

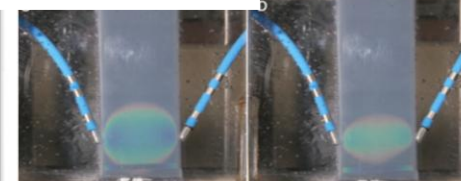
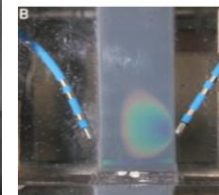
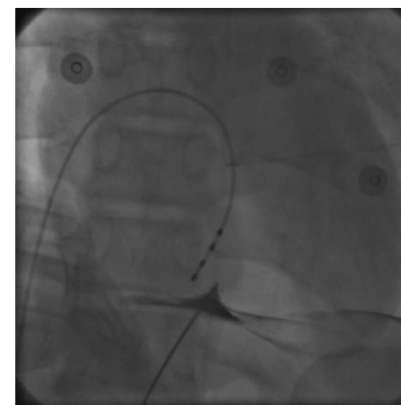
Alternativní přístupy k mapování a ablaci KT

P. Peichl



Agenda

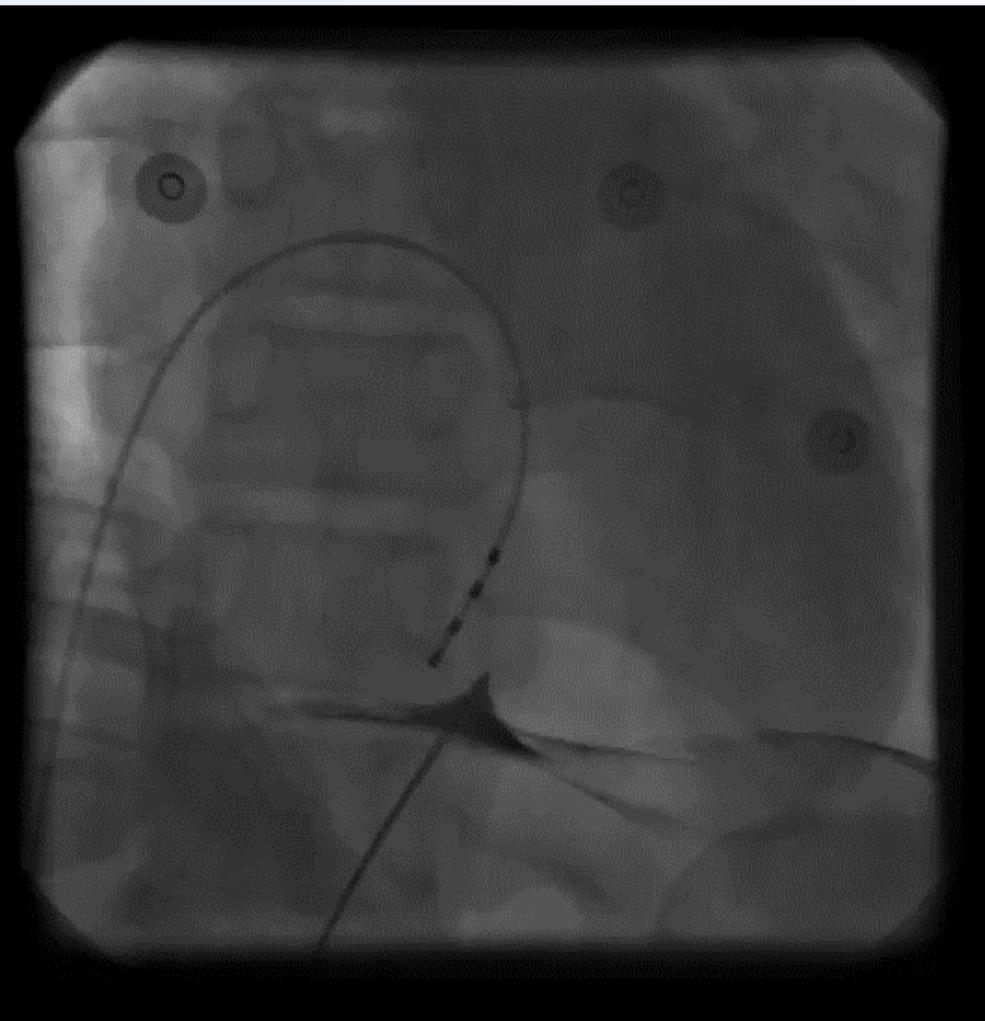
- Epikardiální přístup
- Bipolární ablace
- Alkoholová ablace
 - Arteriální a žilní
- Chirurgické přístupy
- Stereotaktická radioterapie



Epicardial approach



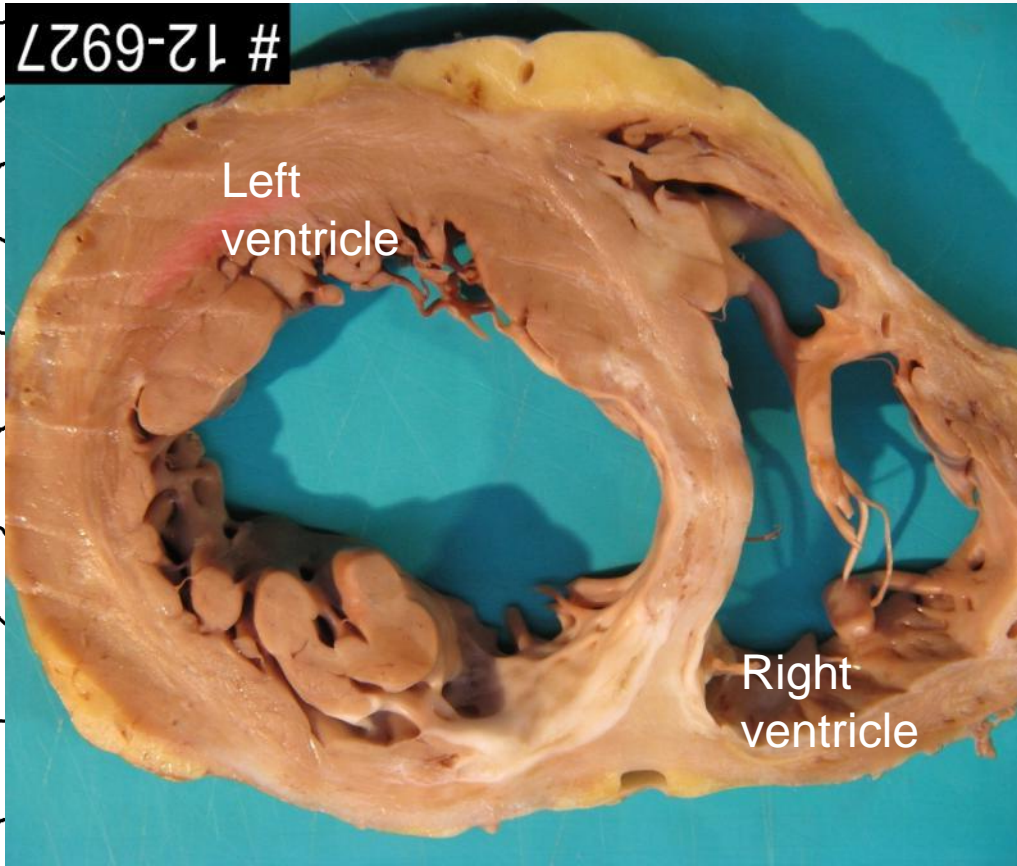
Epicardial access



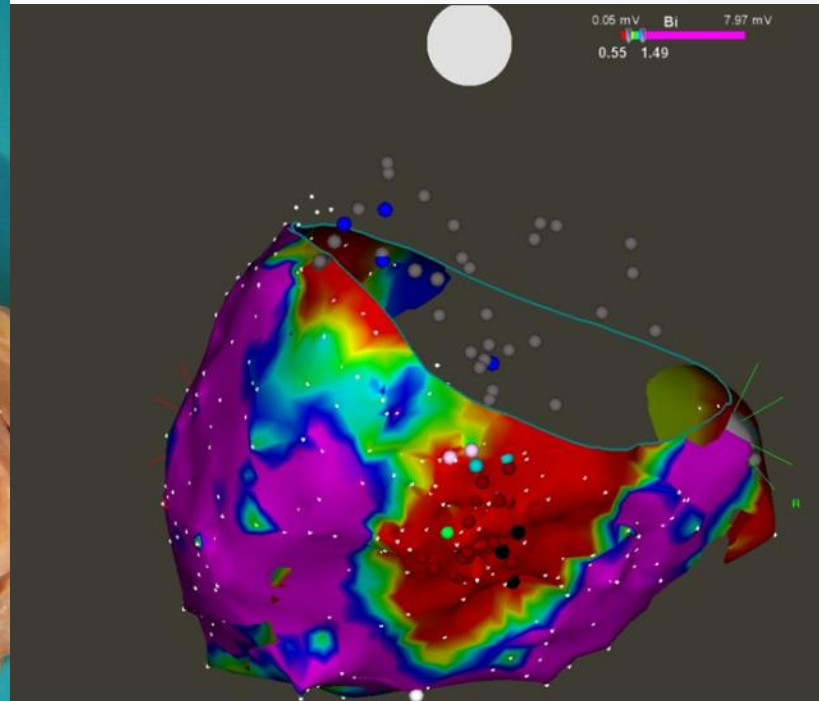
IKEM Experience

- Period 2006-10.2018
- 102 pts (10 women, age 49 ± 17 years) with percutaneous epicardial mapping and ablation
- Complication noted:
 - ~10% puncture of RV (no sequel)
 - 1 puncture of colon, 1 liver (no sequel)
 - Delayed tamponade after ablation in 3pts
 - Extensive ablation, manipulation/mapping in pericardial space after previous cardiac surgery

Sarcoidosis



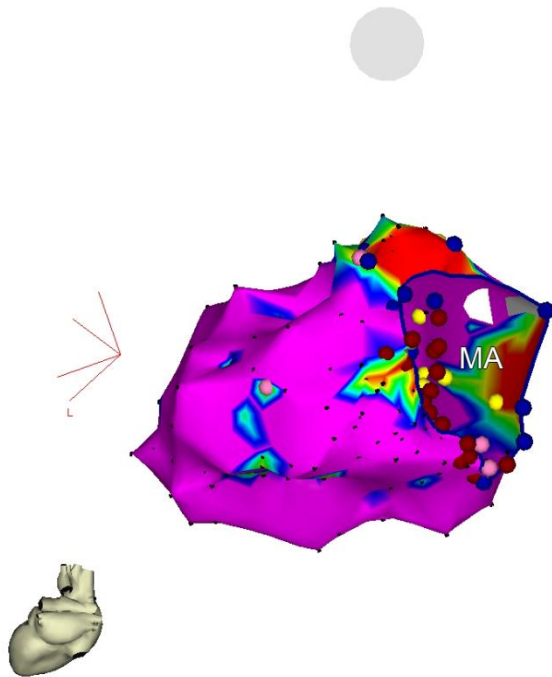
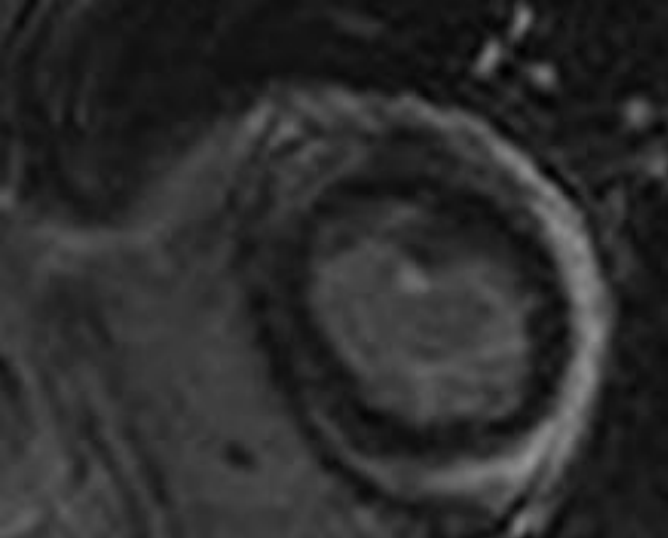
Endo



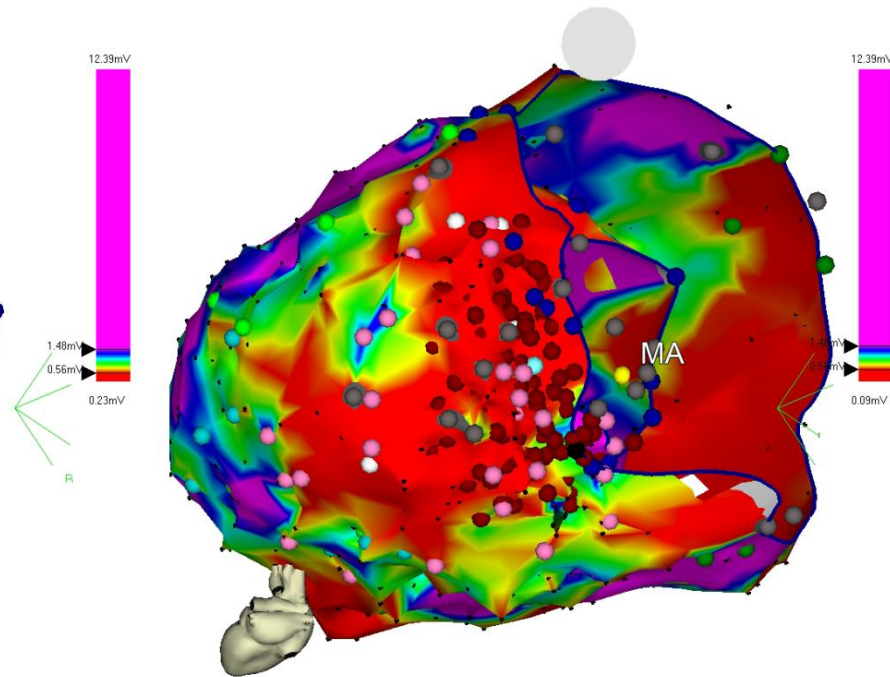
Epi

Epicardially located substrate

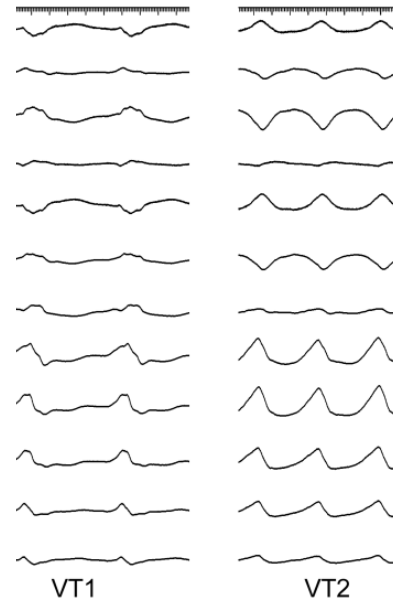
Mutation of gene for desmoplakin



Endokardiální voltážová mapa LK

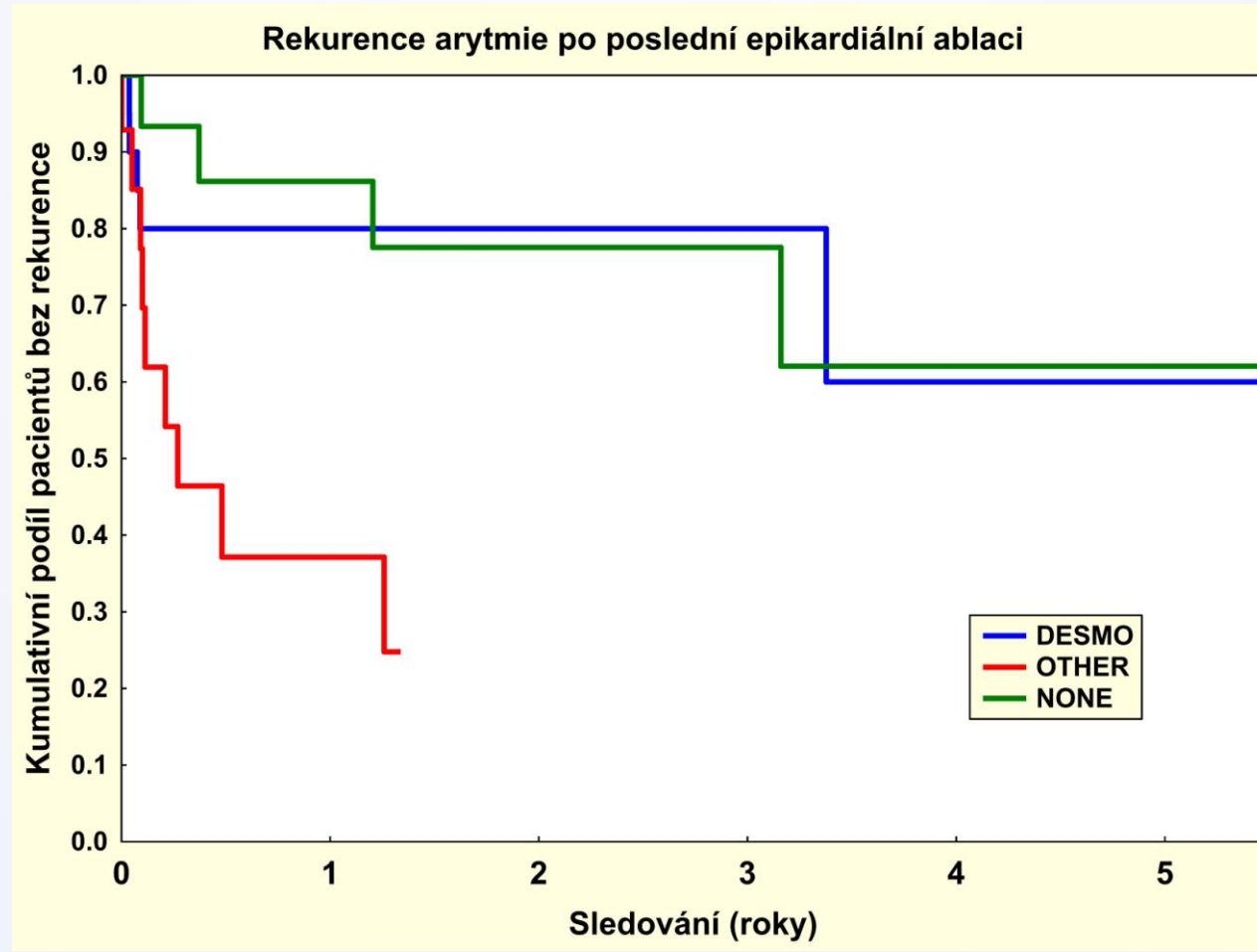


Epikardiální voltážová mapa LK



Výsledky endo/epi ablace dle základní diagnózy

- 50pts s NICM
- Endo/epi ablace KT
- Genetická analýza 228 genů pozitivní u 70% pts:
 - **Desmo** – mutace genů pro desmosom
 - **Other** – ostatní mutace
 - **None** – bez patogenní mutace
- **Velmi dobré výsledky u DESMO vs Other**



Arrhythmogenic substrate detection by ICE

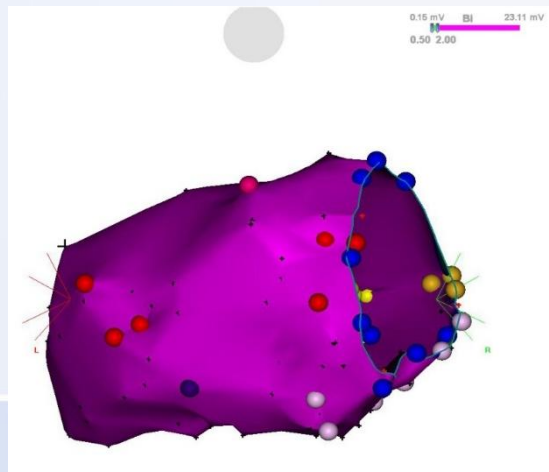
Case

63-year old male with no apparent SHD on TTE

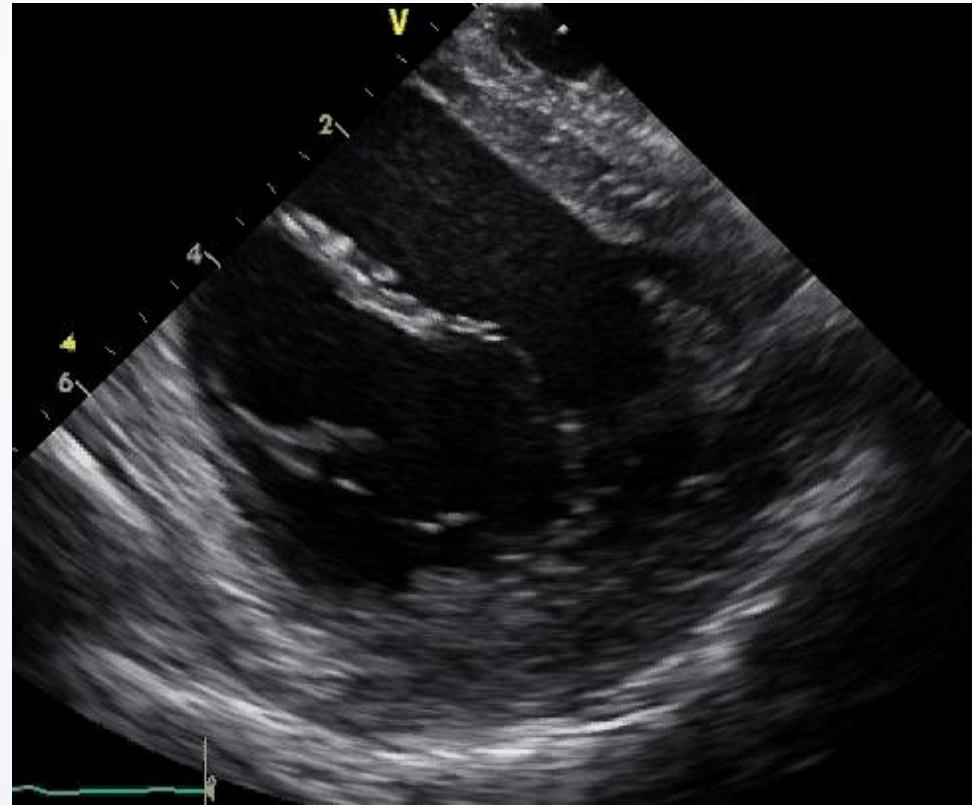
Recurrent ICD interventions for VT 180bpm

No VT inducible during PES despite 4ES

Normal LV endocardial voltage map

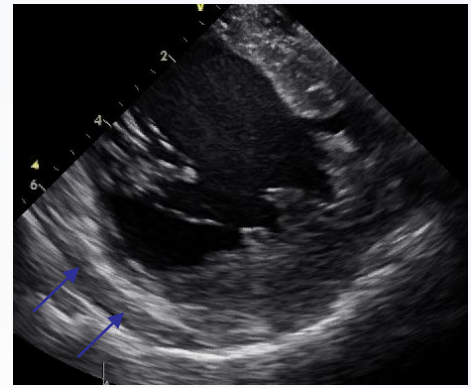


Bipolar voltage map

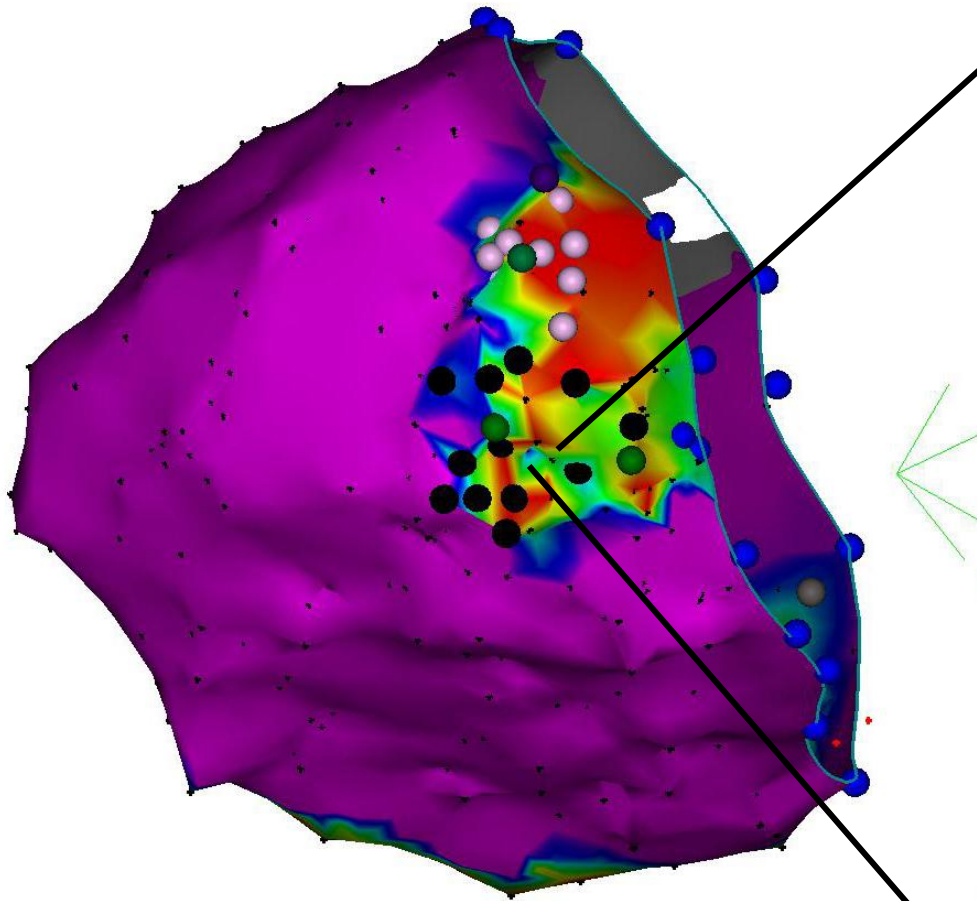


Intramural hyperechogenicity
in the LV lateral wall

Epicardial mapping

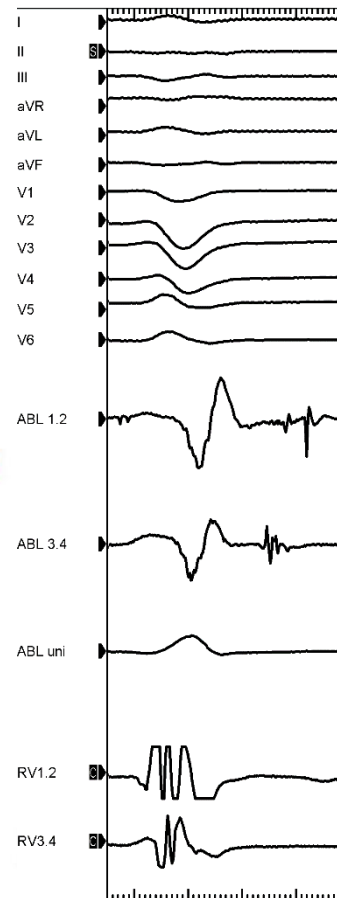


0.50 mV BI 1.50 mV

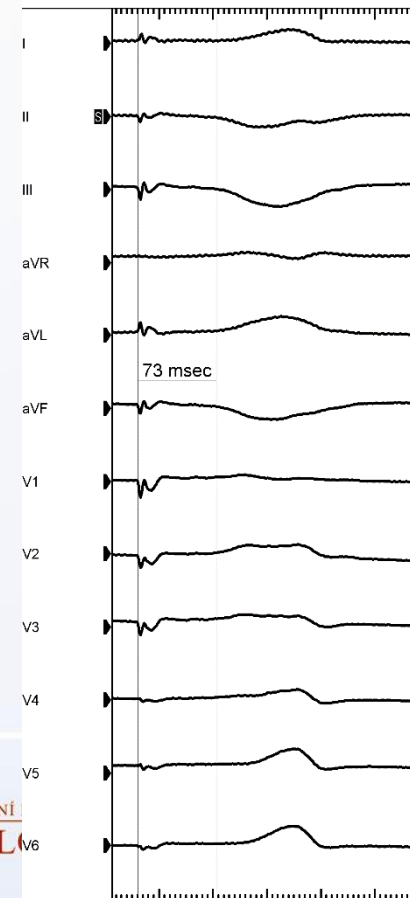


Voltage mapping of epicardium

Late potential

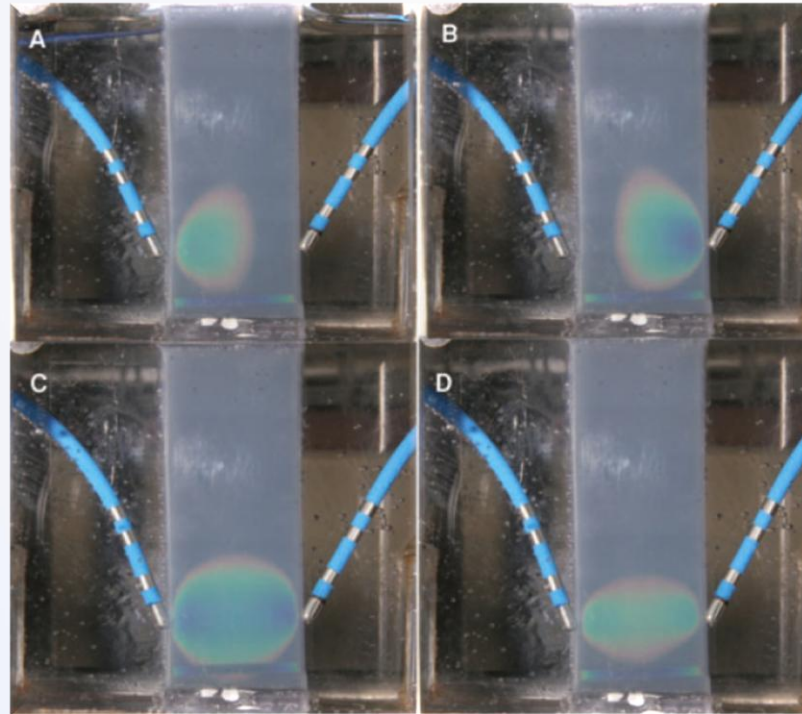


Long-Stim QRS



ENTÁLNÍ
JOL

Bipolar ablation

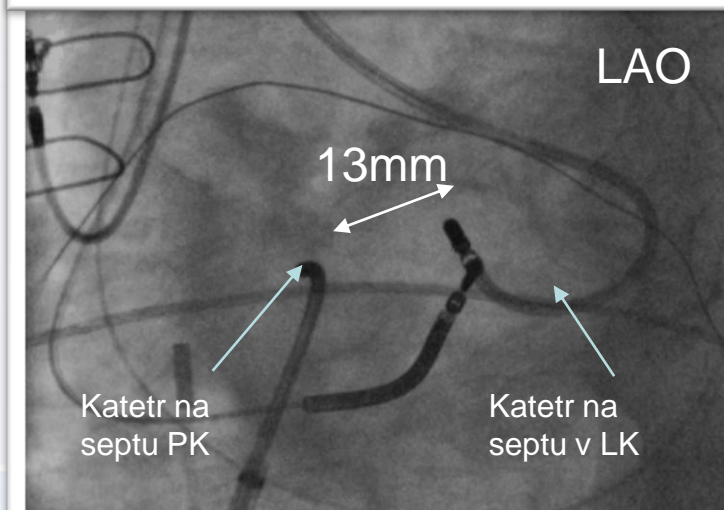
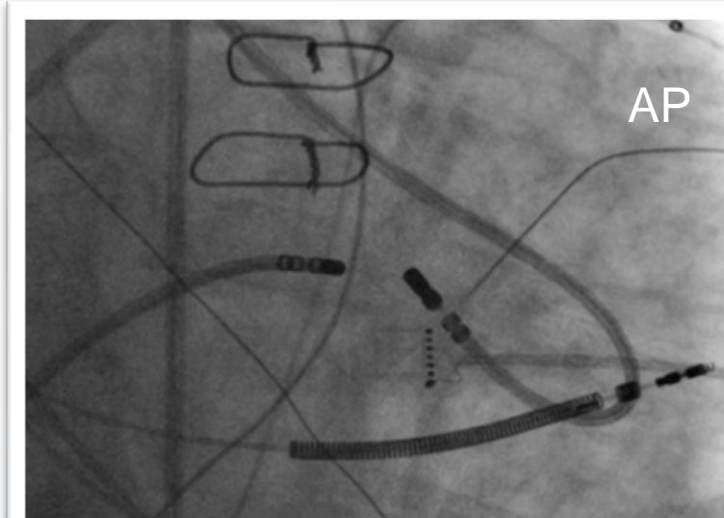
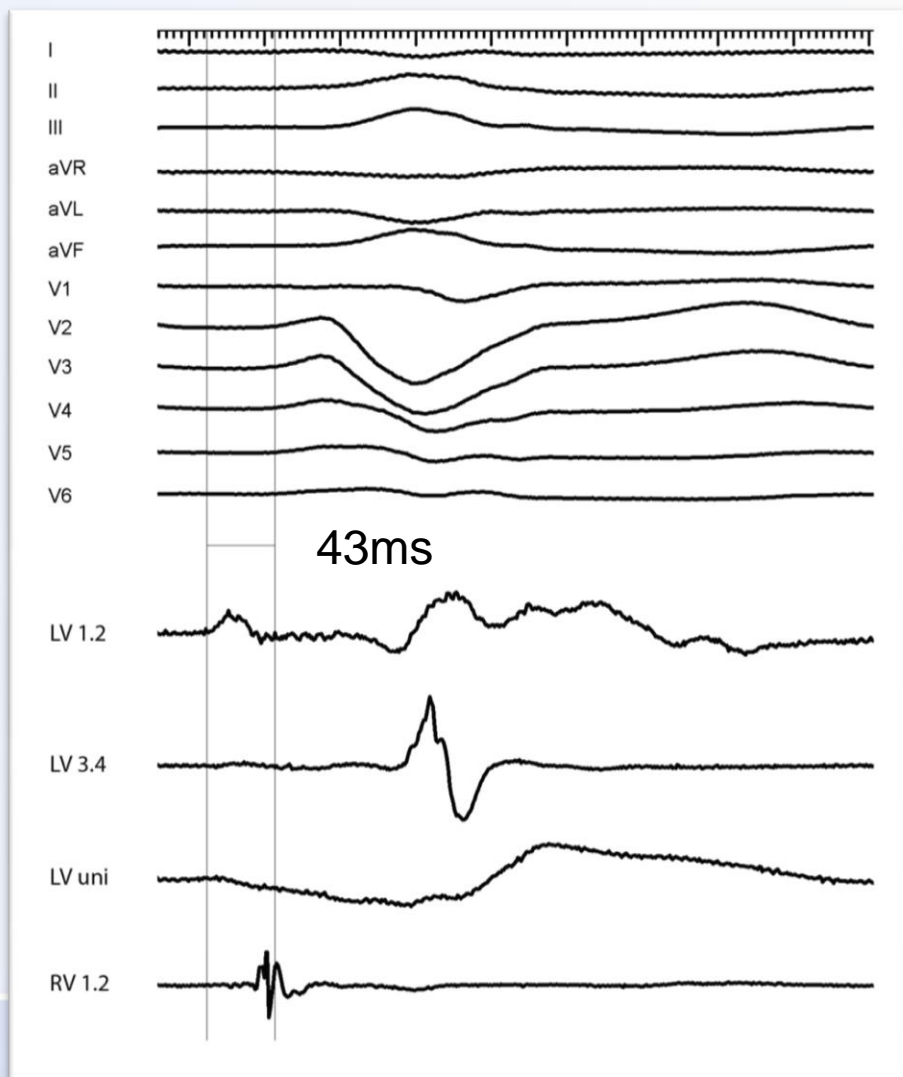


Sivasangalaban G. *PACE* 2010
Koruth JS, *Heart Rhythm* 2012

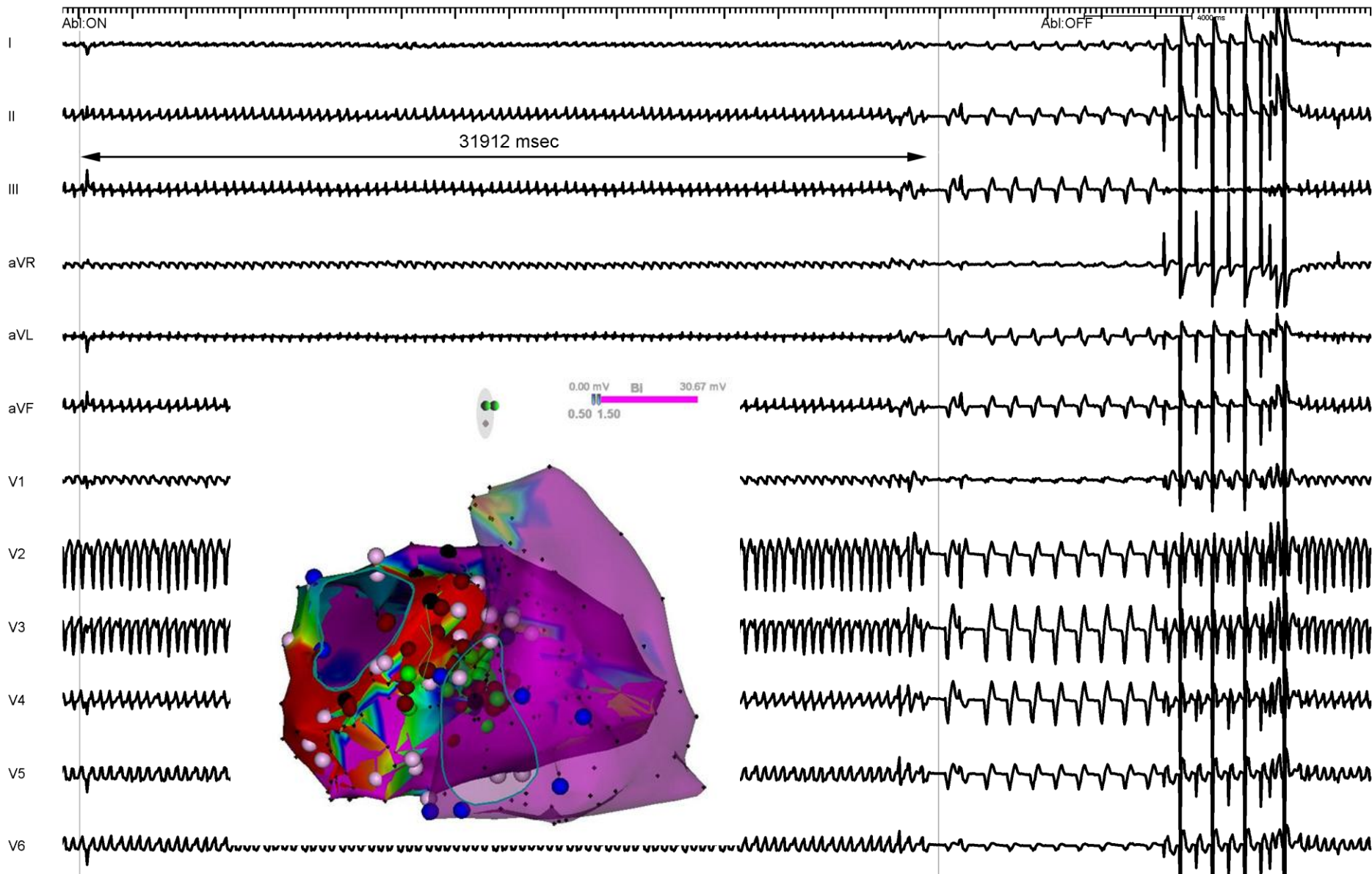
INSTITUT KLINICKÉ A EXPERIMENTÁLNÍ MEDICÍNY
KLINIKA KARDIOLOGIE



Bipolar catheter ablation of midmyocardial substrate



Late termination with bipolar ablation....

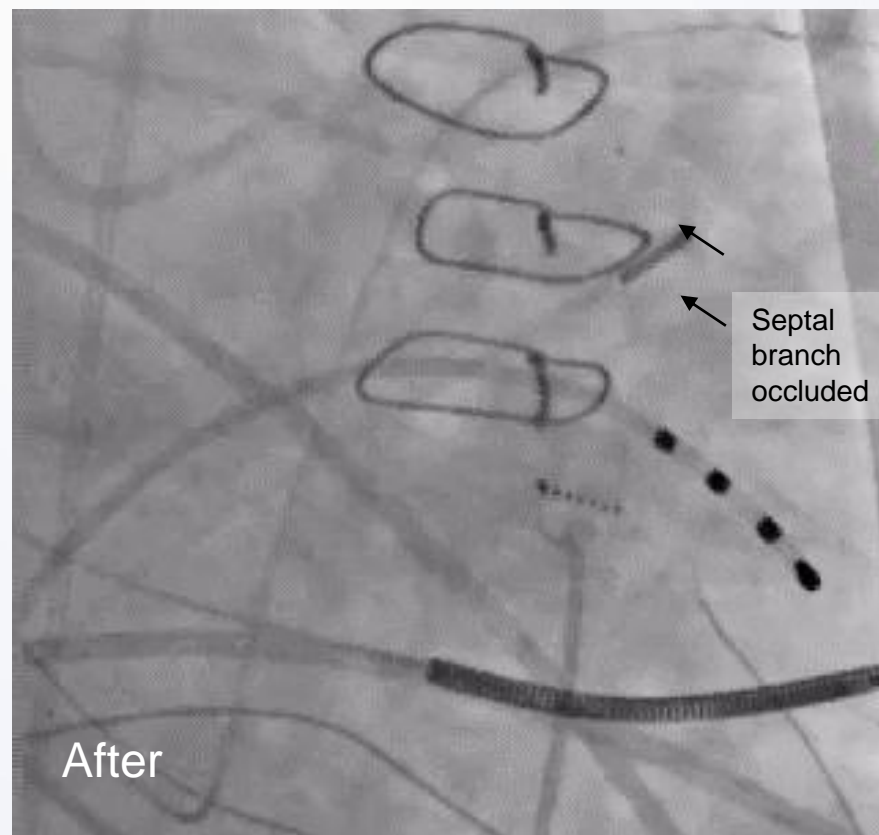
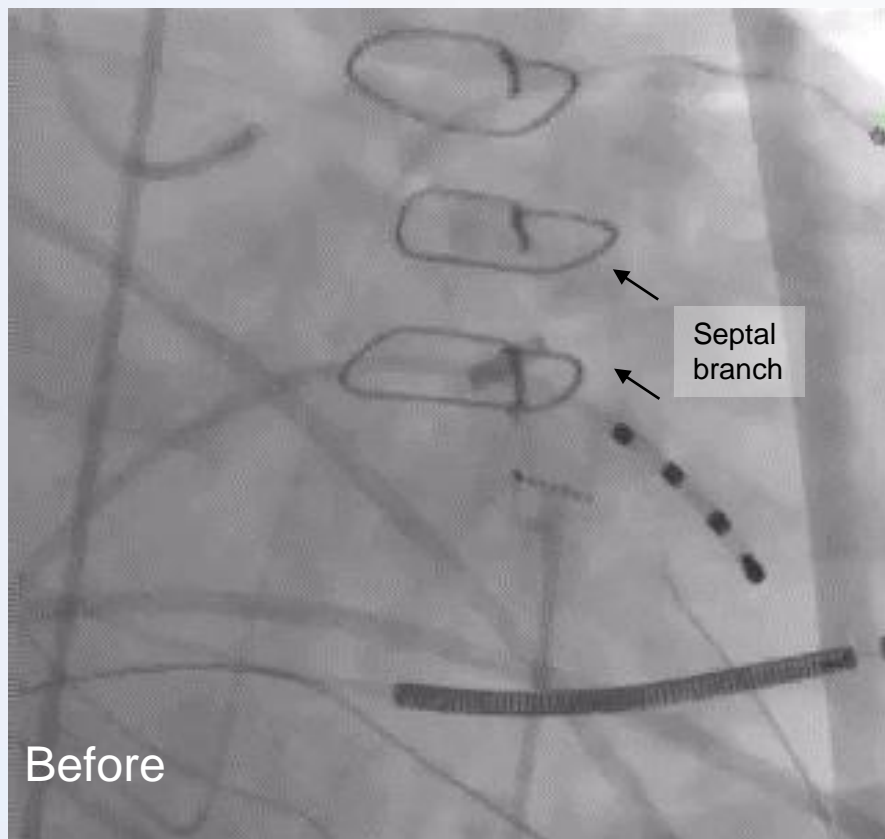


Alcohol ablation

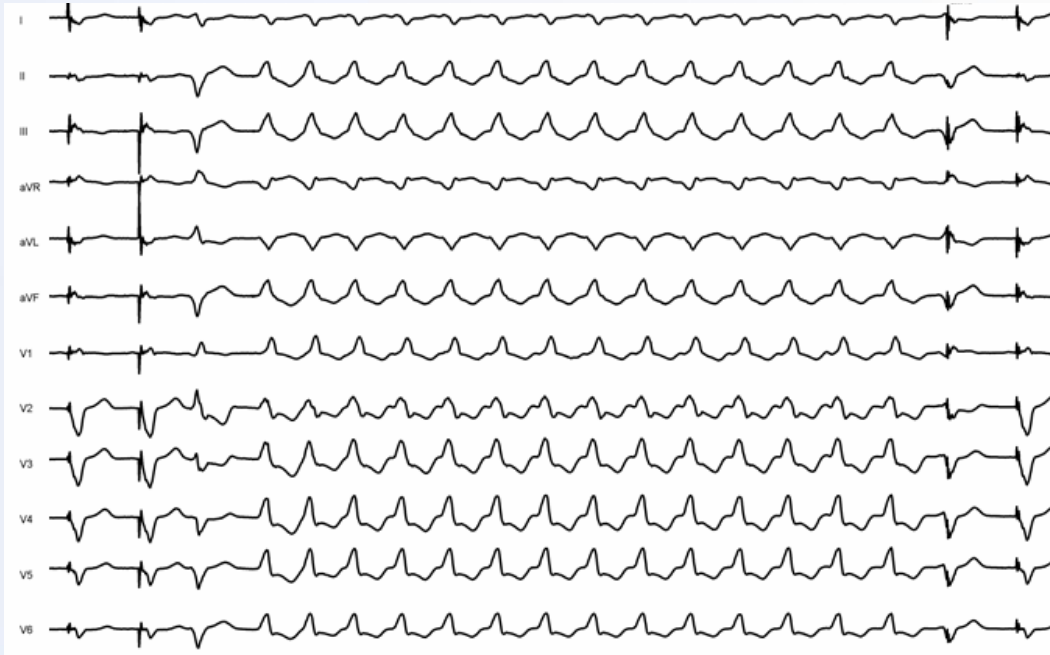
Arterial branches



Transcatheter alcohol ablation of septal branch



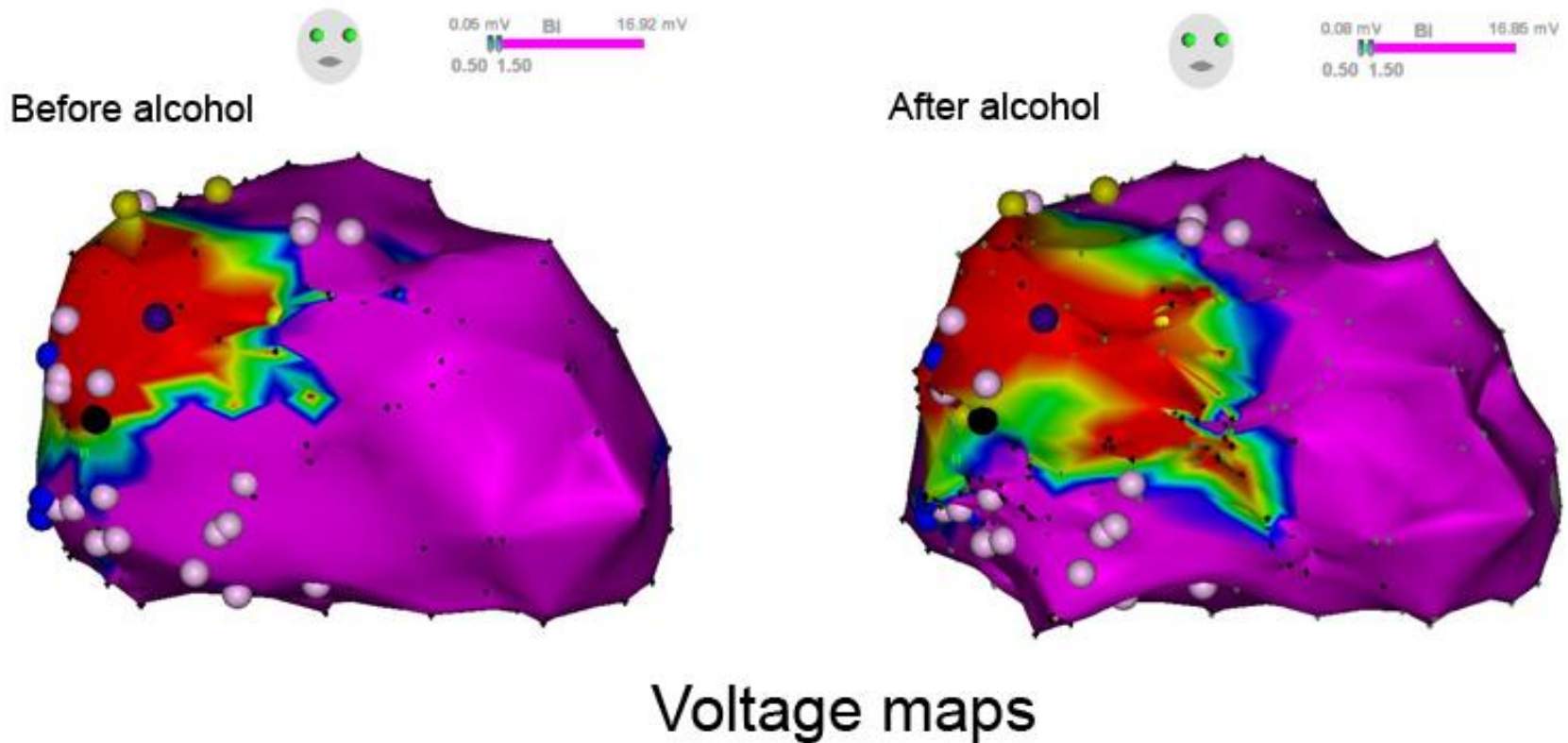
Transcatheter alcohol ablation of septal branch



Induction and immediate termination of VT during alcohol instillation (1ml)



Transcatheter alcohol ablation of septal branch

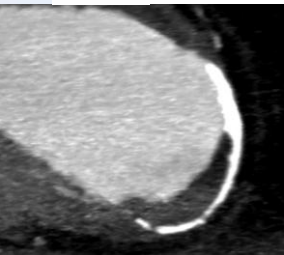
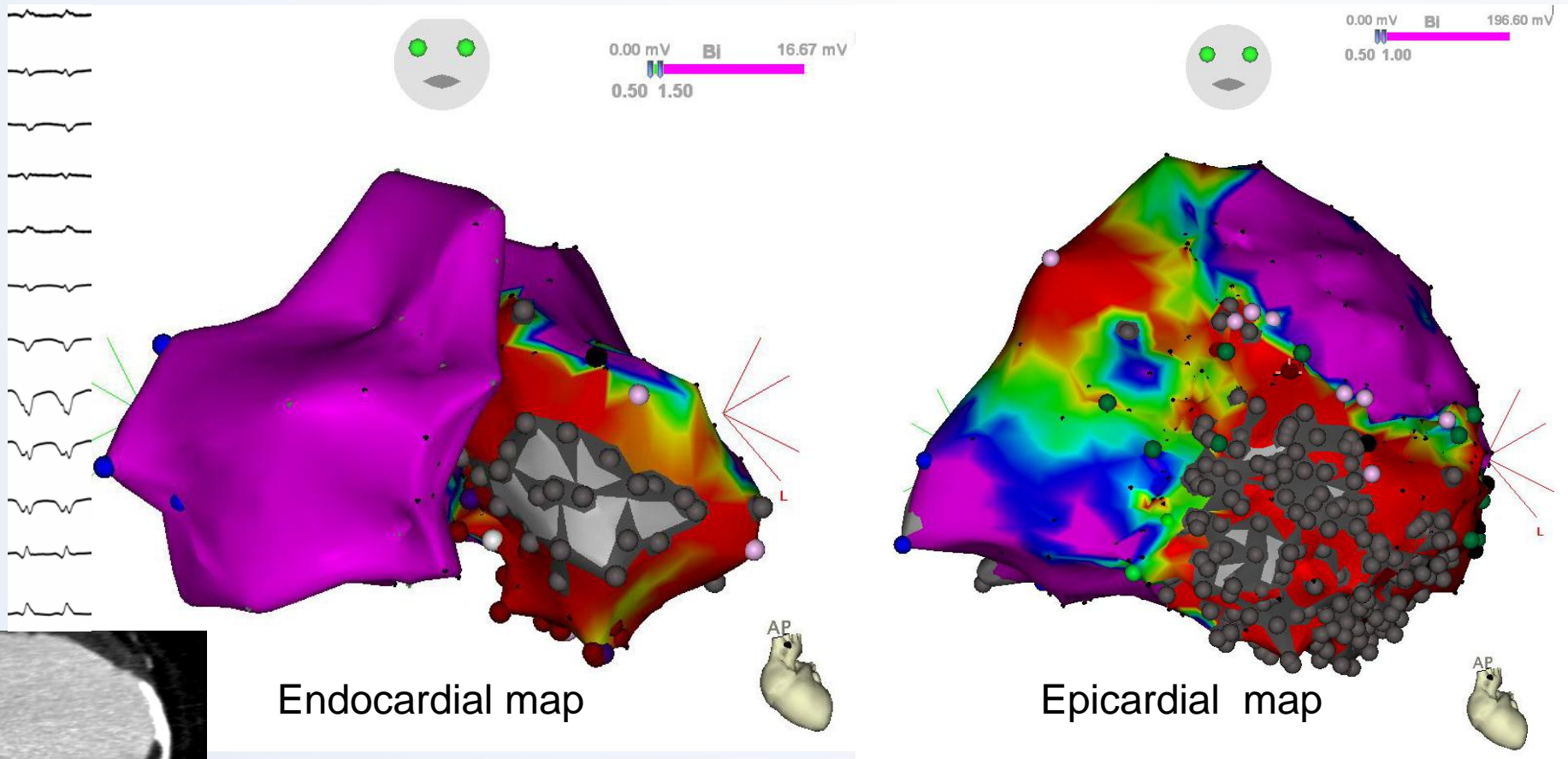


Hs-Troponin T max 925ng/l (norm up to 14ng/l)

ECHO dysfunction of EF LV 30-35% without progression

Recurrent VT from large aneurysm with thrombus

Case





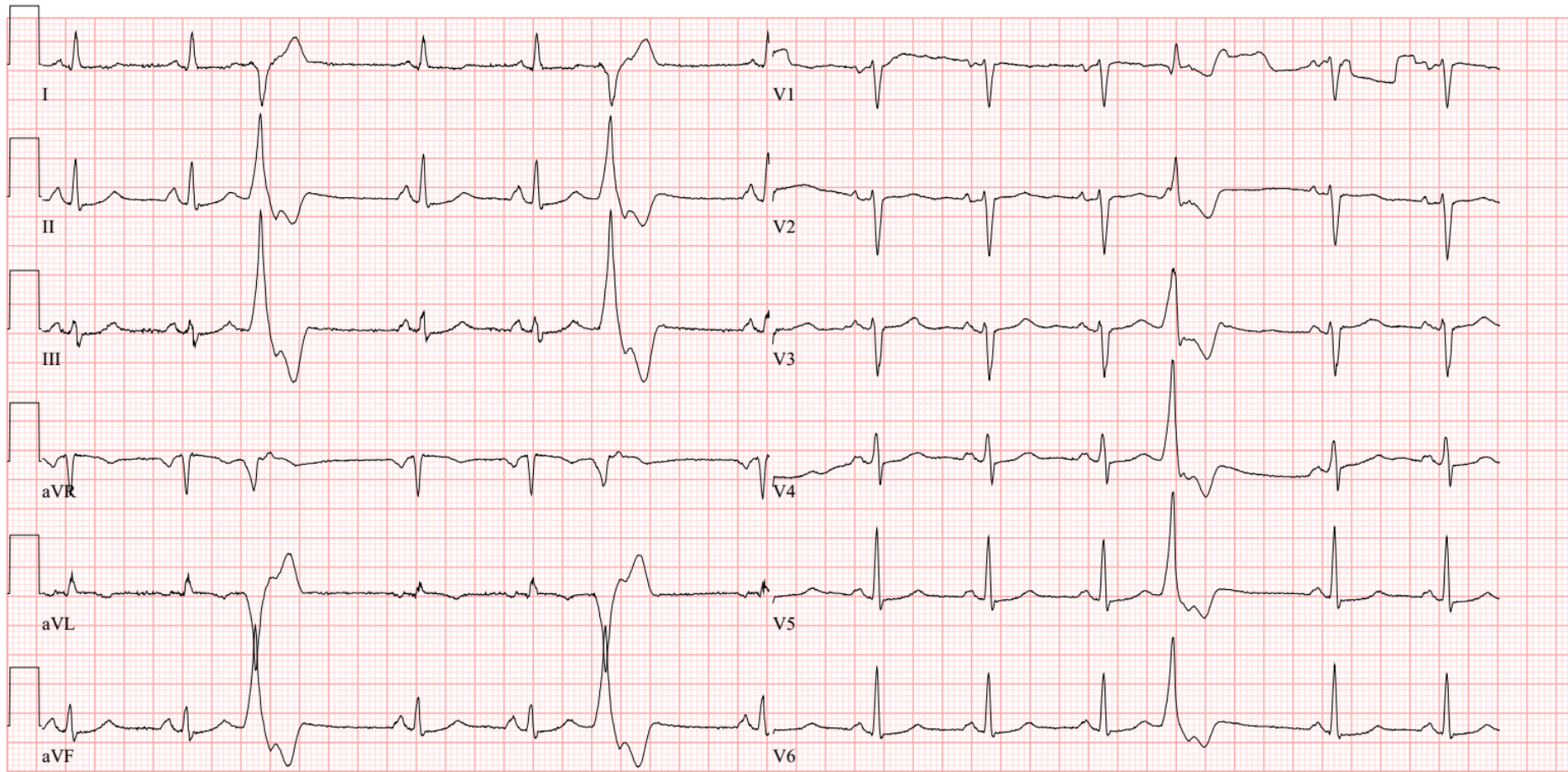


Alcohol ablation

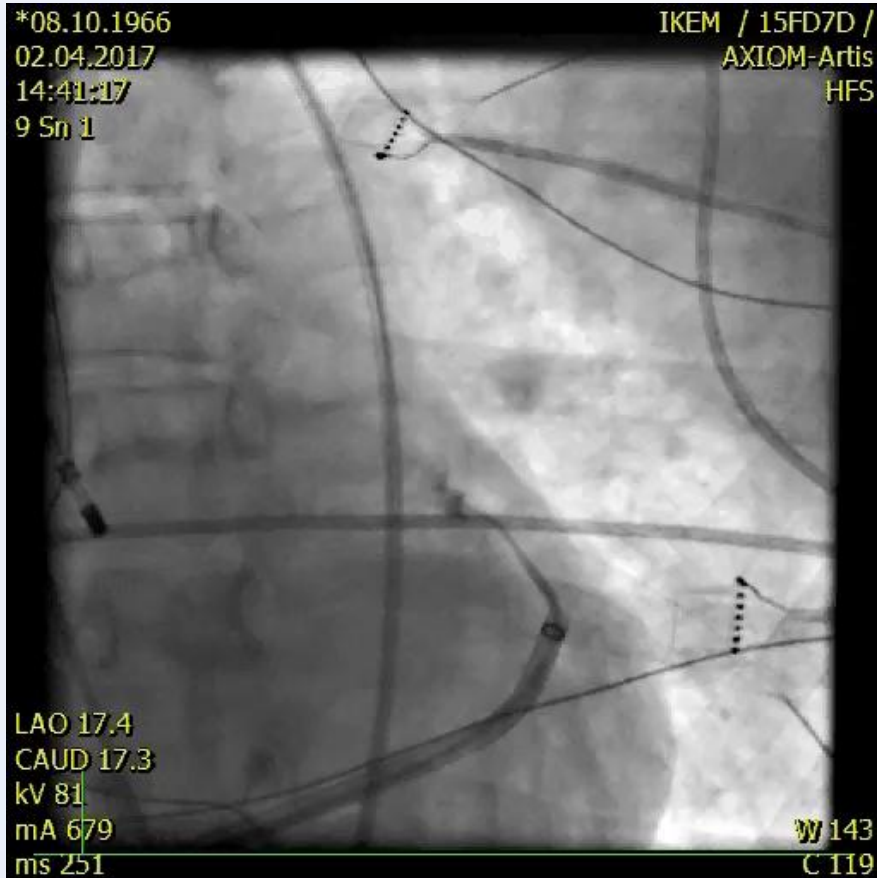
Venous branches



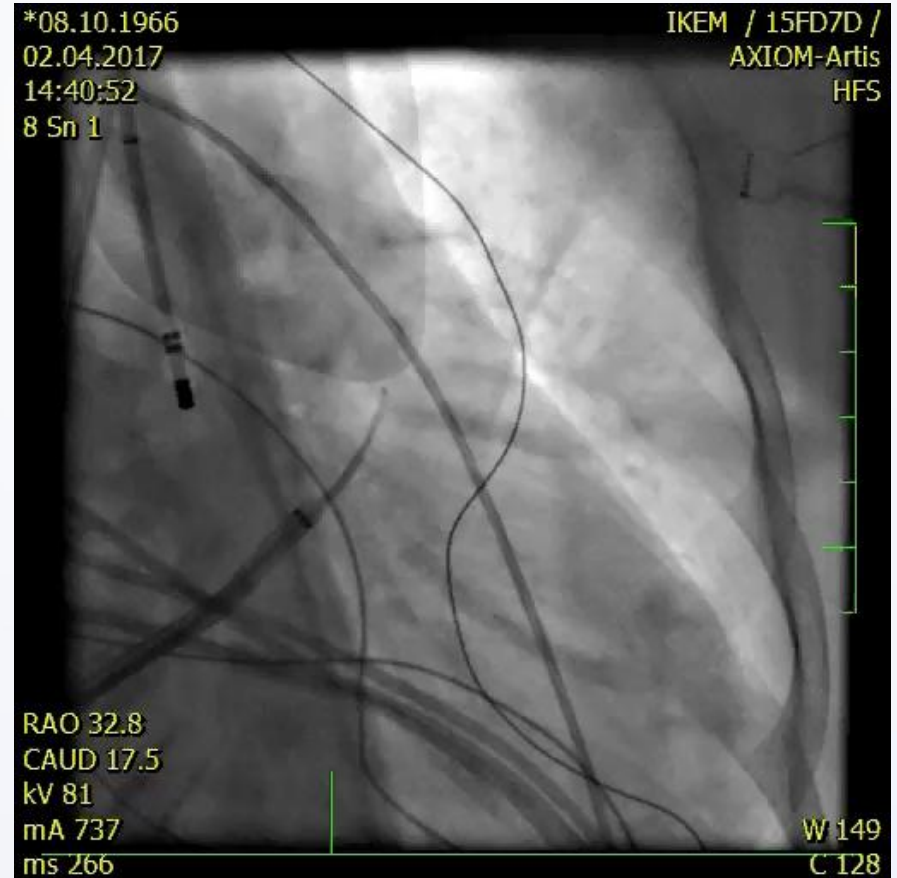
Alcohol ablation of venous branch of coronary sinus



Angio of distal CS

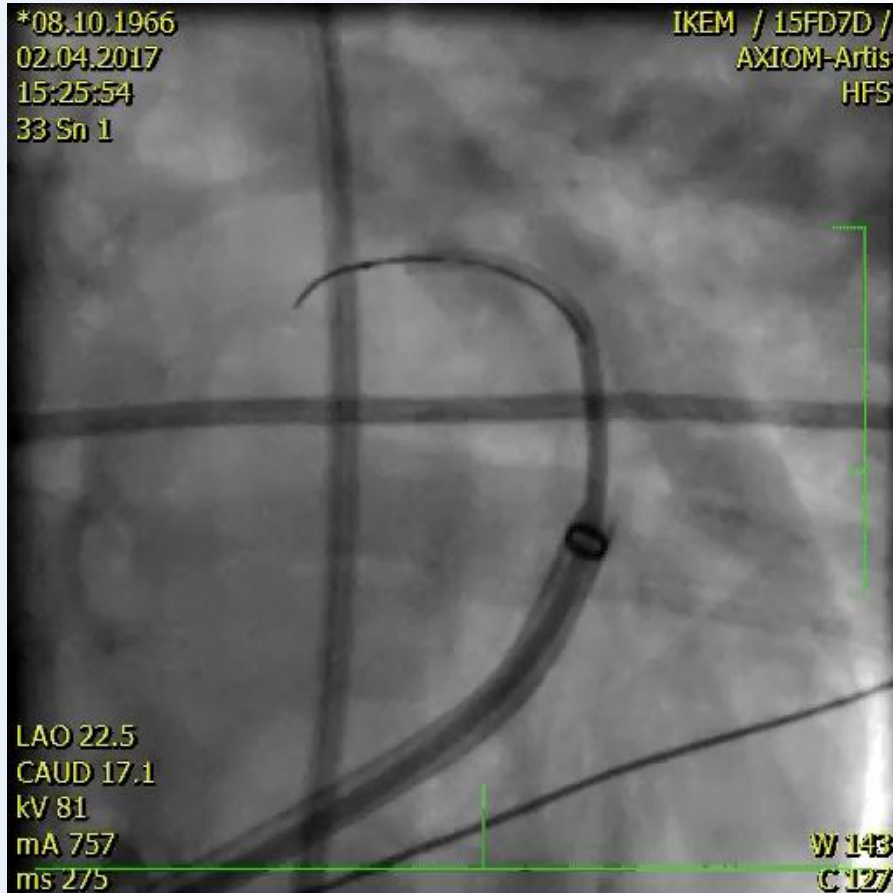


LAO view

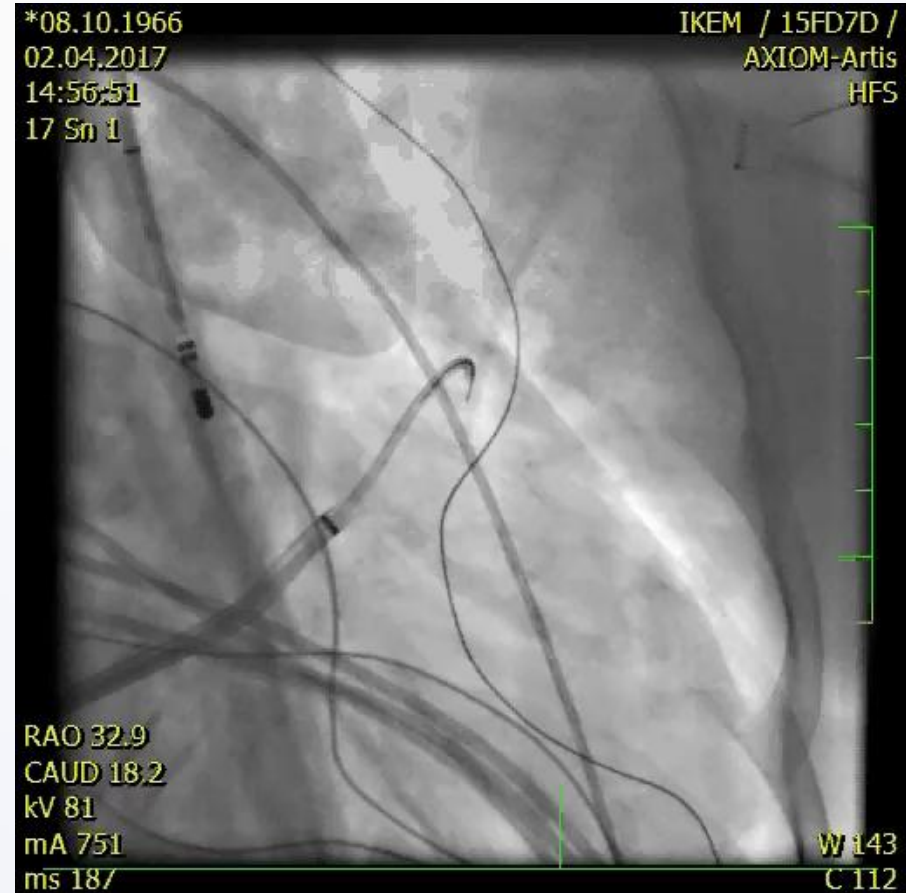


RAO view

Cannulation of small branch

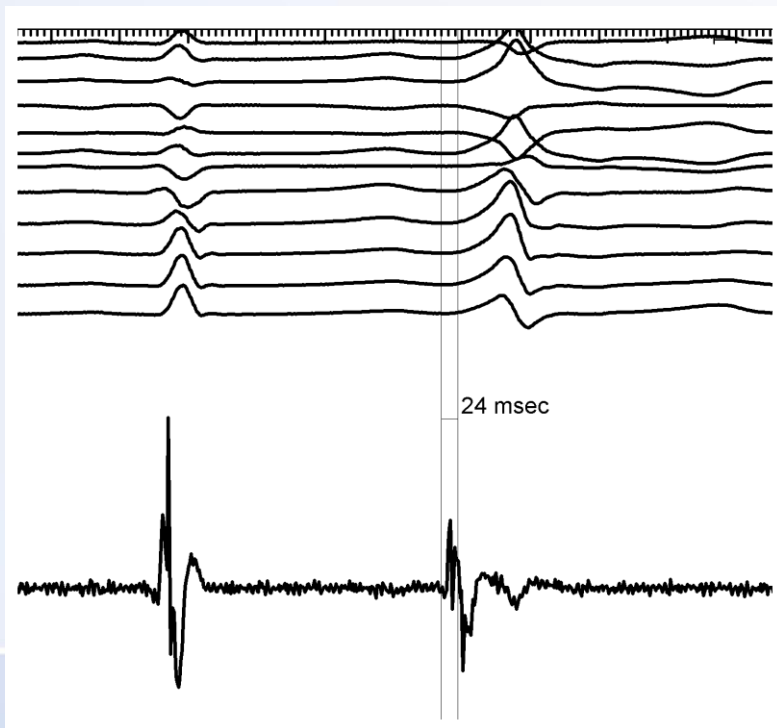
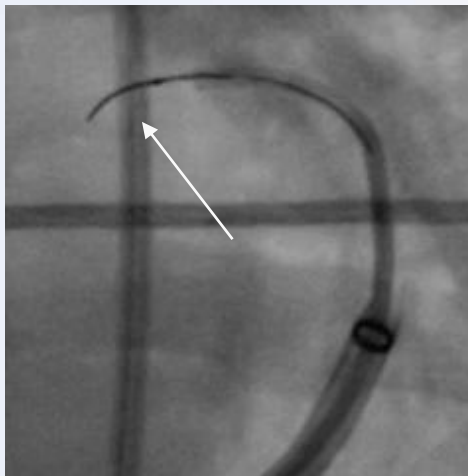


LAO view

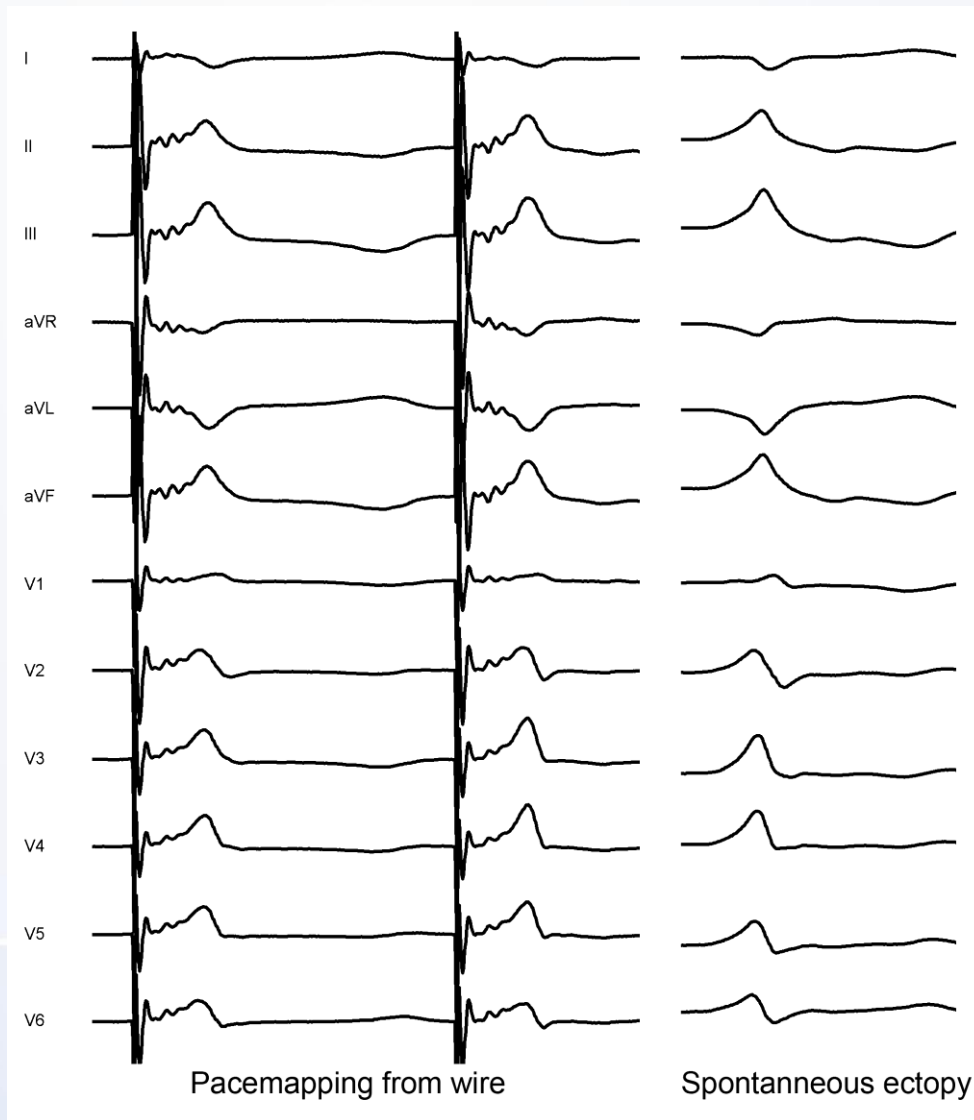


RAO view

Wire mapping within CS



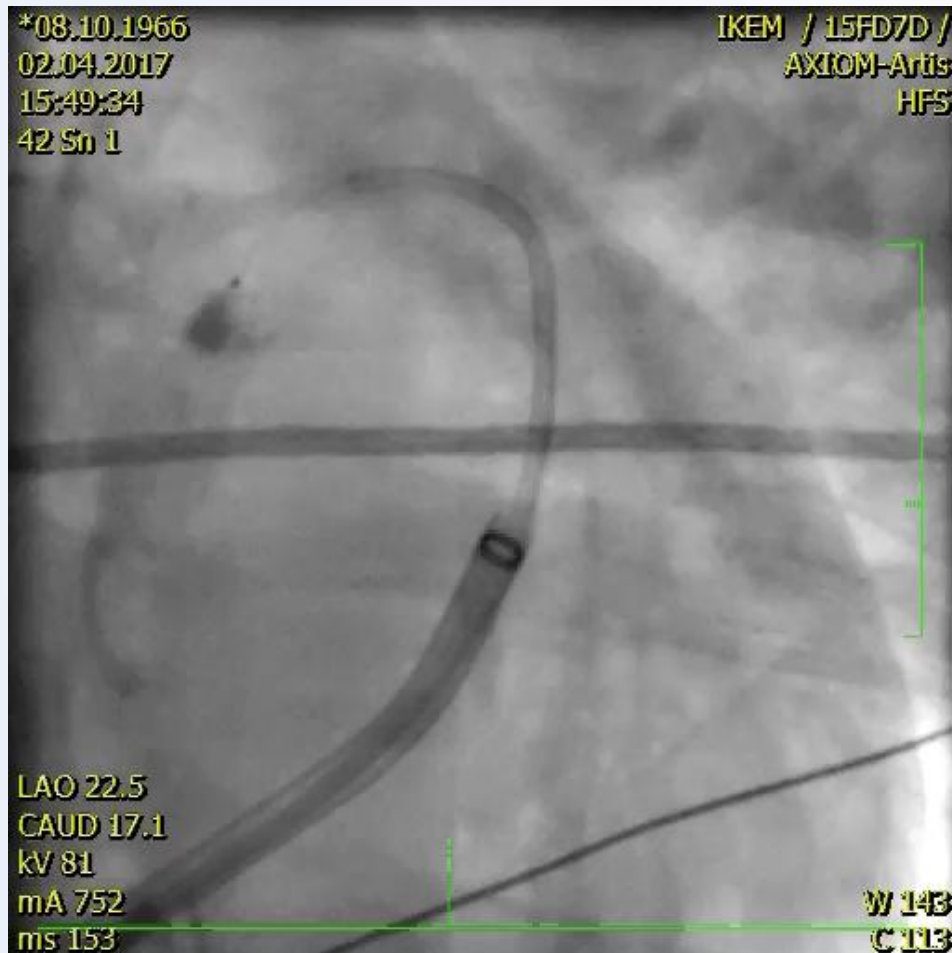
Local electrogram



Pacemapping from wire

Spontaneous ectopy

Application of alcohol



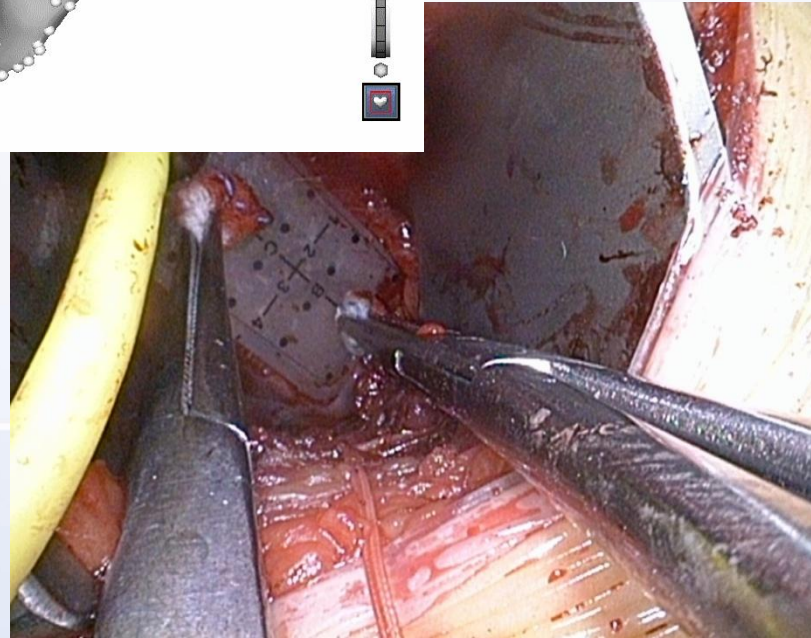
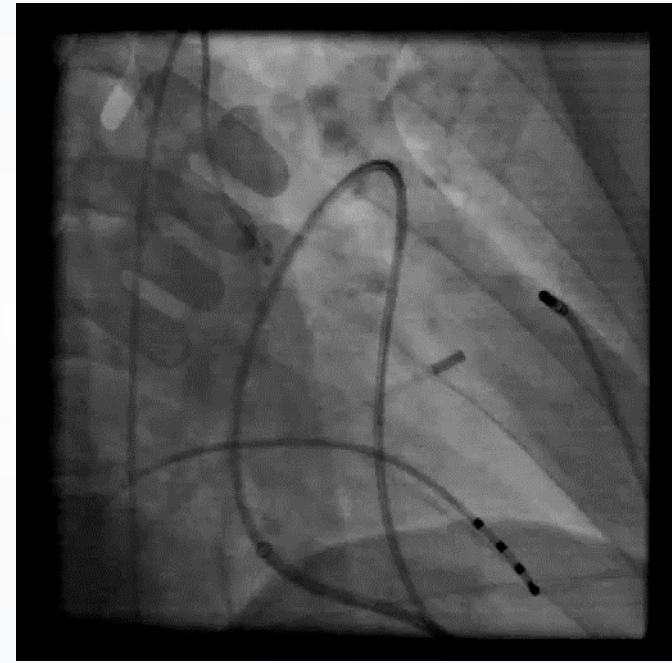
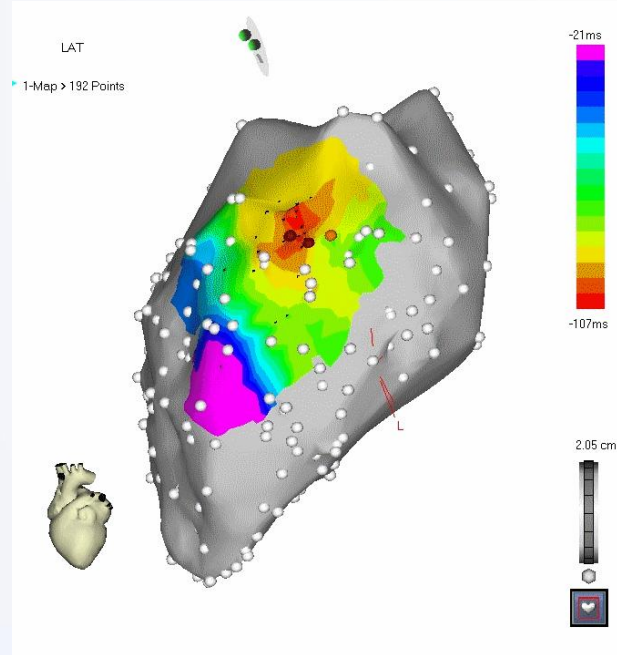
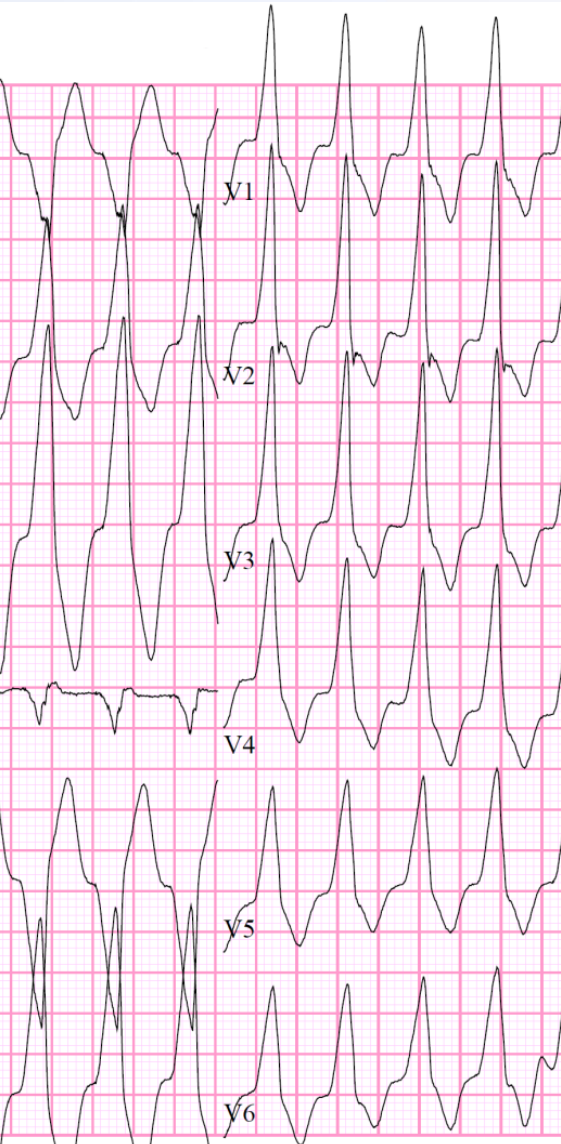
Echogenicity in the LV summit
after alcohol injection

Surgical access



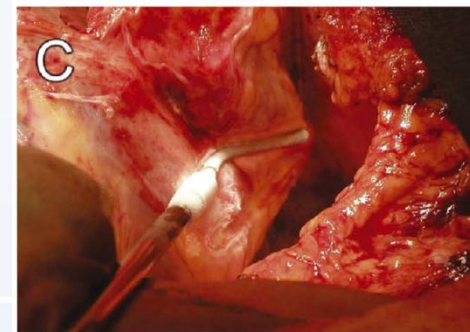
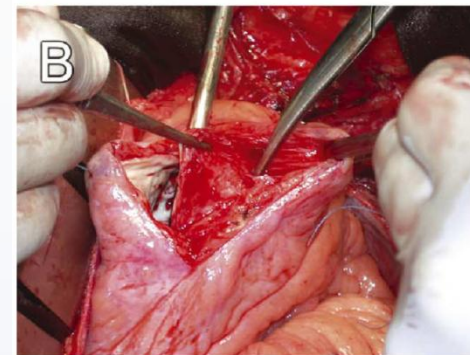
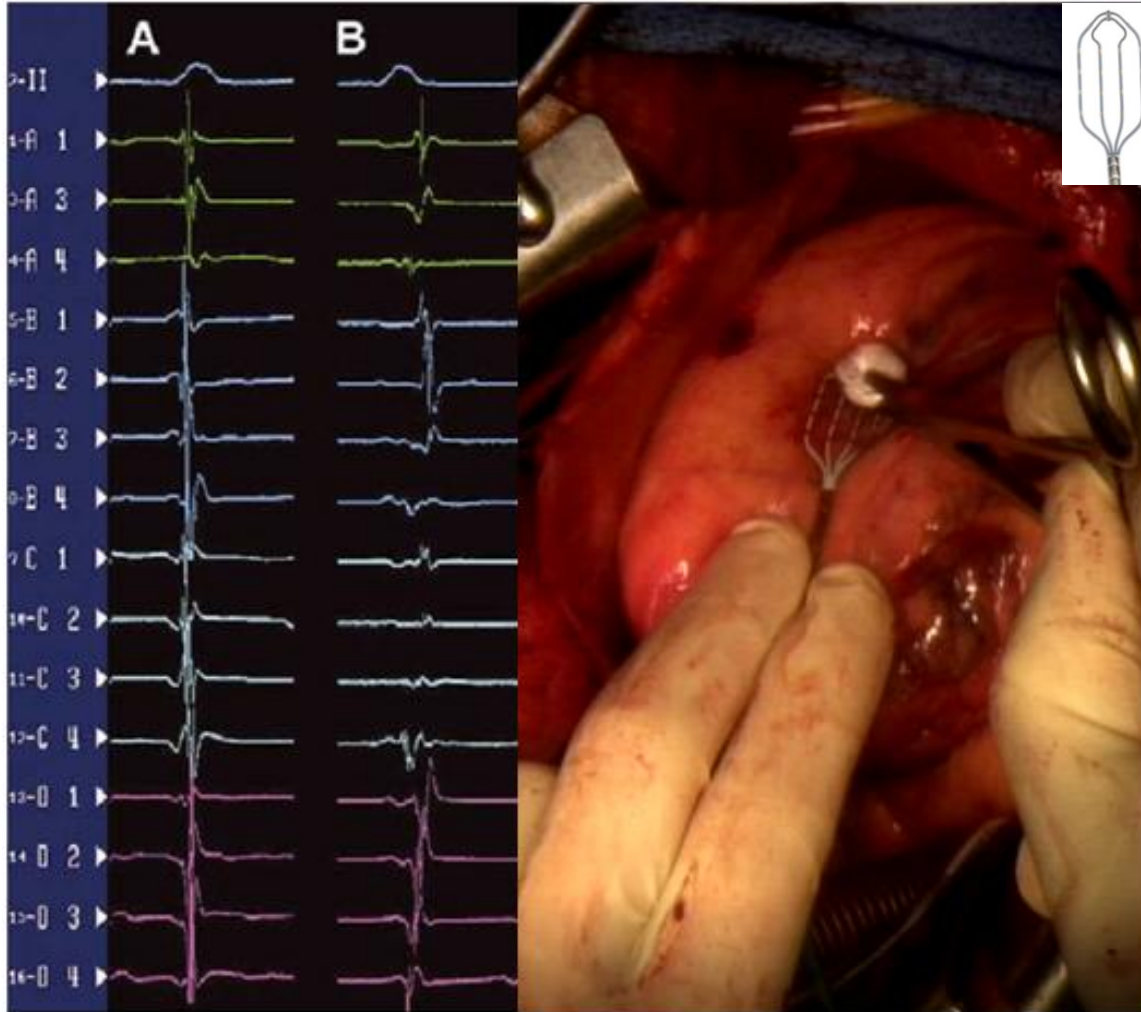
Chirurgie pro KT

Minithorakotomie



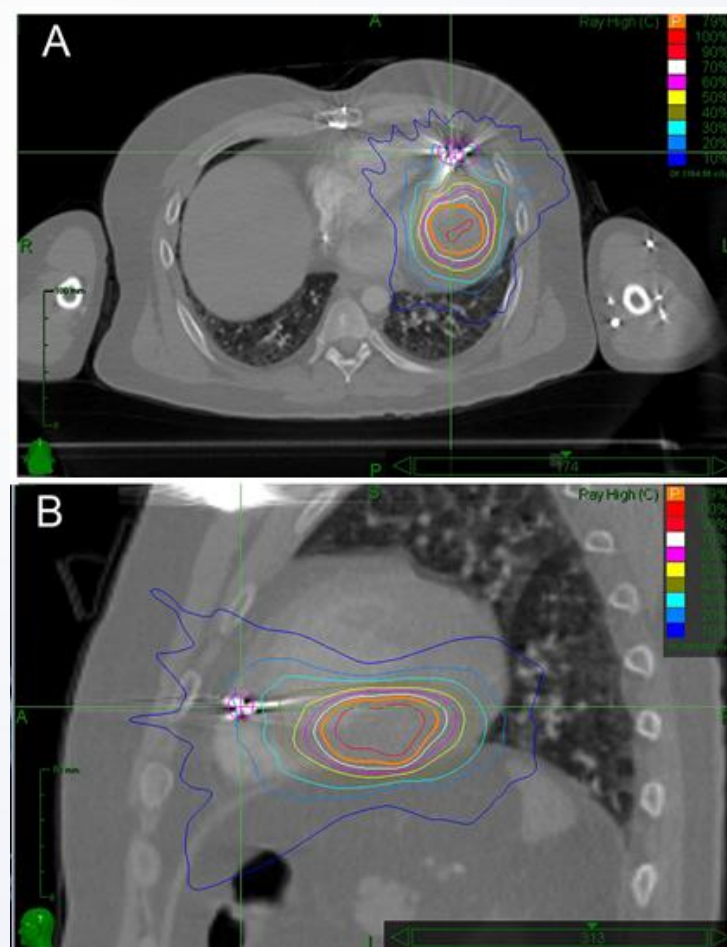
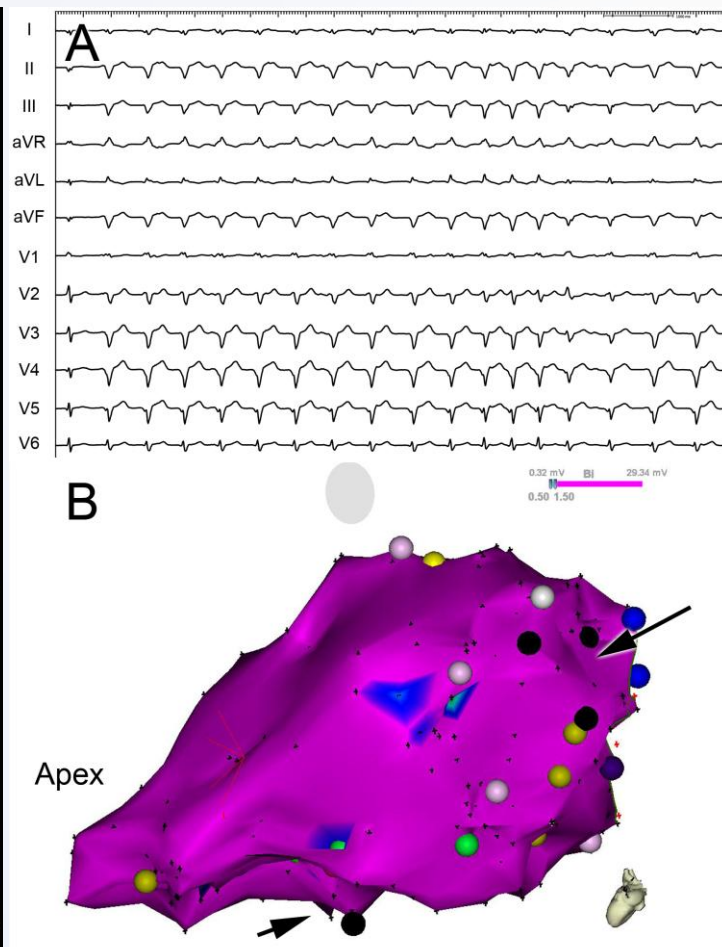
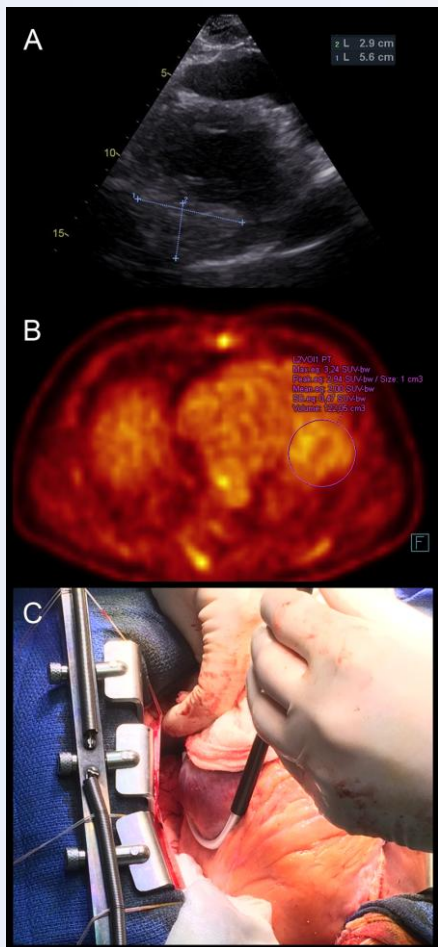
Chirurgie pro KT

Sternotomie



Stereotaktická radioterapie

Kazuistika – pacient s inoperabilním benigním tumorem a KT



Complications of VT ablation

Type of Complication	Total (n=722)	Idiopathic VT (n=249)	SHD-VT (n=473)
Death	0	0	0
Perforation	3 (0.4%)	0 (0.0%)	3 (0.6%)
Tamponade	2	0	2
Hemopericardium	1	0	1
Thromboembolic event	5 (0.7%)	1 (0.4%)	4 (0.8%)
Stroke intraprocedural	2	0	2
TIA intraprocedural	1	1	0
TIA <7 d	1	0	1
Systemic embolism (legs)	1	0	1
Conduction system damage	7 (1.0%)	1 (0.4%)	6 (1.3%)
AV block	6	1	5
LBBB resulting in HF	1	0	1
Other	4 (0.6%)	1(0.4%)	3 (0.6%)
Pericarditis	1	1	0
RV lead dysfunction	1	0	1
CPR during the procedure	2	0	2
Vascular access	26 (3.6%)	4 (1.6%)	22 (4.7%)
Femoral pseudoaneurysm	14	2	12
Femoral AVF	5	2	3
Groin hematoma			
With surgical management	3	0	3
With transfusion needed	3	0	3
With conservative management	1	0	1
Total	45 (6.2%)	7 (2.8%)	38 (8.0%)

Values are counts (%). AV indicates atrioventricular; AVF, arteriovenous fistula; CPR, cardiopulmonary resuscitation; HF, heart failure; LBBB, left bundle branch block; RV, right ventricular; SHD, structural heart disease; TIA, transient ischemic event; and VT, ventricular tachycardia.

Peichl P, *Circulation EP*, 2014

- 722 pts with VT ablation within period of 2006-2012
 - 249 idiopathic VTs
 - 473 ablations for structural heart disease
- Total risk of complications 6.2%
- Most commonly vascular
- Life threatening complications (tamponade, stroke) <1%
- **Predictors of complications:**
 - Age >70years
 - Creatinin >115umol/l
 - LV EF <25%

VT Ablations – A Broad Spectrum

