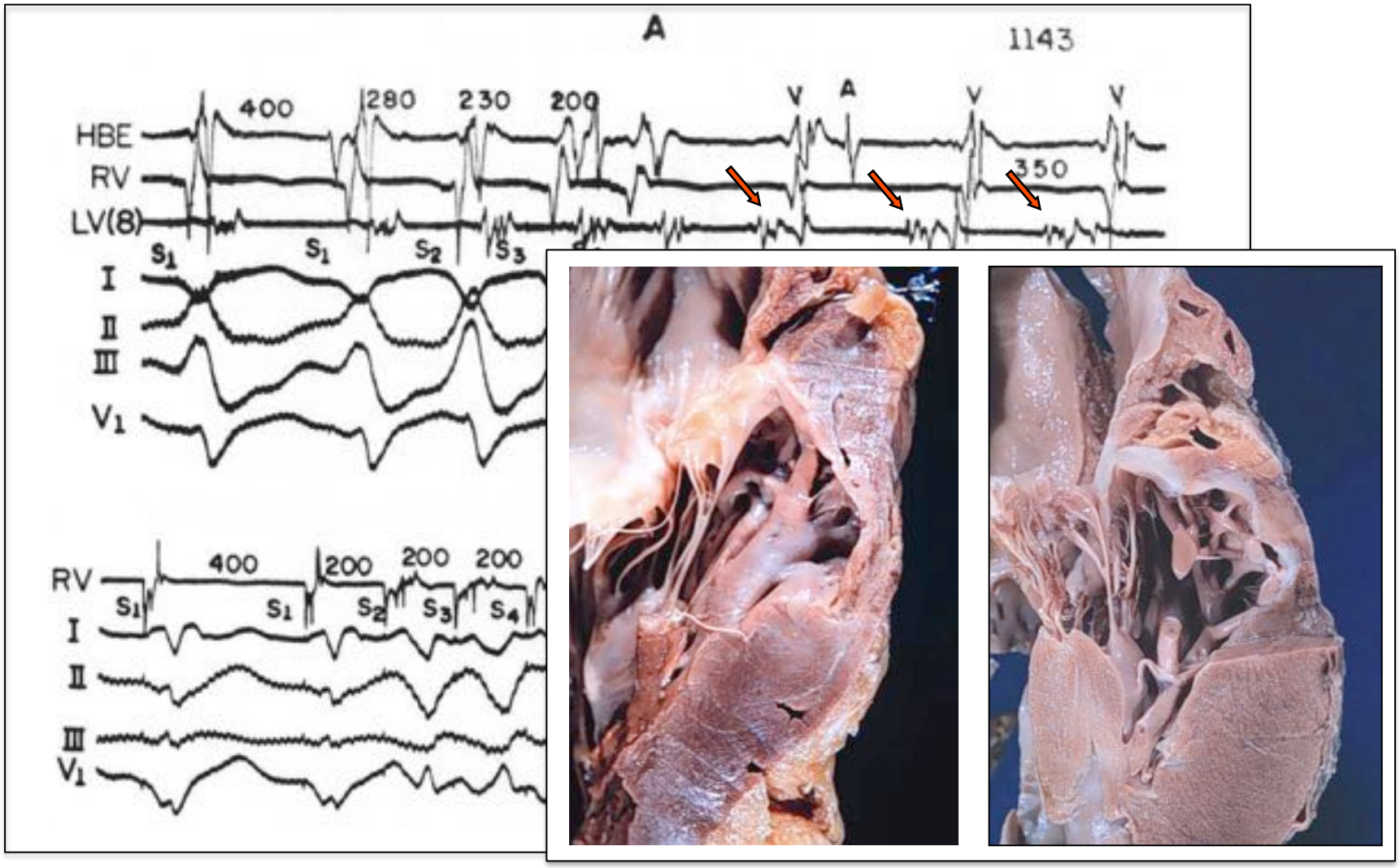
LV Basal wall was the origin site of Mapped VTs in 90% of cases

Successful Catheter Ablation of the "Origin" of Recurrent Ventricular Tachycardia In Chronic Chagasic Heart Disease

VT ablation through DC Shocks (1985 - 1992)

Before ablation

After ablation

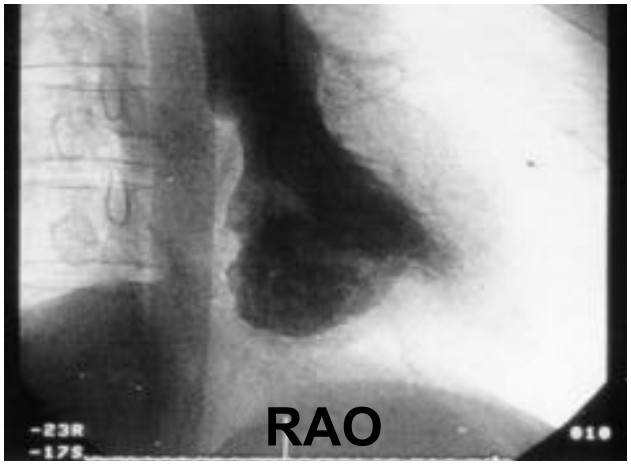


Sosa, et al., Journal of Electrophysiology; 1:58-61, 1987.

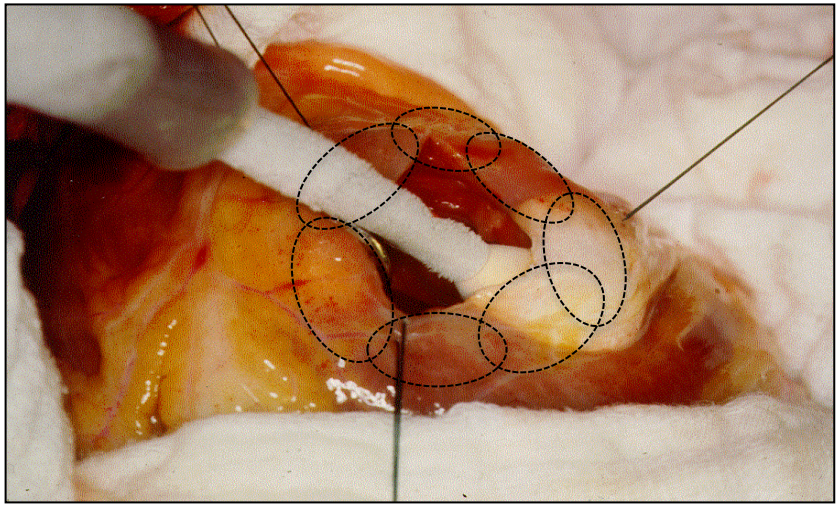
Non Guided VT Surgical Cryoablation in Chagas Disease
InCor (1991-94)

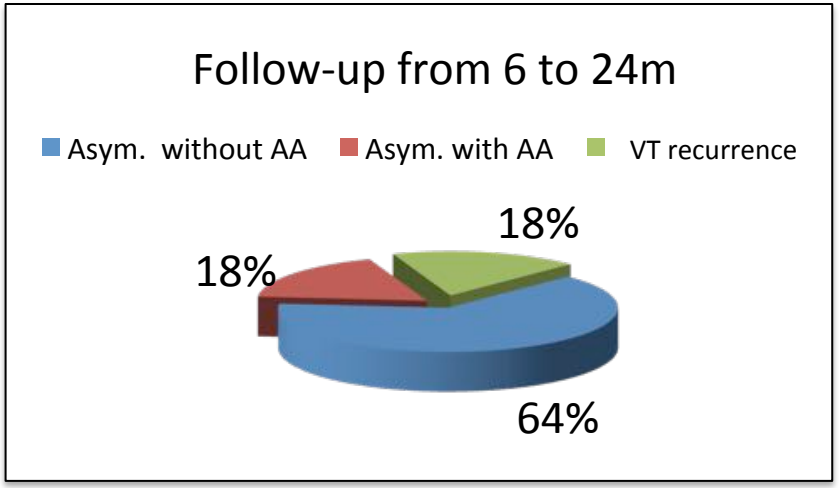
N: 19; Recurrent Sustained VT; F: 10; 58±6.5 years; mean LVEF : 53.8 ±13%

LV Angiography in RAO

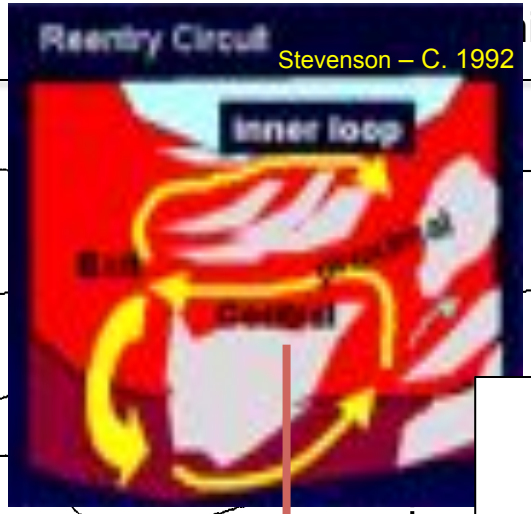


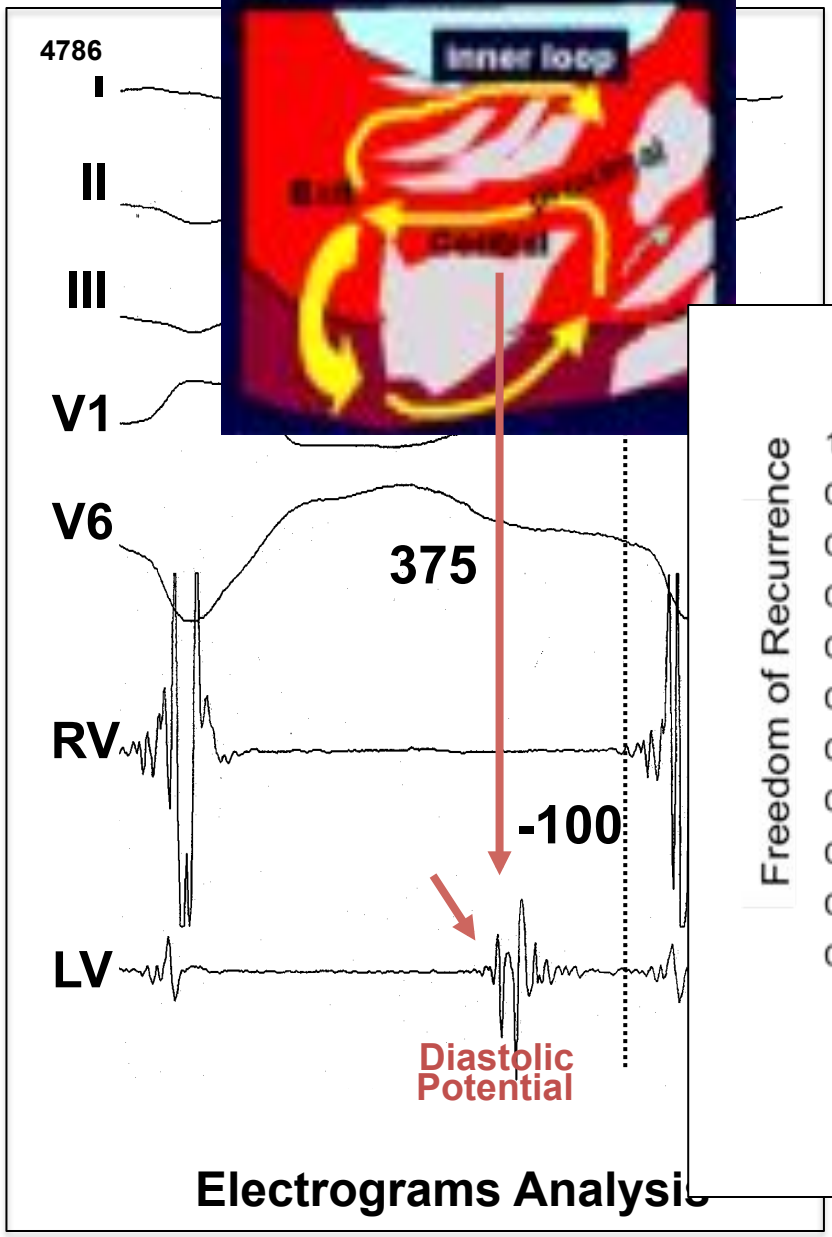
Endocardial Cryoablation of Basal Wall



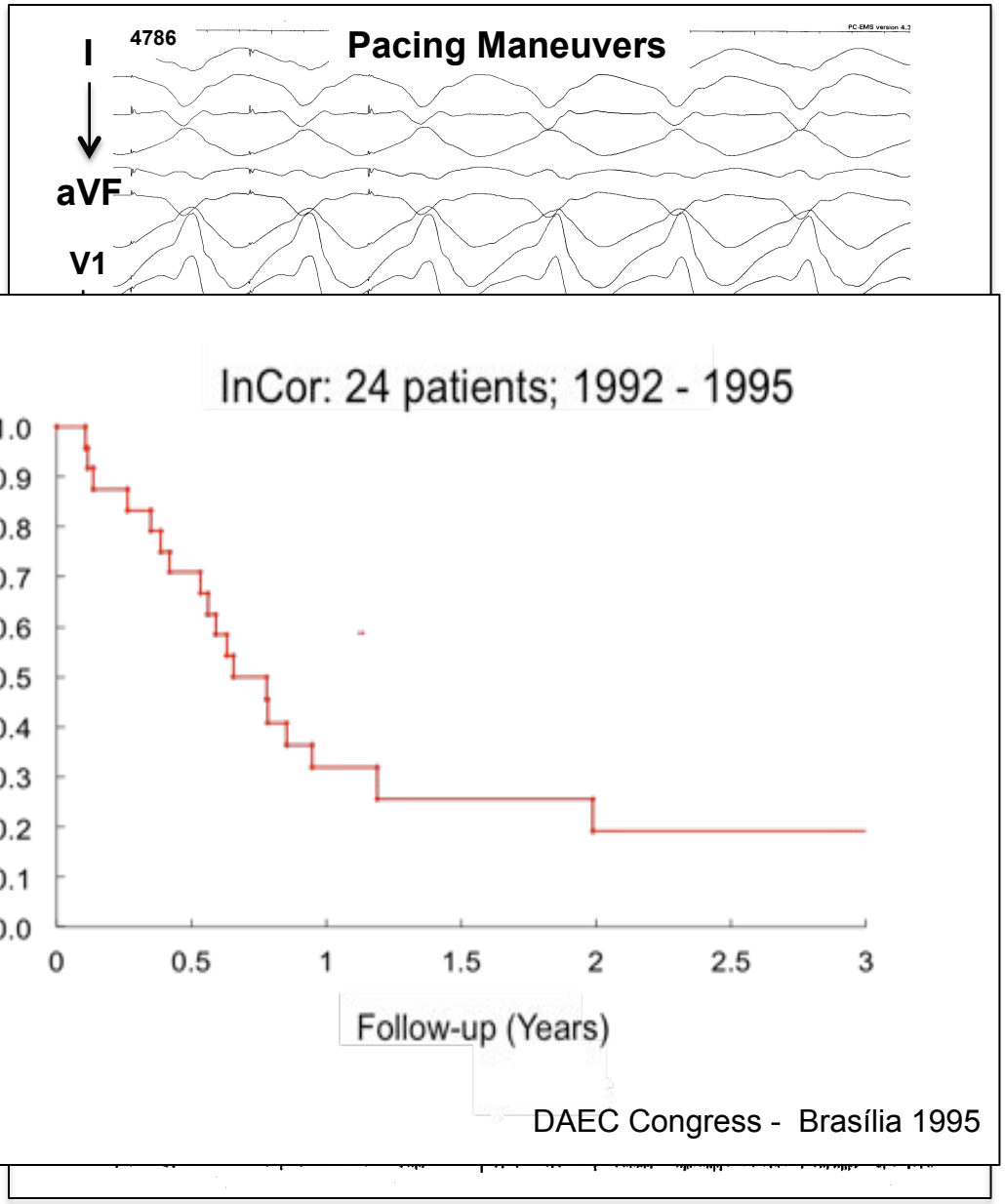


iversity of São Paulo Medical School- Brasil



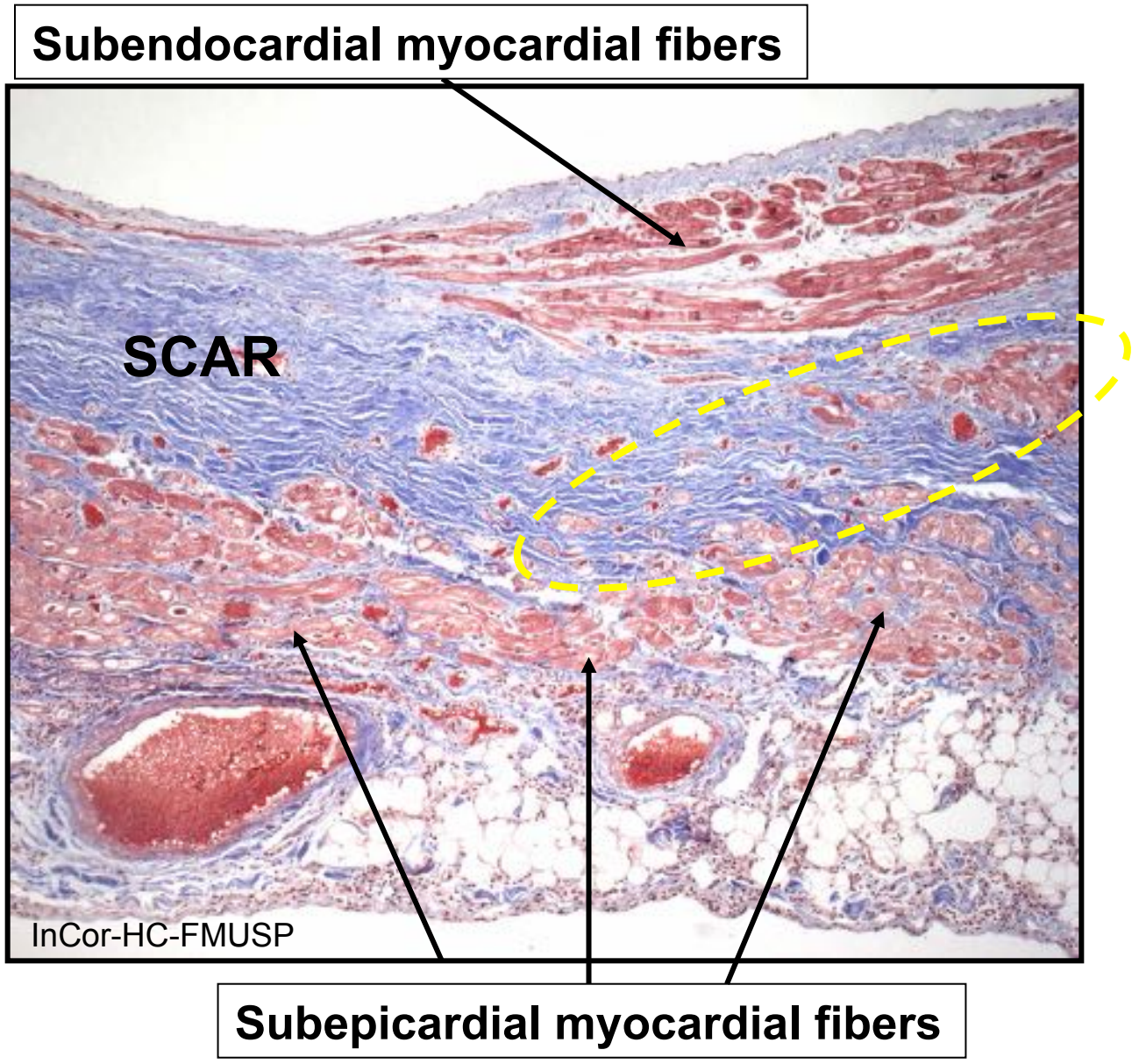


Electrograms Analysis

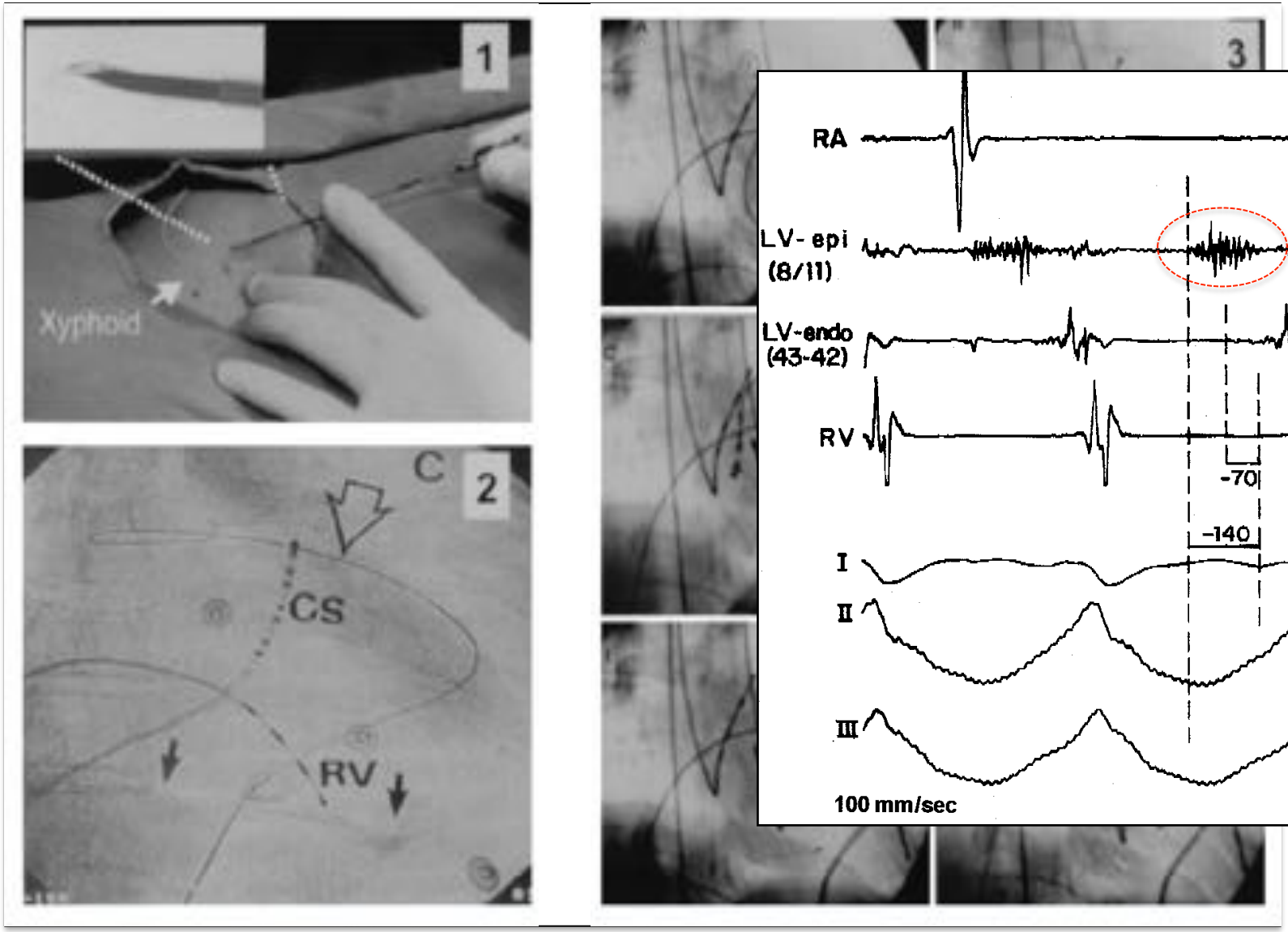


DAEC Congress - Brasília 1995

Substrate of Ventricular Tachycardia in Chagas Disease



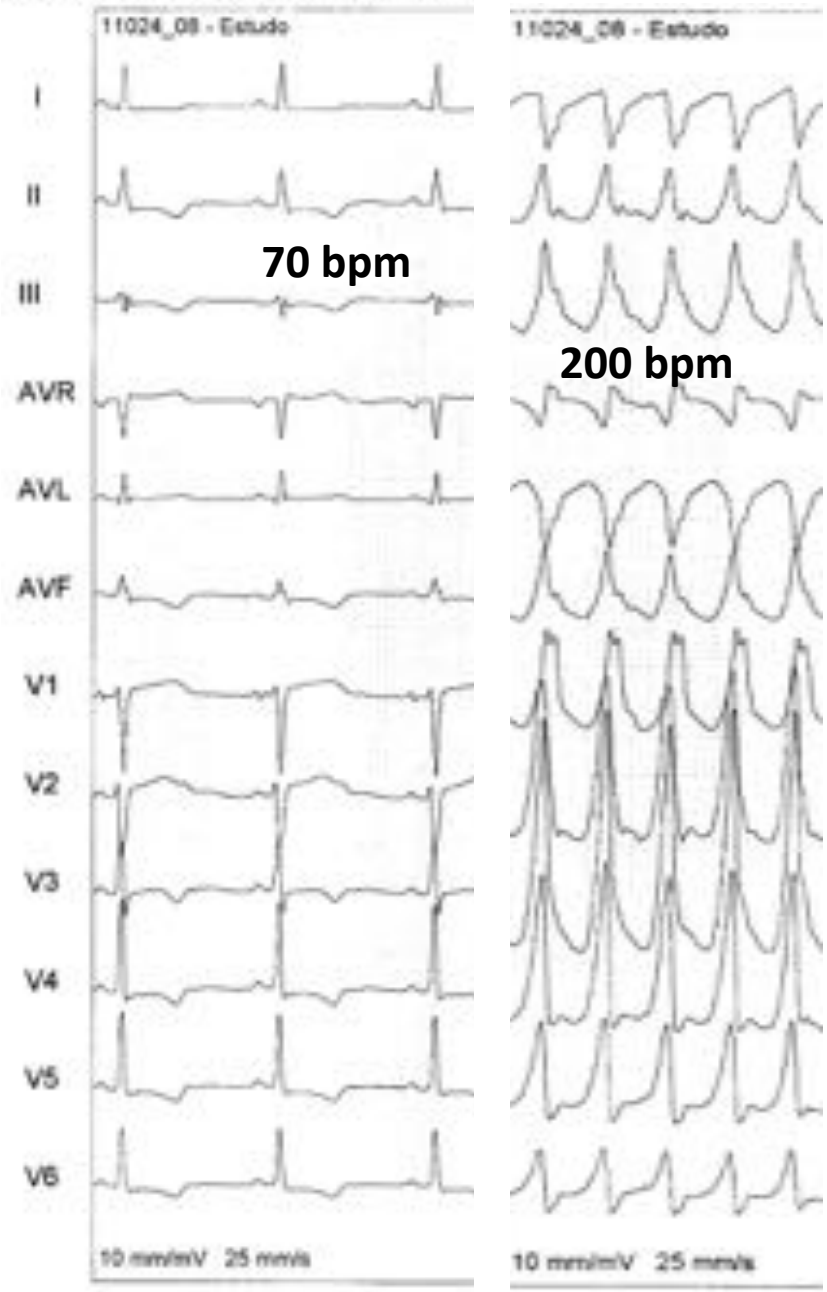
Transthoracic Epicardial Mapping of Chagas Ventricular Tachycardia

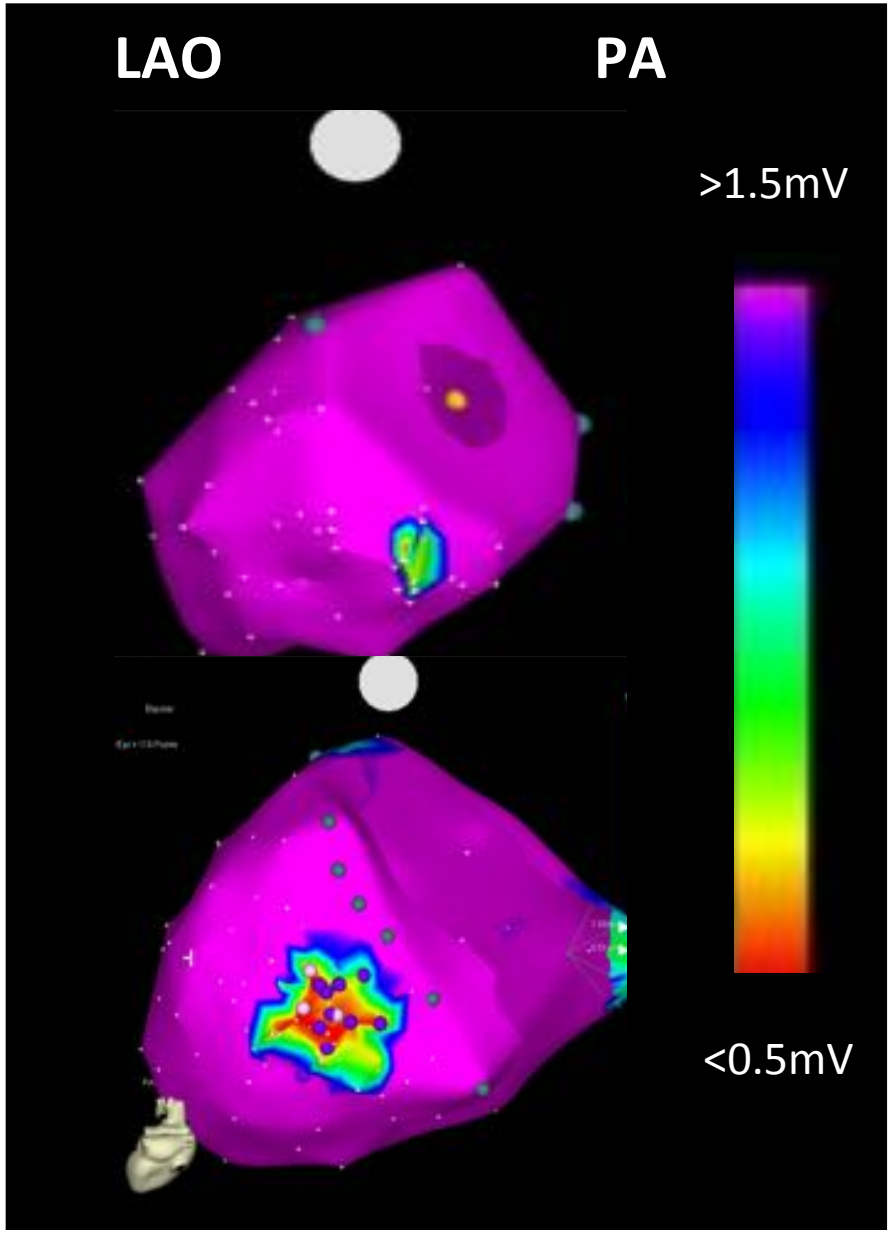


Sosa E, Scanavacca M, d'Ávila A, Pileggi F. JCE 1996

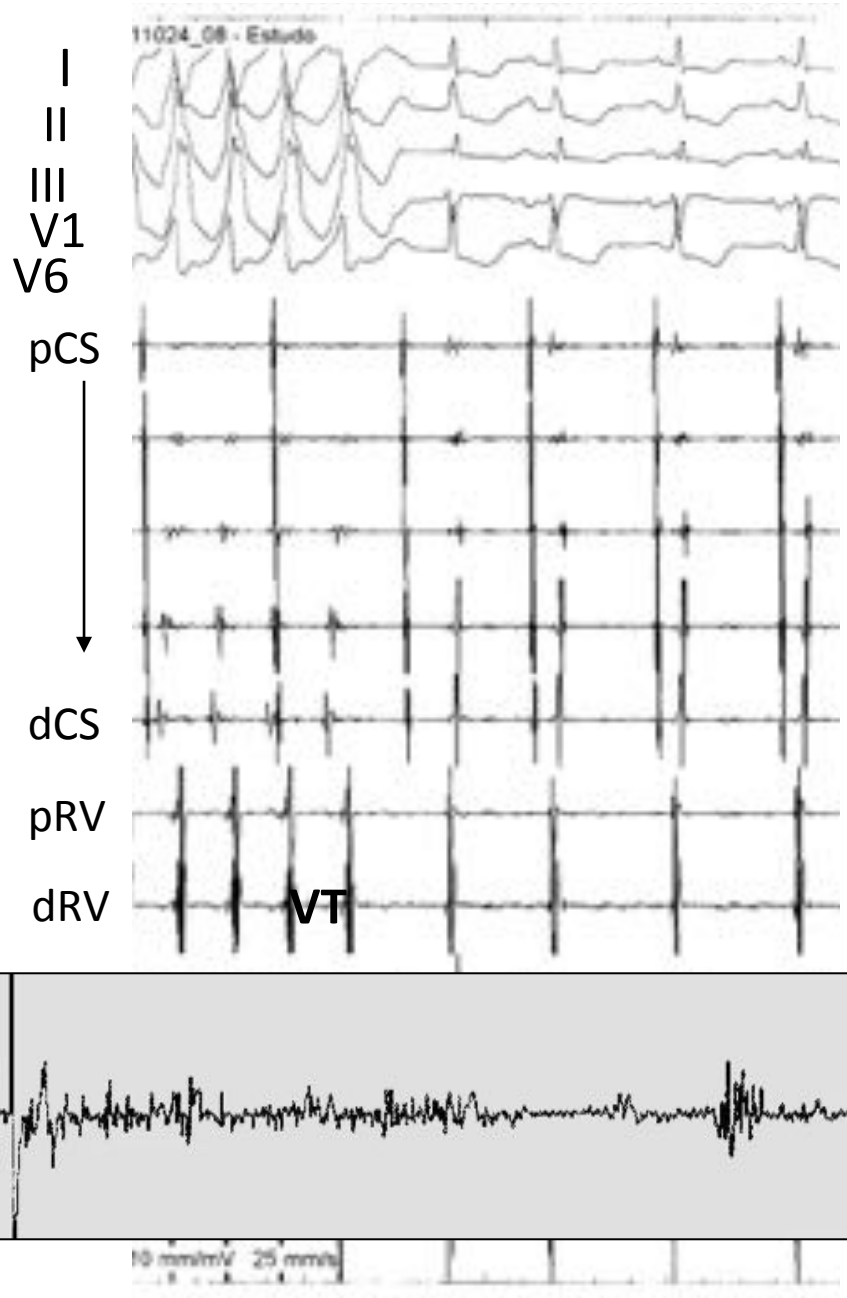
Epicardial Chagas VT

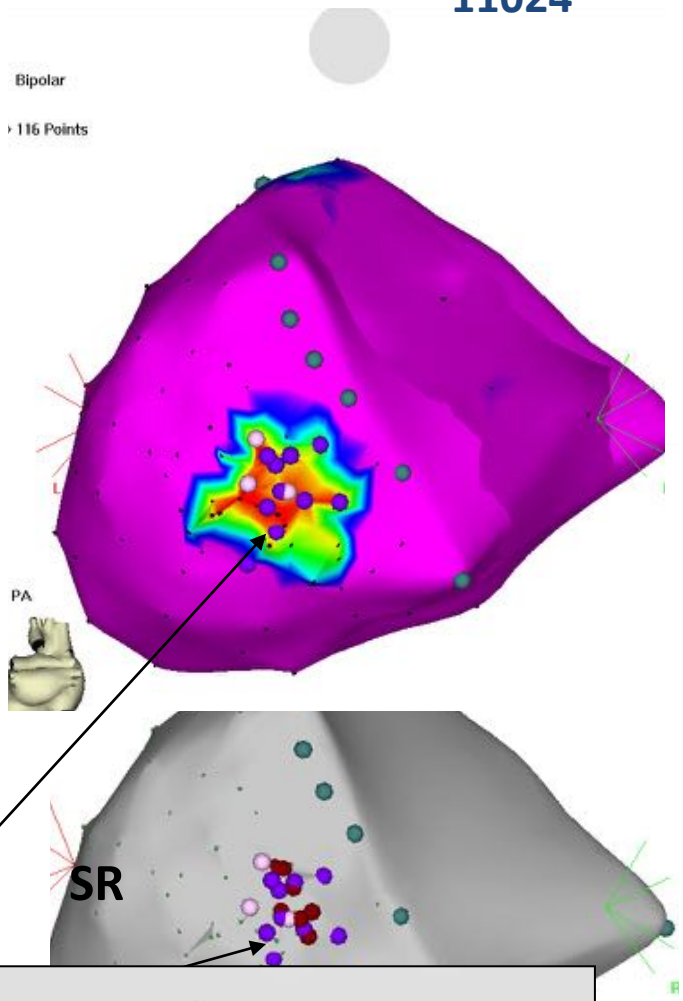
11024

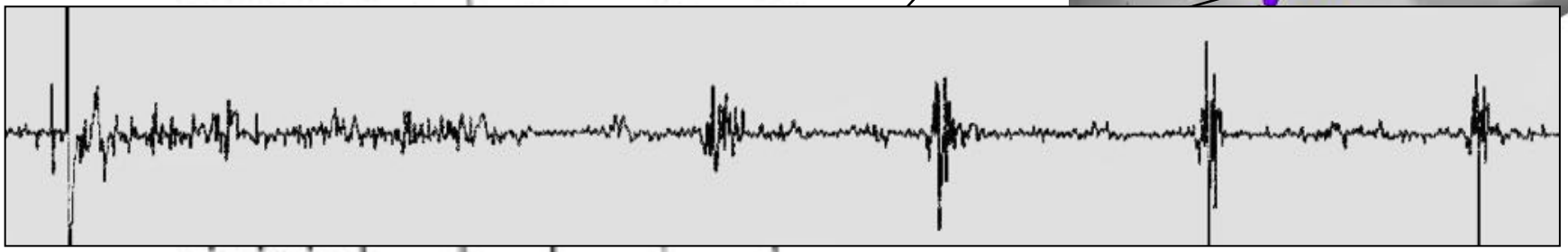




(Epicardial) ablation of Chagas VT

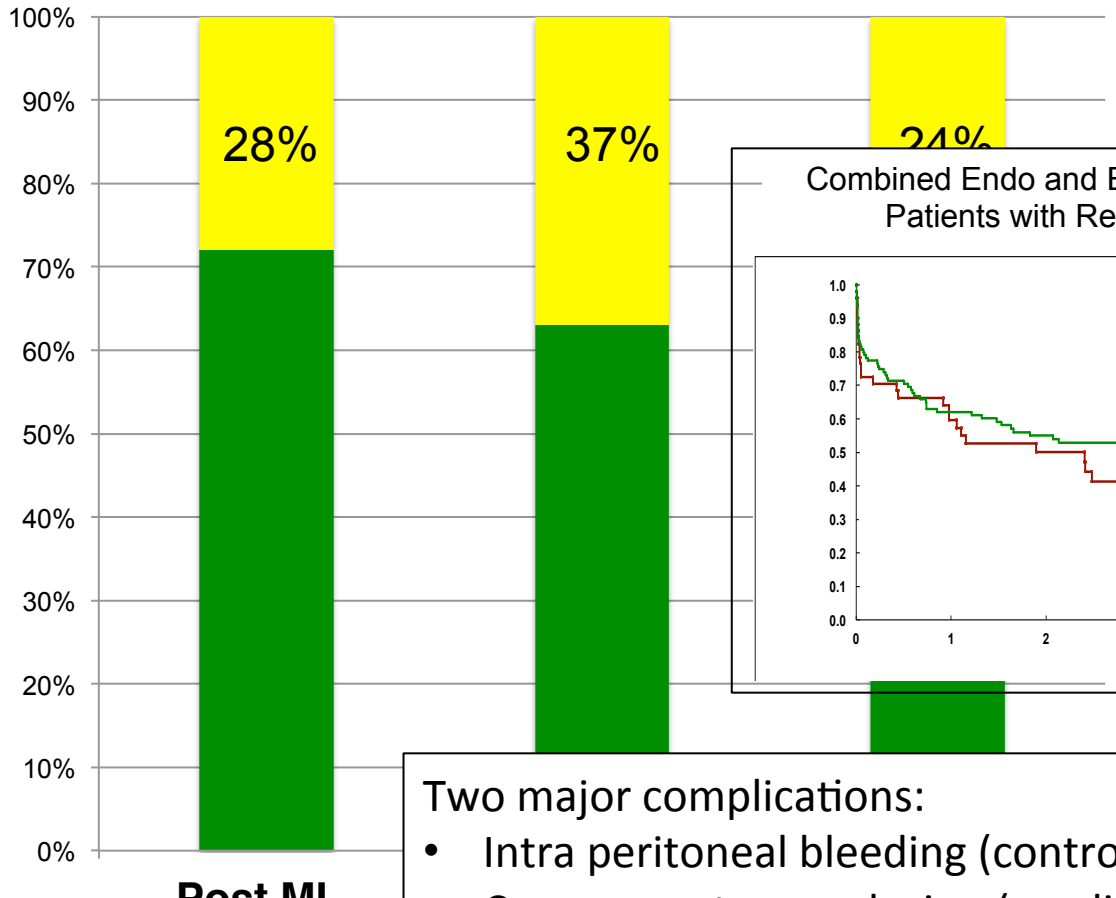


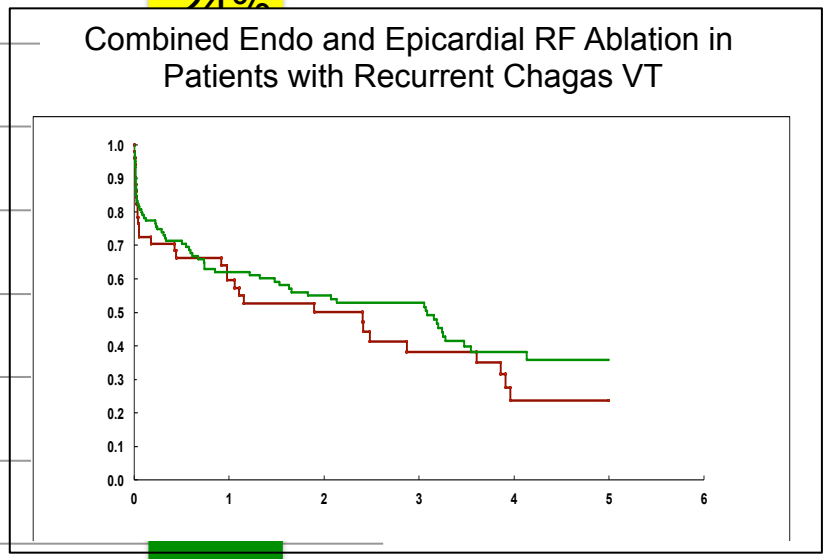




Prevalence of Mappable Epicardial VTs in Structural Heart Disease

n: 257





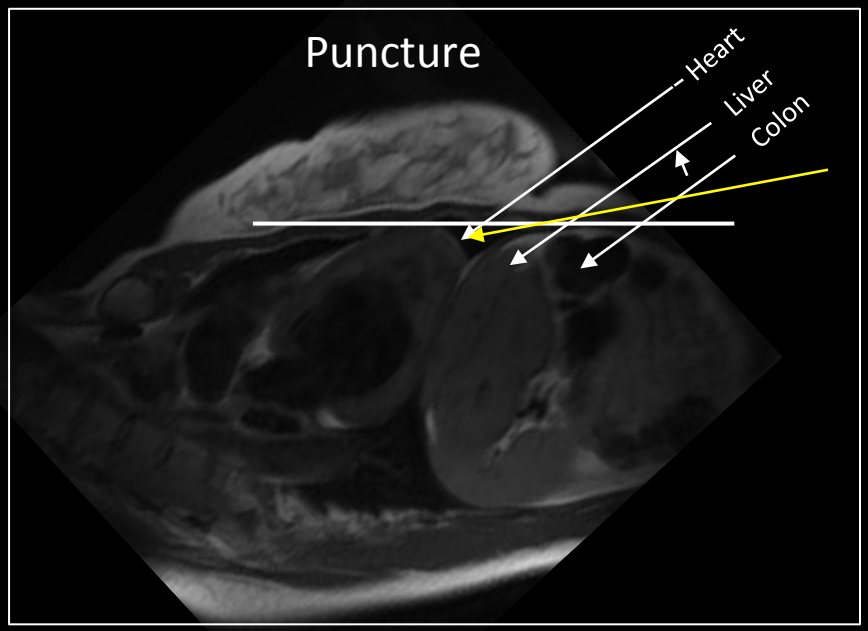
Two major complications:

- Intra peritoneal bleeding (controlled after surgery)
- Coronary artery occlusion (no clinical repercussion)

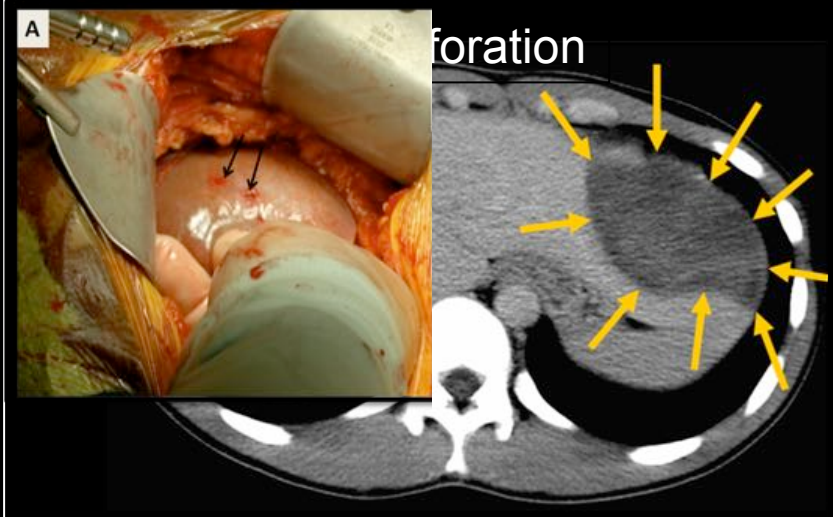
Sosa & Scanavacca. JCE 2005

Pericardial Access: Risks

Puncture

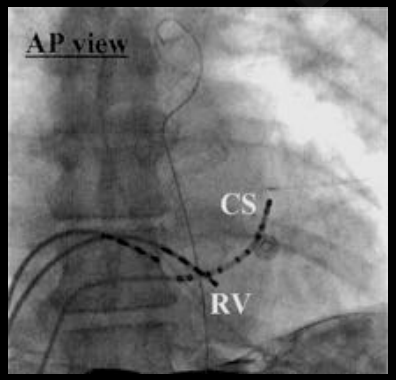


foration

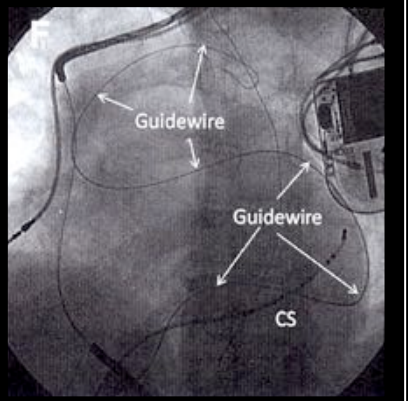


Koruth JS et al. Circulation EP 2011

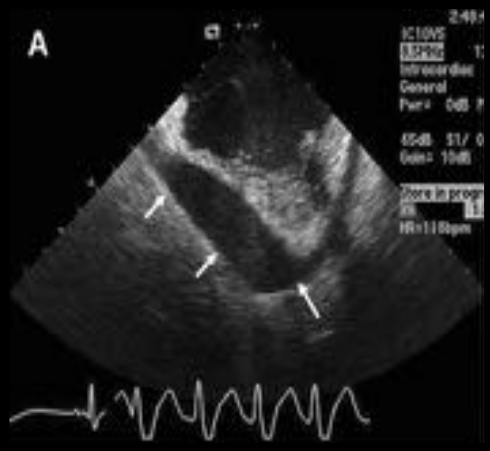
Guide wire Position

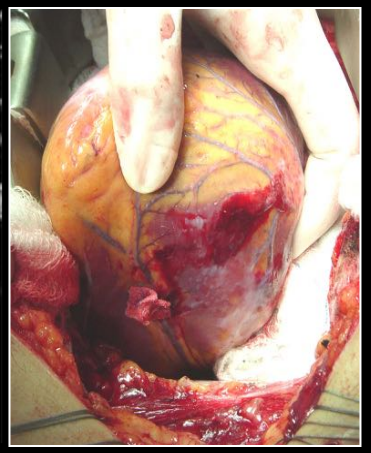


Yamada & Kay – CE Clinics 2010



Garikipati et al. CE Clinics 2010

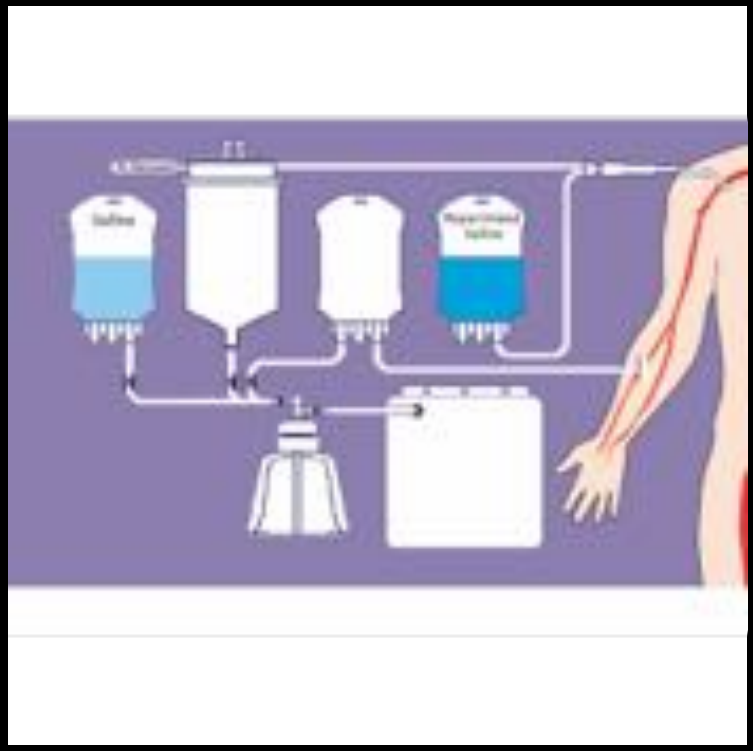




Hempericardium – coronary vein dysrupture

Backup for Subxyphoid Epicardial Approach

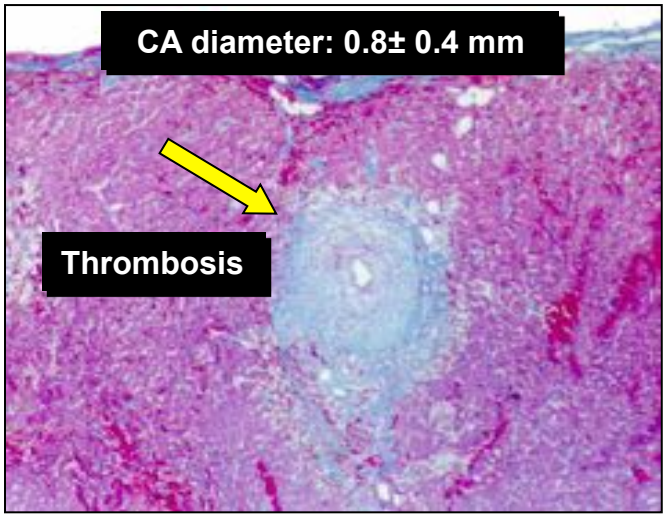
Cell Saver

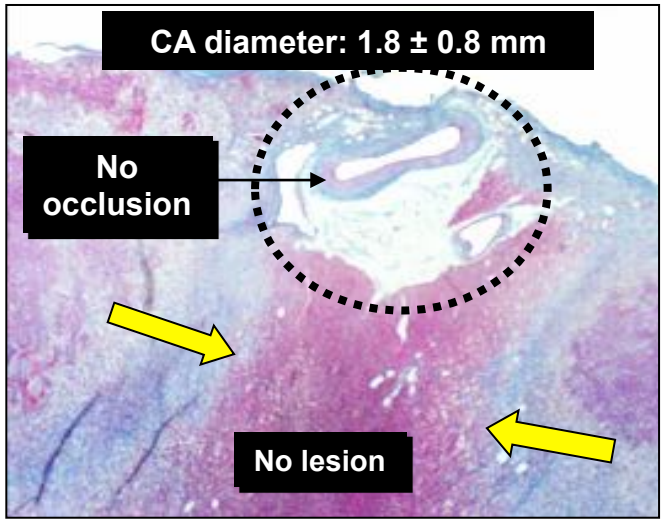


Open Chest Surgery

Epicardial Ablation: Limitations

Coronary Arteries



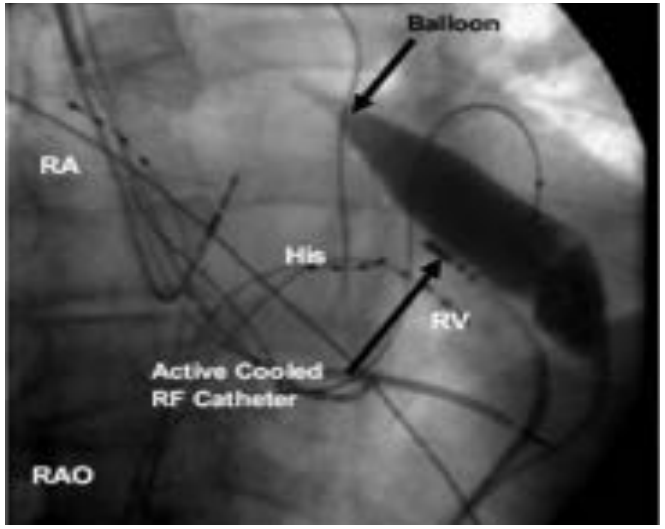


D'Avila- PACE 2000;

Epicardial Fat

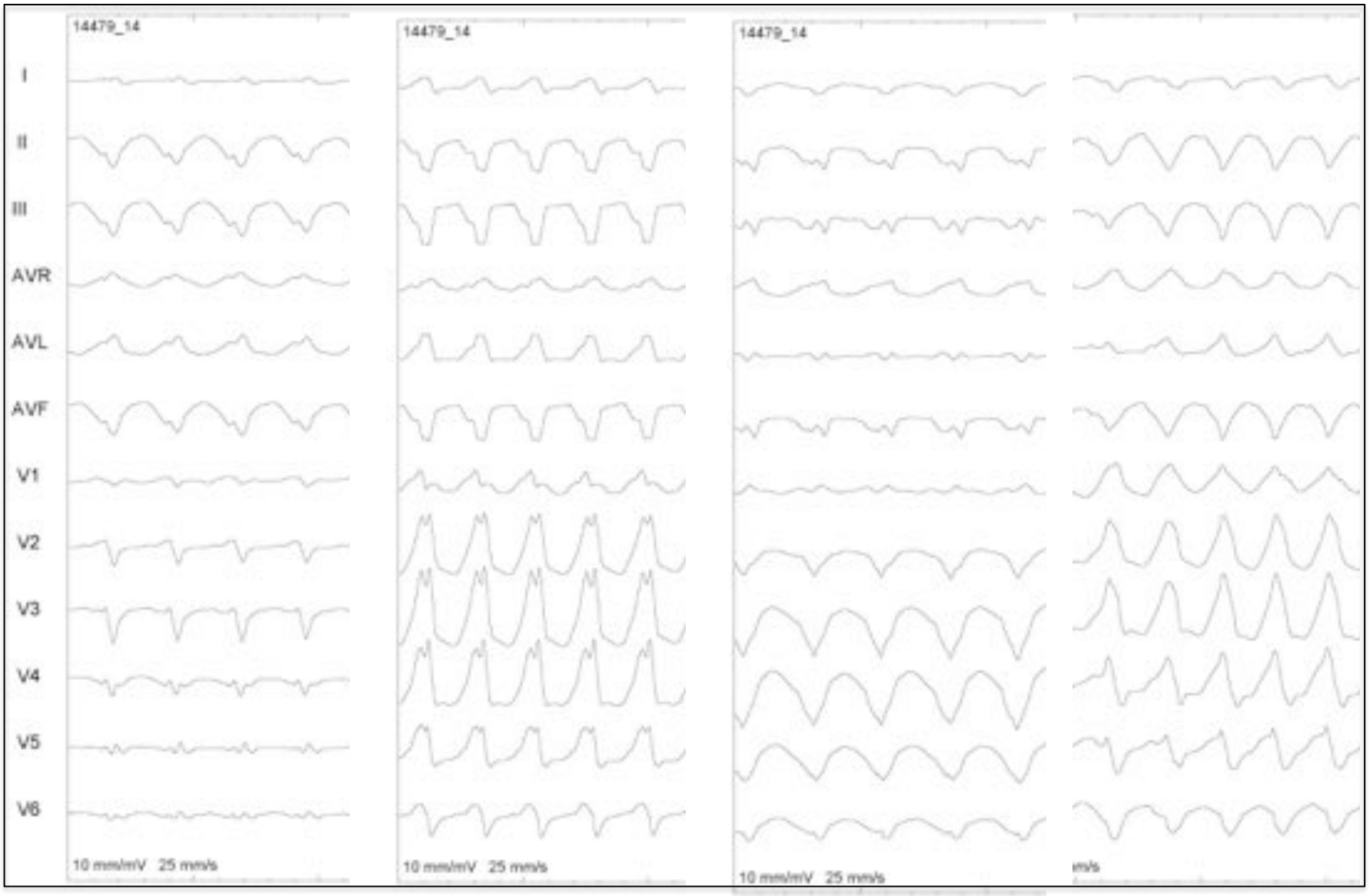
Stevenson NASPE 2002

Phrenic Nerve



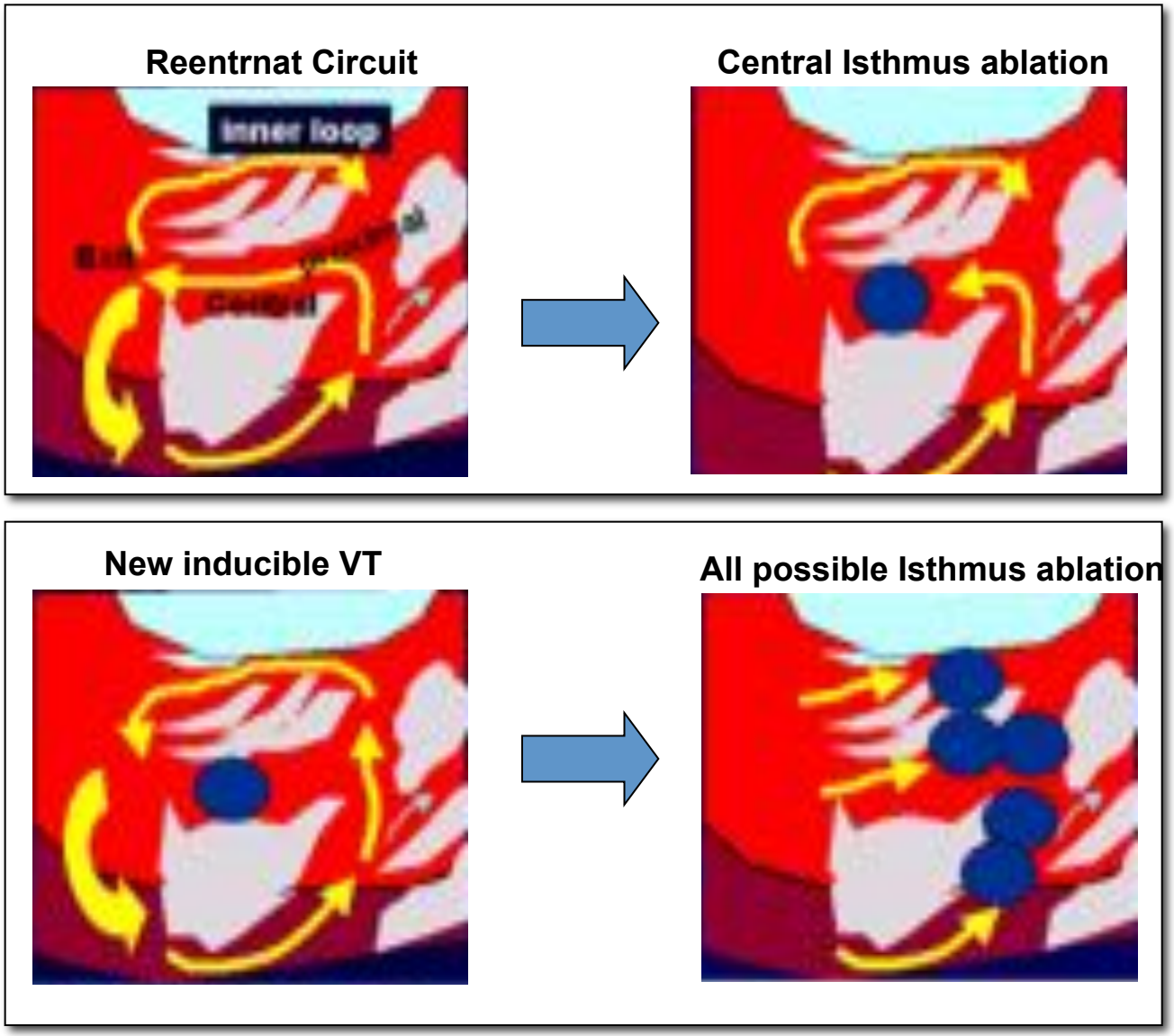
Bunch et al. Heart Rhythm 2007

Male, 56 years old, Chagas disease, ICD since 2006, multiple appropriate shocks; EF = 0,25.



InCor 2014

Strategies for VT Ablation

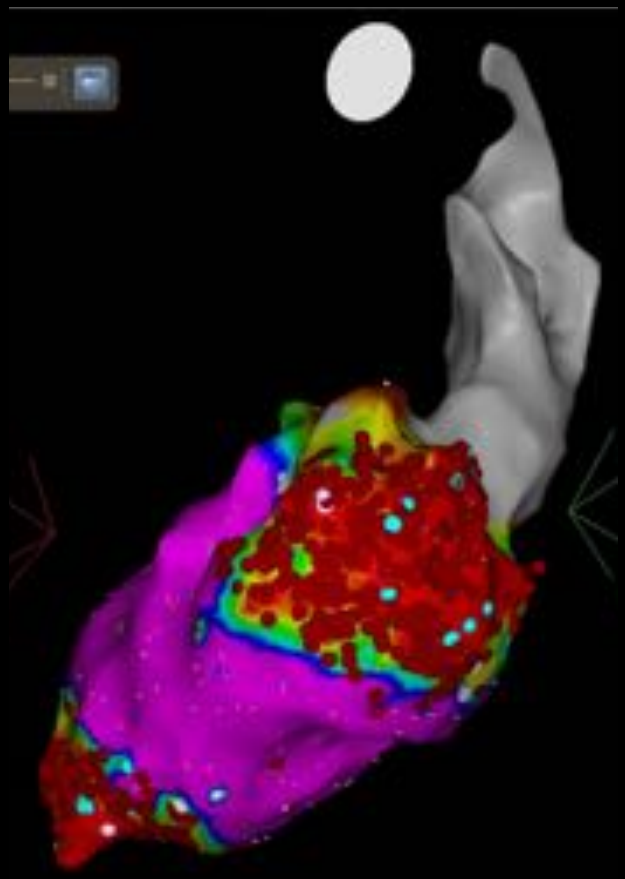


Stevenson et al . HRS 2002

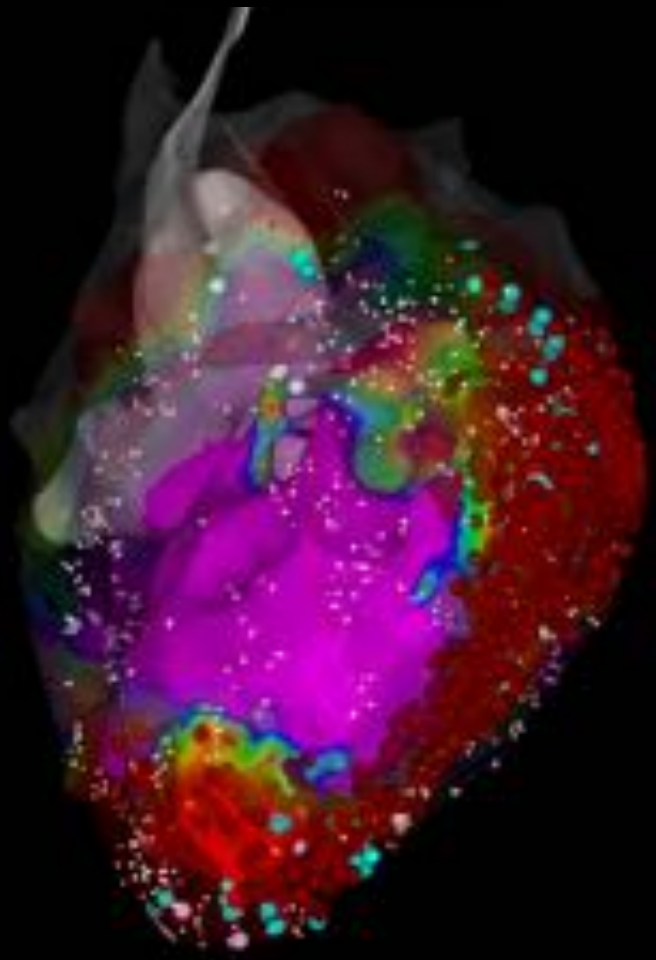
Multiple and Unstable VTs

Substrate Mapping and Ablation

ENDO

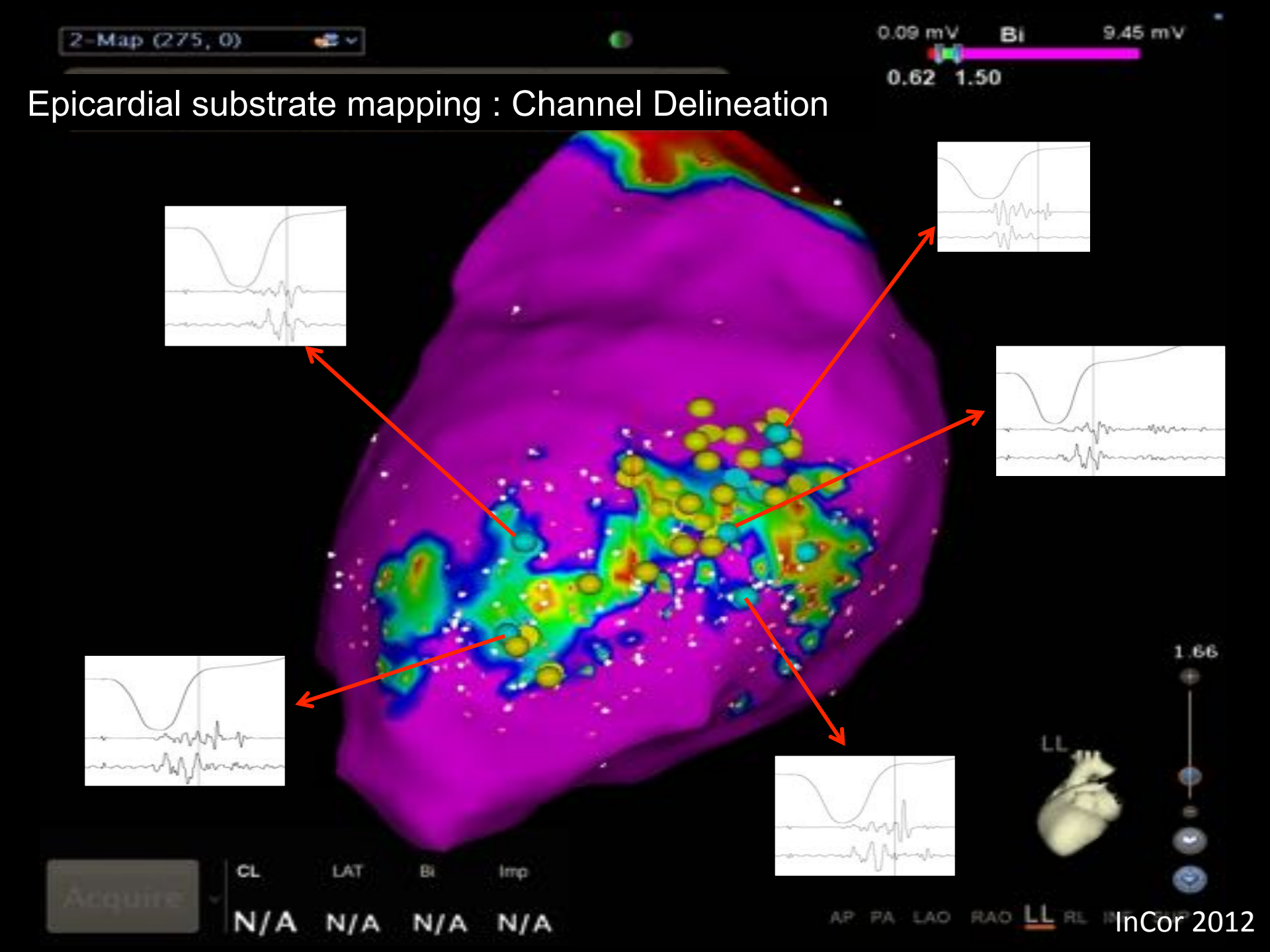


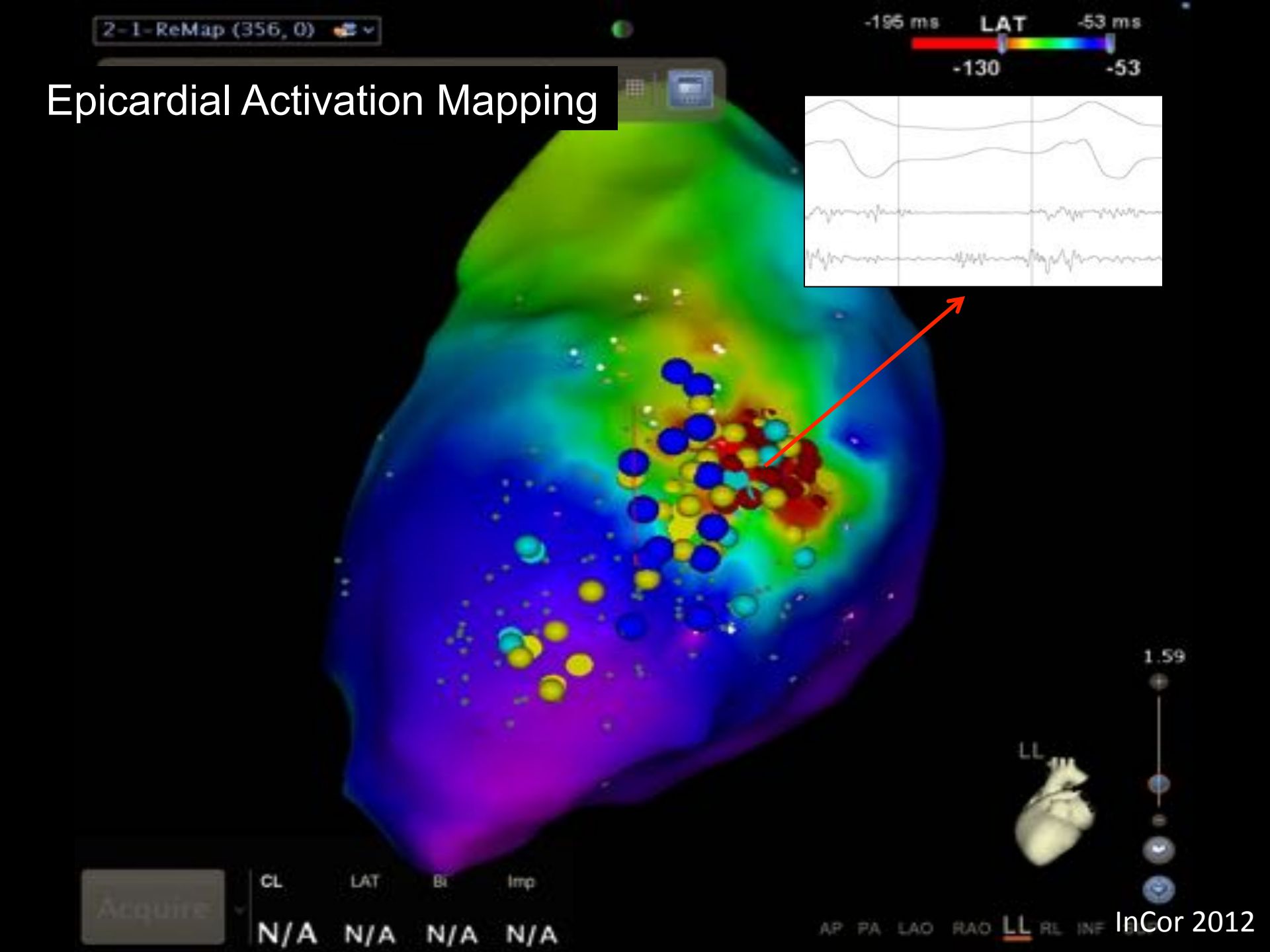
ENDO + EPI



* 8 months follow-up without recurrences

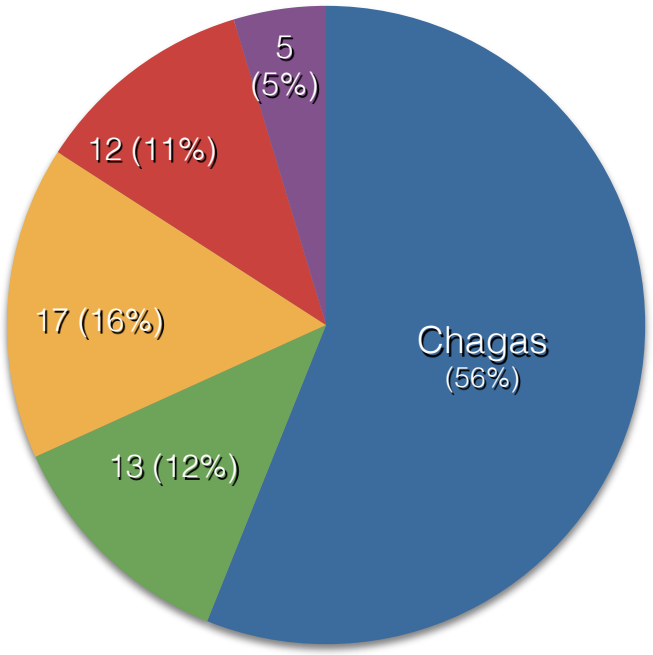
Epicardial substrate mapping : Channel Delineation




2-1-ReMap (356, 0)
-196 ms
LAT
-53 ms
-130
-53
Epicardial Activation Mapping
1.59
LL
CL
LAT
BI
Imp
N/A
N/A
N/A
N/A
AP
PA
LAO
RAO
LL
RL
INF
InCor 2012

VT Catheter Ablation in Structural Heart Diseases
- InCor: 2013 – 2014 -

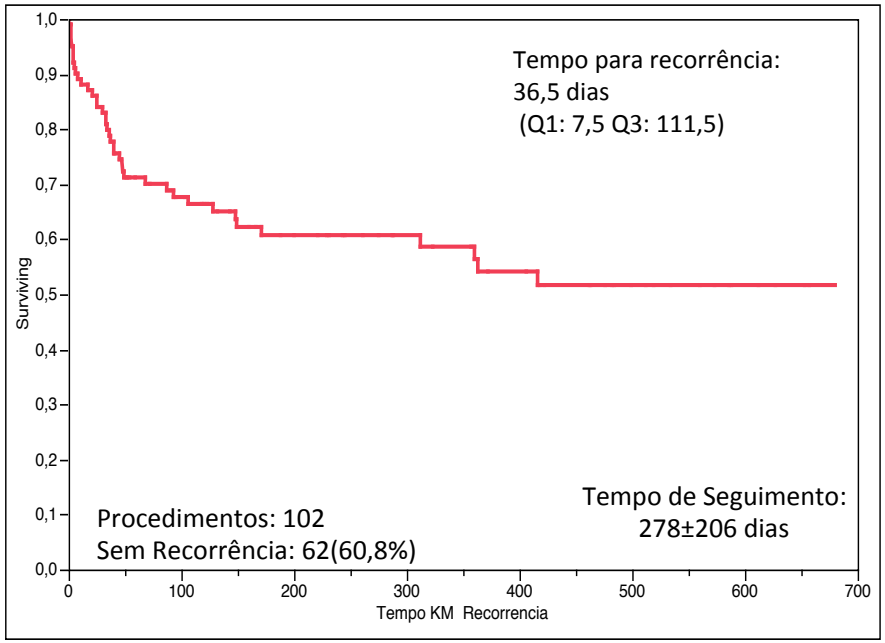
- **107 Procedures**
  - **86 Patients**
    - **Age: 56,7±14 years**
    - **Male: 61 (70,9%)**
    - **LVEF: Média - 36,9±12,4%**
    - **Two ablations: 13 (14,8) patients**
    - **Three ablations: 2 (2,3%) patients**
    - **Four ablations: 1 (1,1%) patients**
  - **Epicardial ablation: 65 (60,7%)**
  - **Indications:**
    - **Recurrent VT: 56,4%**
    - **VT Storm: 41%**
    - **Slow VT: 2,5%**
      - **Amiodarone: 600mg**
      - **Lydocaine: 27%**



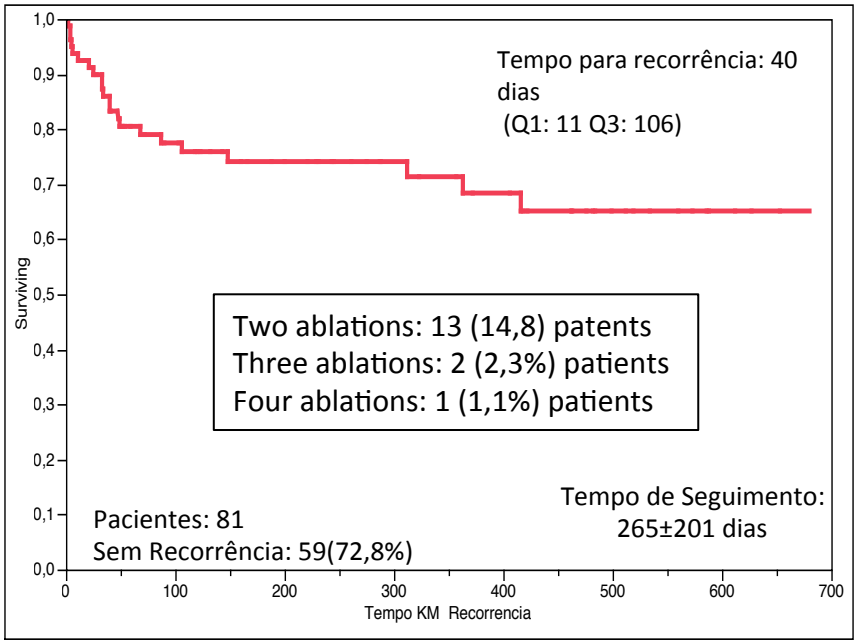
- Chagas disease: 60 patients
- Ischemic: 17 patients
- Idiopathic: 13 patients
- ARVD: 12 patients
- Other: 5

Freedom from Recurrence after Ablation
InCor: 2013 - 2014

After First Procedure – N: 86



After Last Ablation – N: 107



Complications: 6 (5,6%)

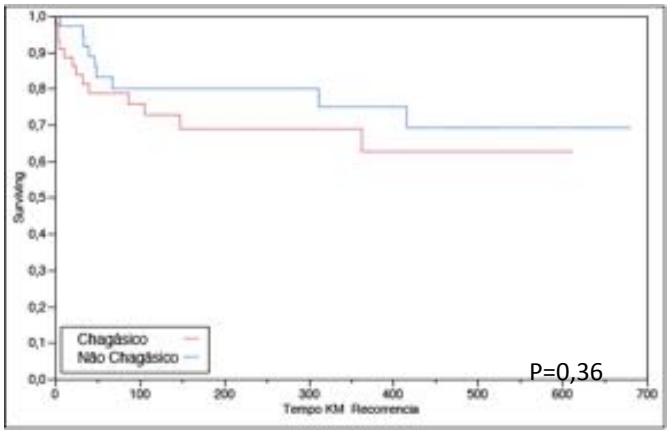
- Cardiac surgery due to hemopericardium: 1
- Cardiogenic shock: 1
- Total AV block: 1
- Femoral artery dissection: 2
- Late tamponate: 1

No procedure related death

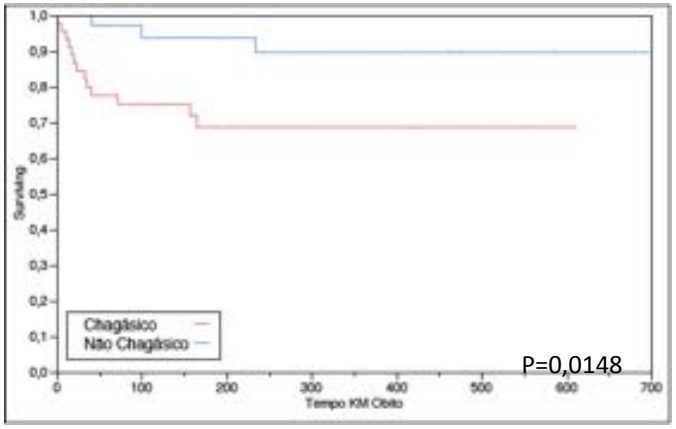
Epicardial and Endocardial Mapping and Ablation in Chagas' Disease - InCor 2013 - 2014

- N=60 (56,8%)
- Age: 58,8±9,6 years
- LVEF: 0,30 (0,28 a 0,39)
  - Two ablations: 8
  - Three ablations: 1
  - Four ablations: 1
- Epicardial ablation : 49 (81,7%)
- Procedure time: 330±143min
- Surgery:
  - Acute hemopericardium: 1
  - Late tamponate: 1

Freedom of VT

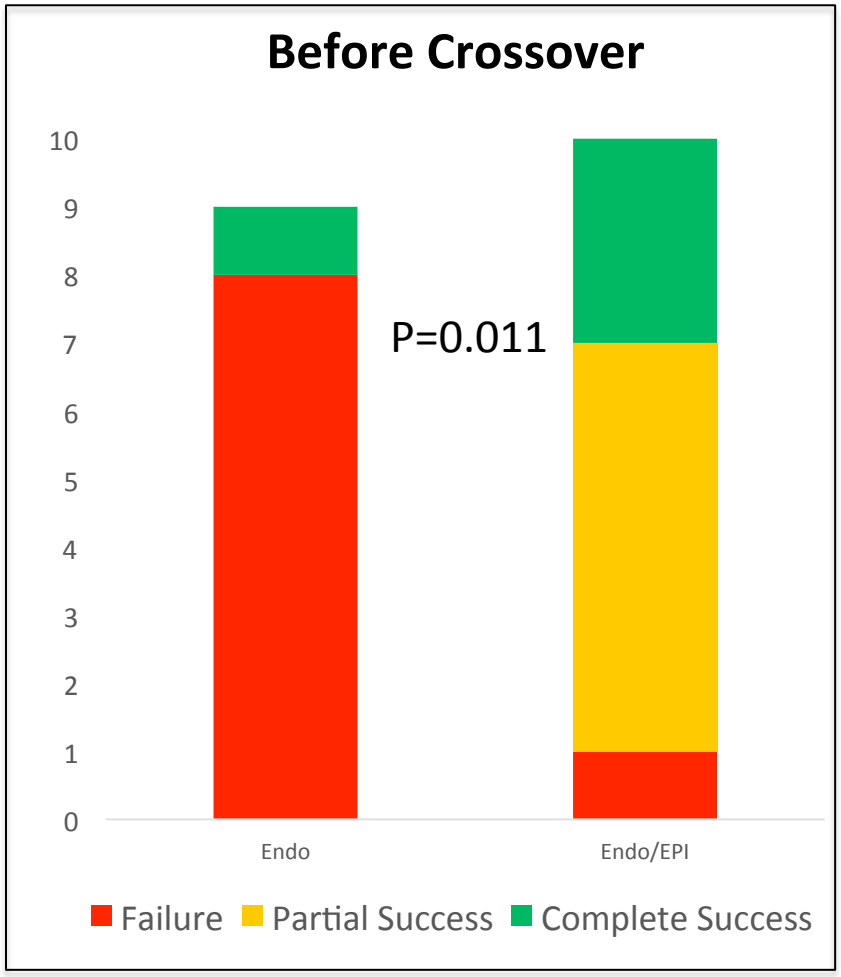


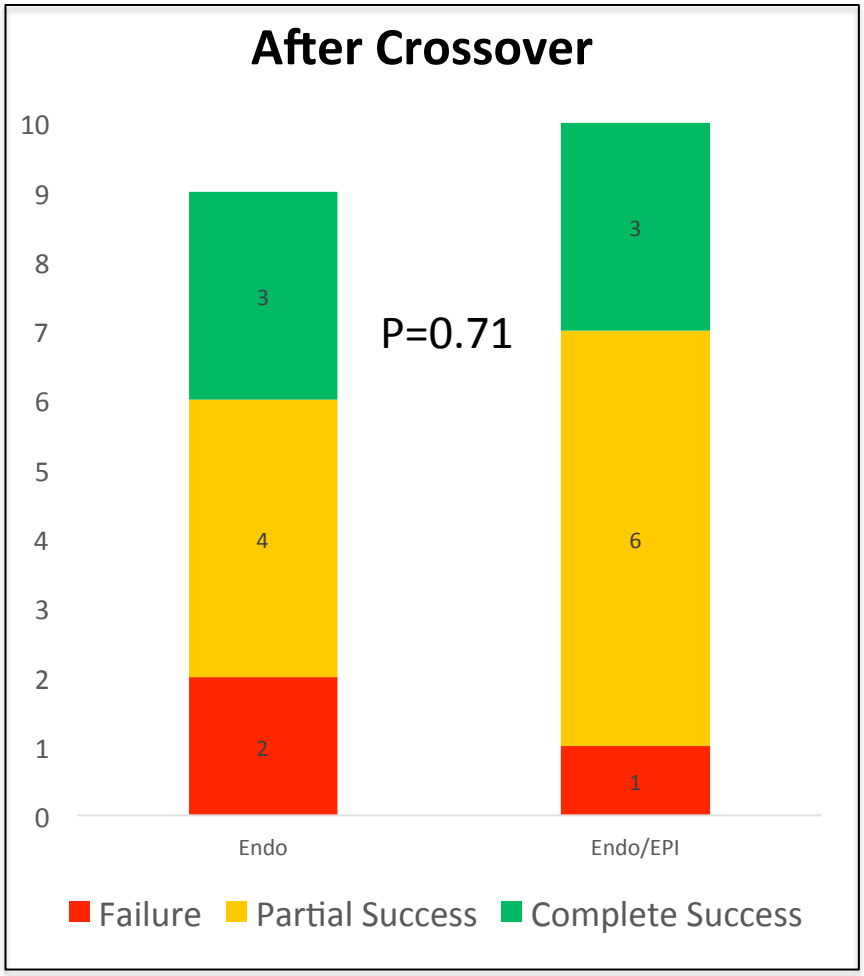
Death



Efficacy and Safety of Epicardial VT
Endo vs. Epi Randomized Pilot Trial

Partial Results In 19 patients





InCor 2015

Epicardial ablation around the world

- The Brazilian Experience -

What have we learned after 20 years performing epicardial mapping and ablation of cardiac arrhythmias?

- Summary -

- The percutaneous epicardial mapping and ablation of ventricular arrhythmias has been incorporated as a regular procedure in our group.
- After its use in patients with Chagas disease, the technique has provided relevant information on the arrhythmia substrate in other cardiomyopathies.
- Combining endo and epicardial mapping and ablation seems to improve the results of VT ablation in selected patients.
- However, epicardial access and epicardial ablation increase the risk of complications.
- Prospective and randomized studies are still needed to optimize the risk / benefit for its indication.