CSP in Congenital Heart Disease

Conduction System Pacing

Summer Summit Berlin 2025

12-14 June 2025

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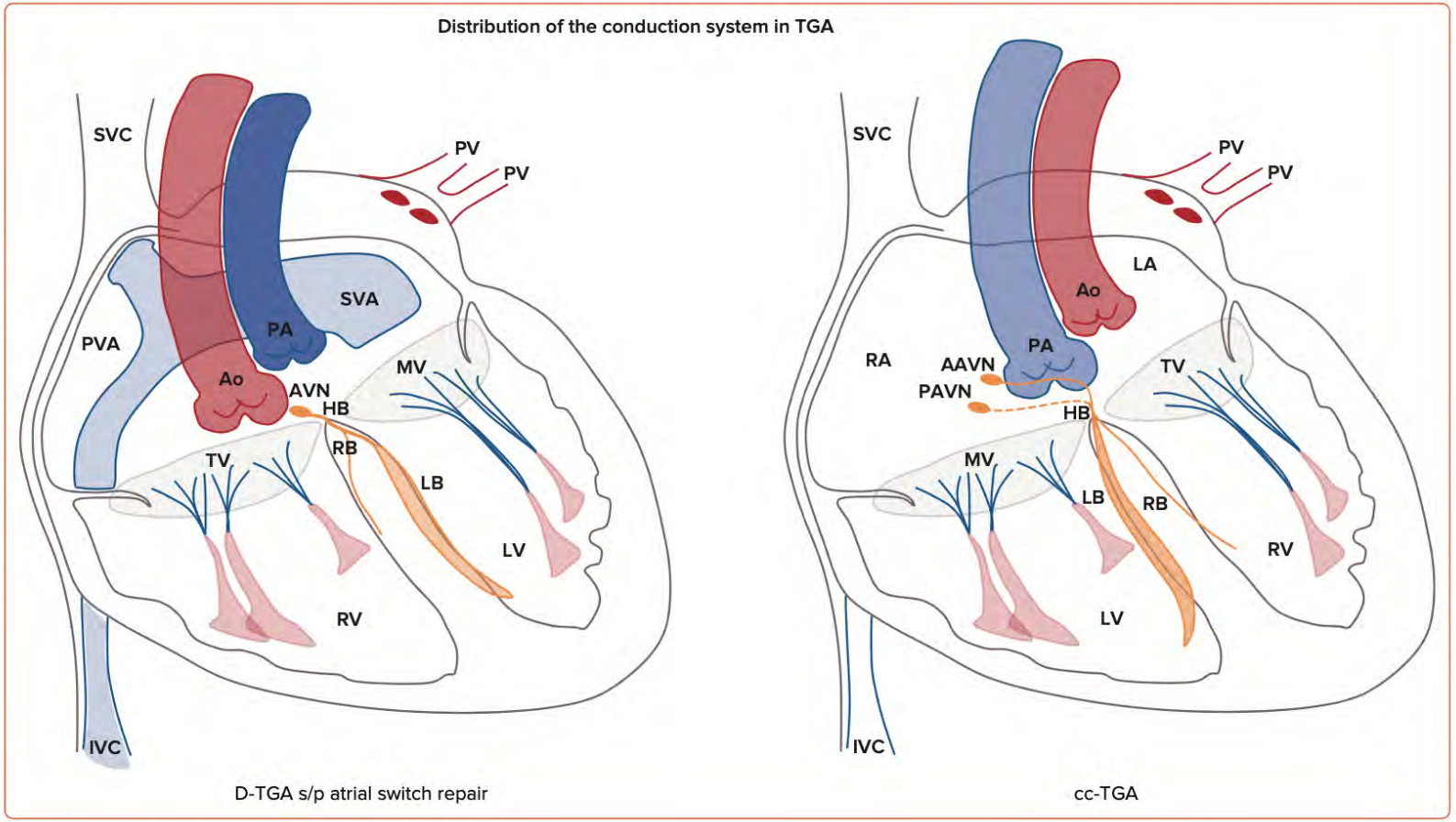
MH UNIVERSITÄTS KLINIKUM IM VERBUND

Disclosures:

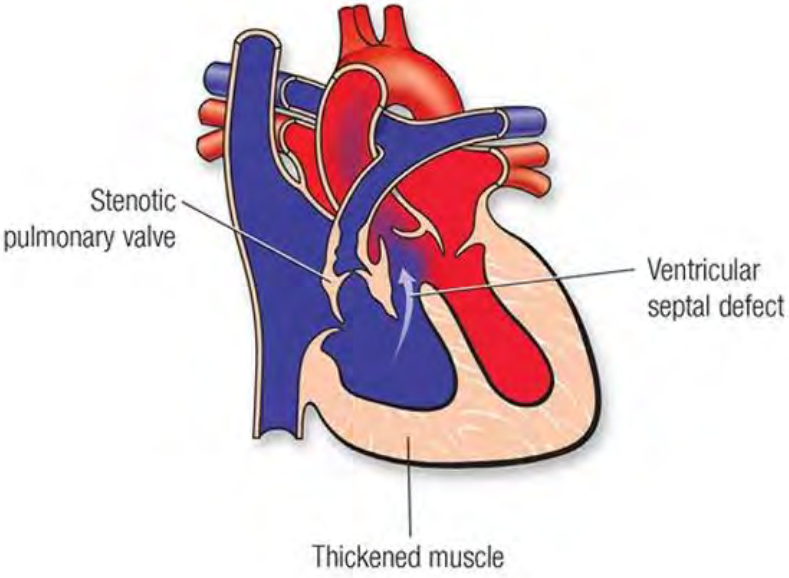
- Honoraria - Member of advisory board/ consulting by
  - Biotronik, Abbott.

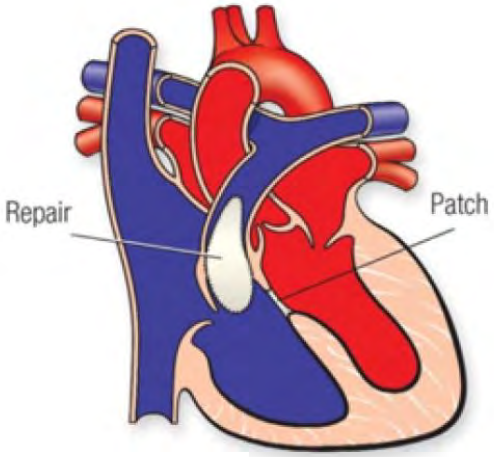
Figure 3: Distribution of the Conduction System in Complex Congenital Heart Disease with Systemic Right Ventricle

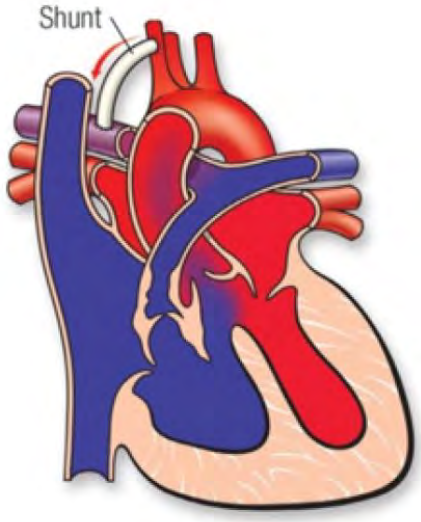


Cano Ó, Moore JP. Conduction System Pacing in Children and Congenital Heart Disease. *Arrhythm Electrophysiol Rev*. 2024;13:e19

Tetralogy of Fallot

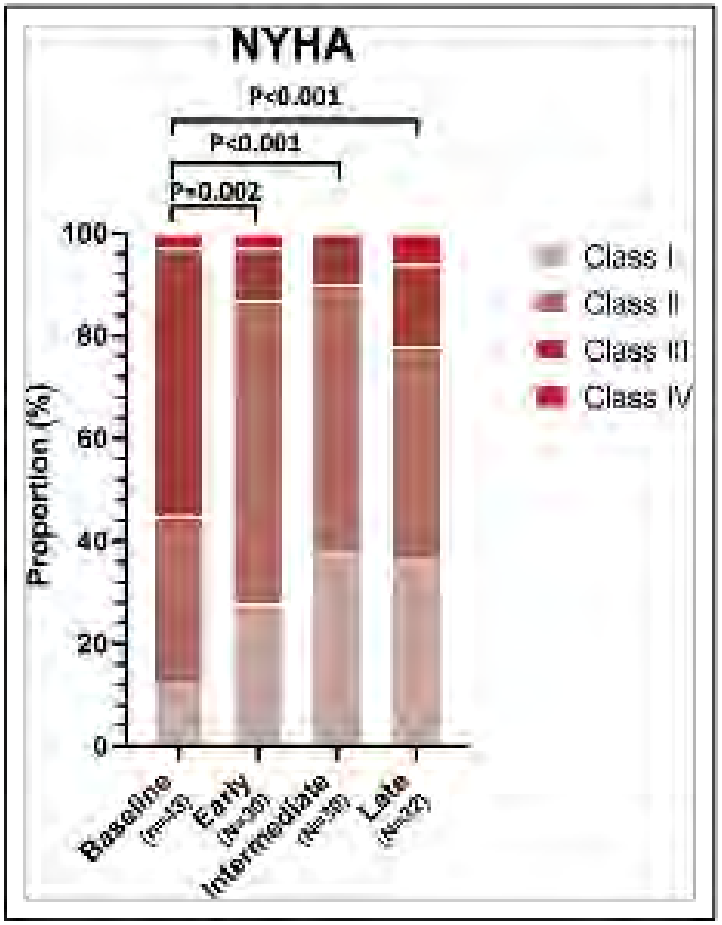


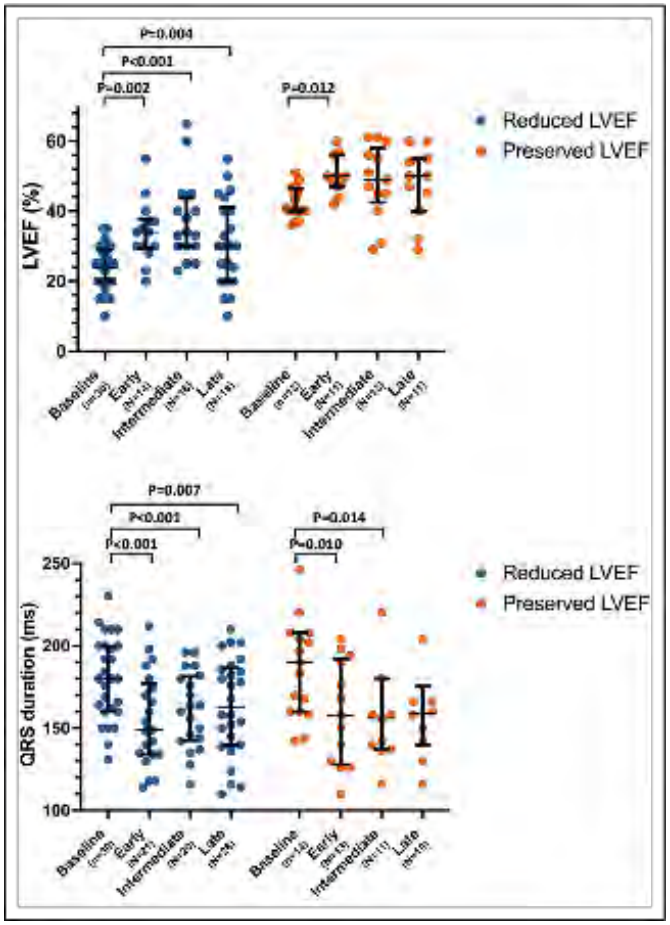




Jeremy P. Moore et al. *J Am Coll Cardiol EP* 2022; 9:385-393.

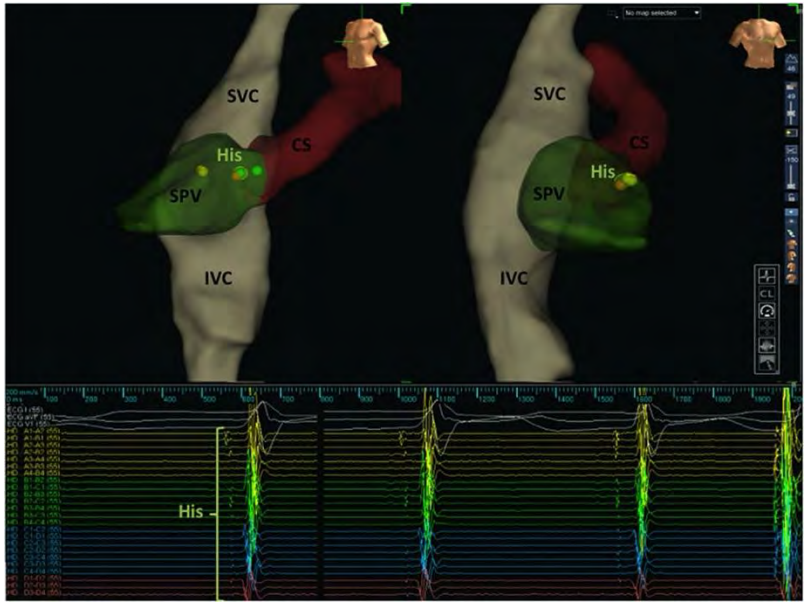
Long-Term Outcomes of CRT in Patients With Repaired Tetralogy of Fallot: A Multicenter Study



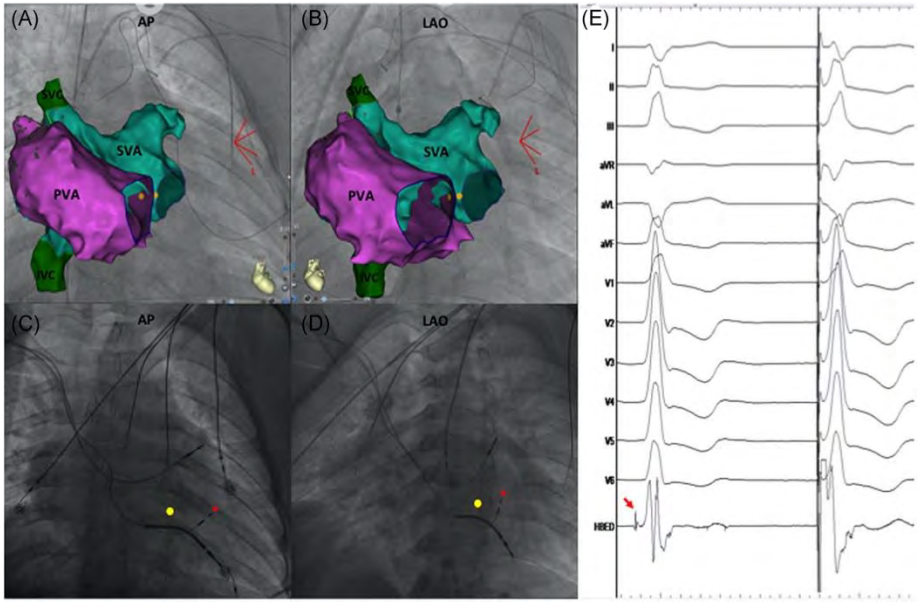


Ramdat Misier et al *Circ Arrhythm Electrophysiol.* 2024;17:e012363

Safety and feasibility of conduction system pacing in patients with congenital heart disease



congenitally corrected transposition of great vessels and dextrocardia. SPV - subpulmonic ventricle



D-TGA status post-Senning atrial switch operation, PVA, pulmonary venous atrium; SVA, systemic venous atrium

Cano et al. J Cardiovasc Electrophysiol. 2021;1–12.

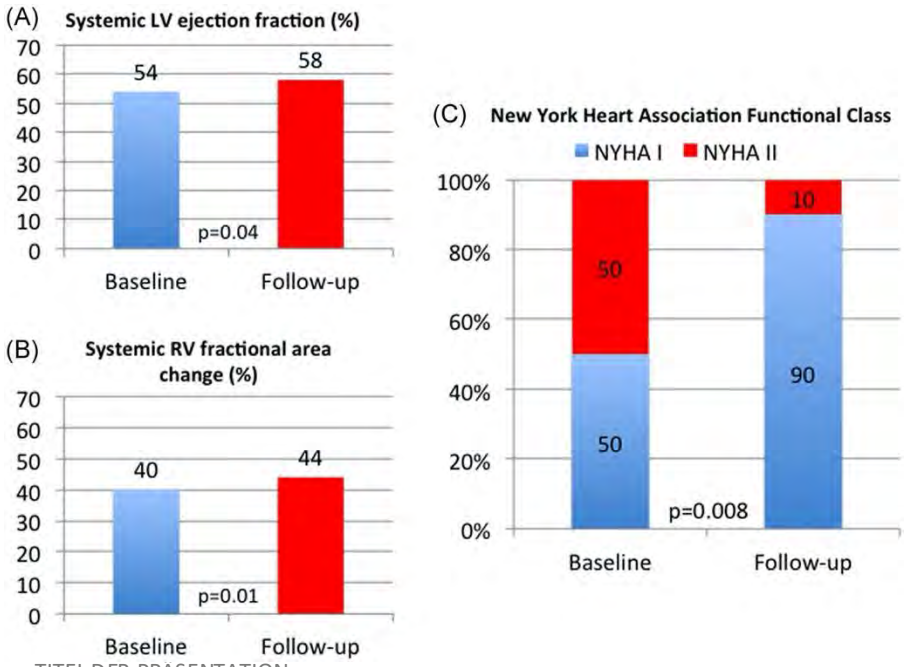
CSP was achieved in 75% of cases

Procedure times and fluoroscopy times: 126±82min and 27±30min.

Ventricular lead implant times: 4 to 115 min, (mean 31 ± 28 min)

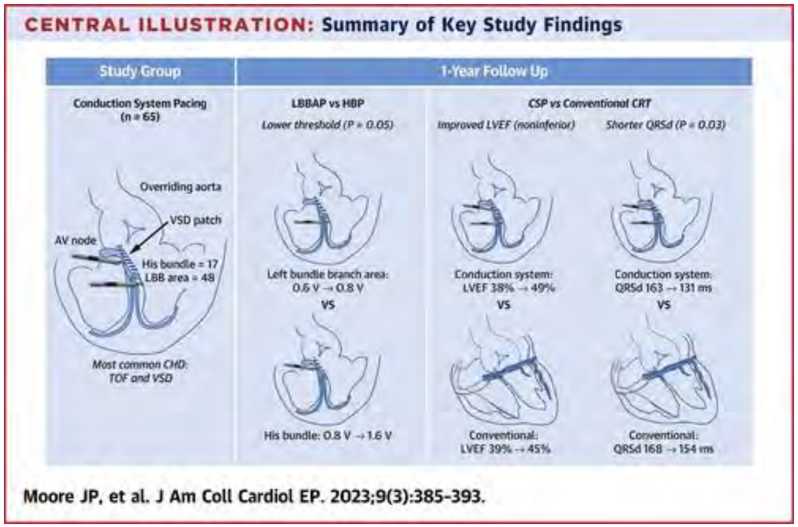
Multiple delivery sheaths in 50% of all cases.

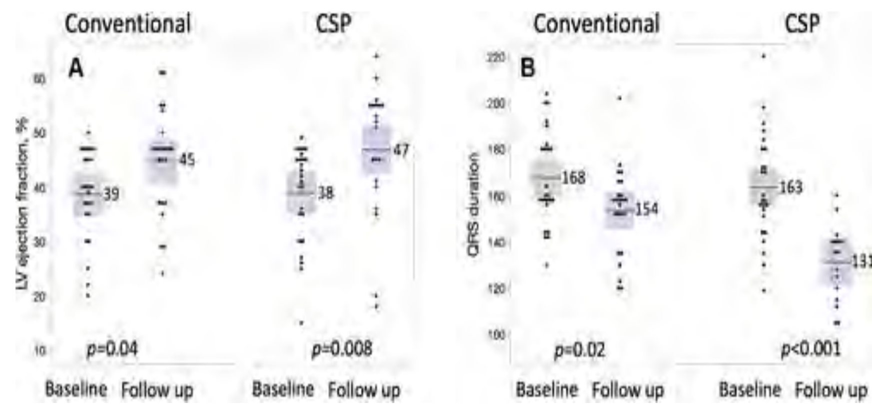
The QRS width was reduced from 145±36ms to 116±18ms



Cano et al. J Cardiovasc Electrophysiol. 2021;1–12.

CSP Versus Conventional CRT in Congenital Heart Disease

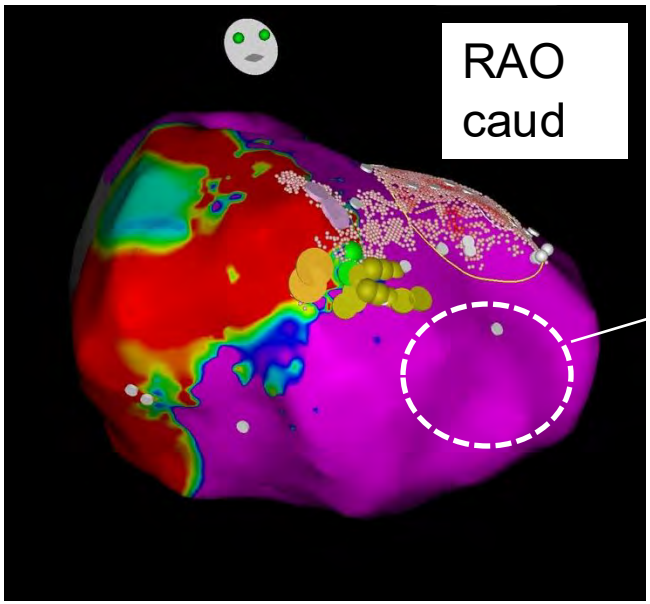


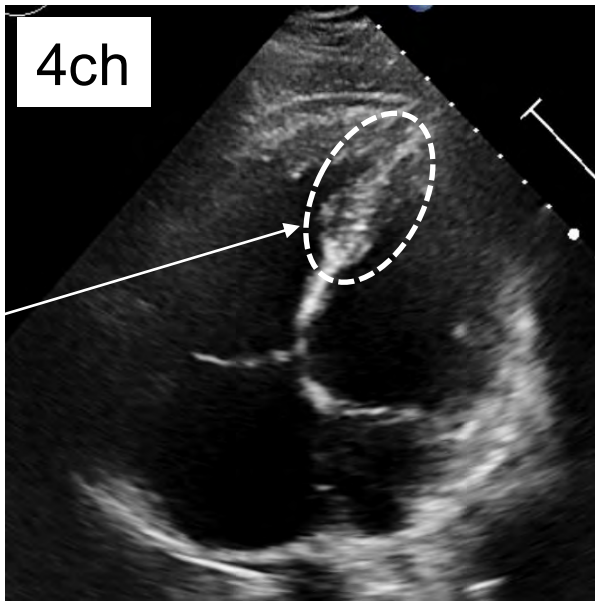


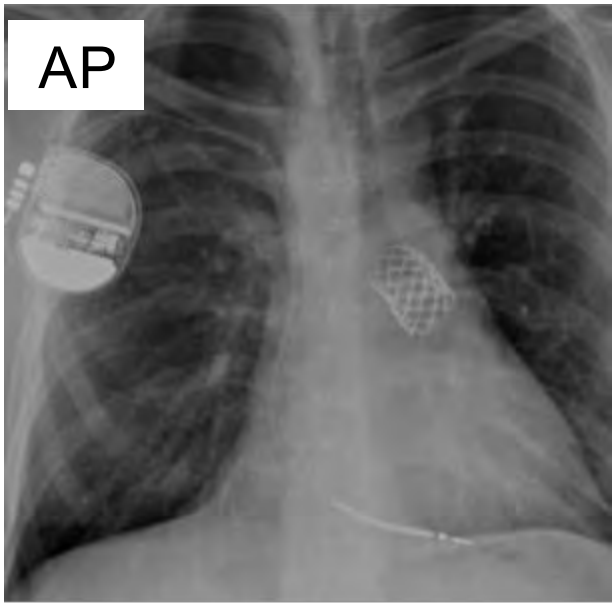
CSP can be reliably achieved in biventricular, systemic left ventricular CHD patients with **similar improvement in LVEF** and **greater QRS narrowing for CSP** vs conventional CRT at 1 year. Among CSP patients, **pacing electrical parameters were superior for LBBAP** vs HBP.

Jeremy P. Moore et al. *J Am Coll Cardiol EP* 2022; 9:385-393.

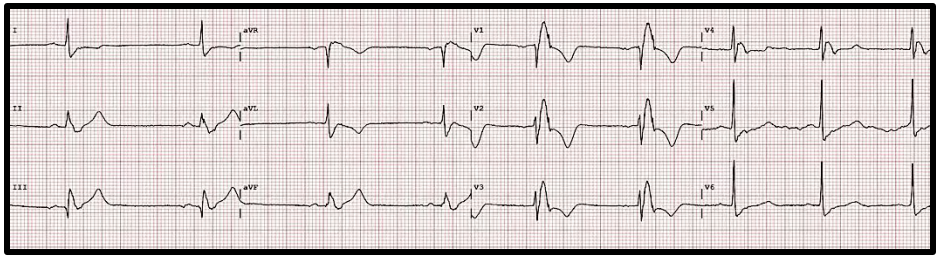
CASE #1



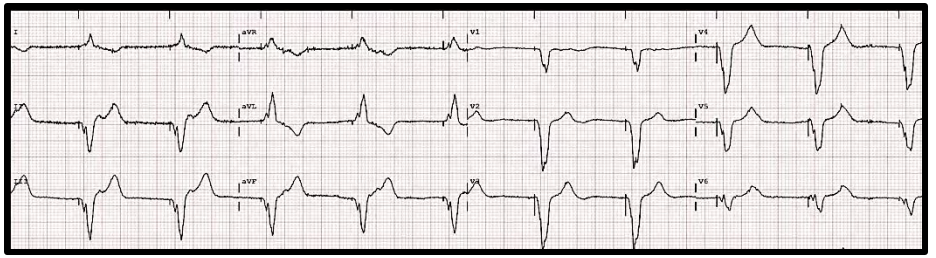




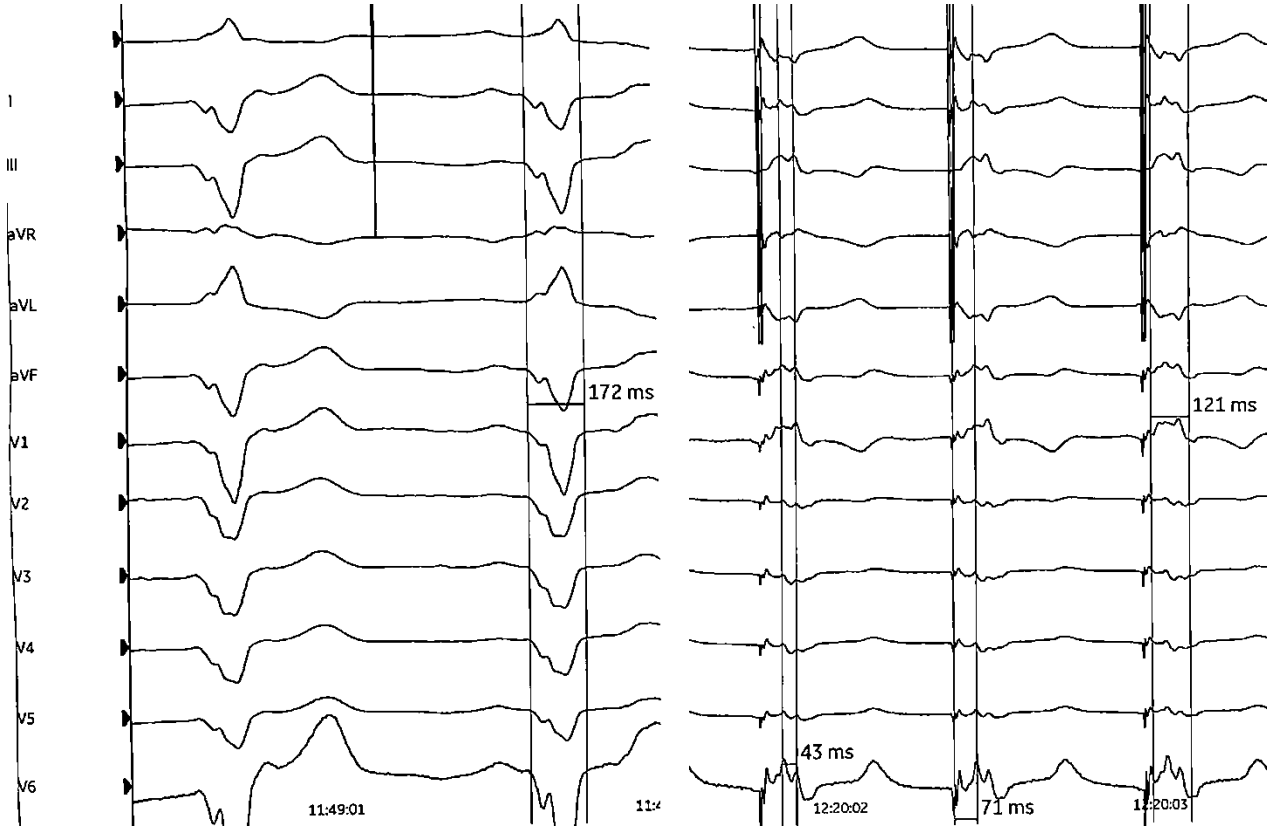
Before AV-Block

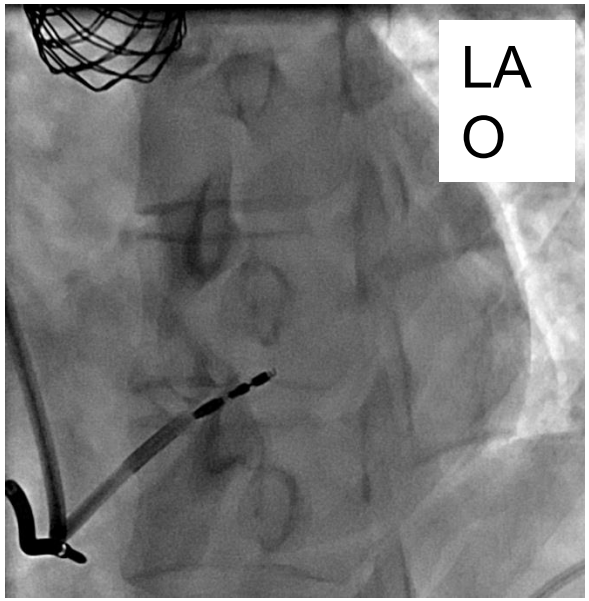


RV-Pace

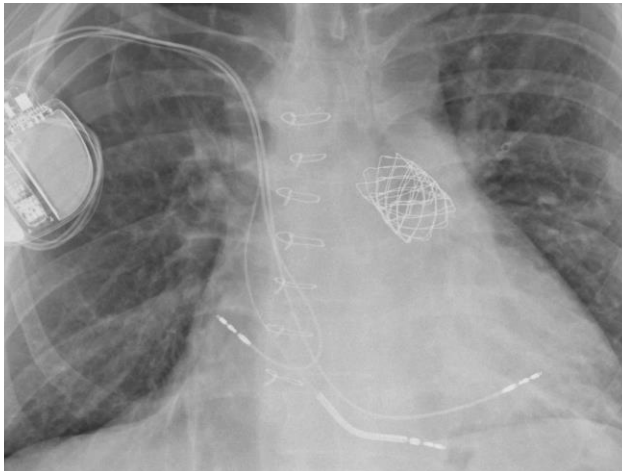


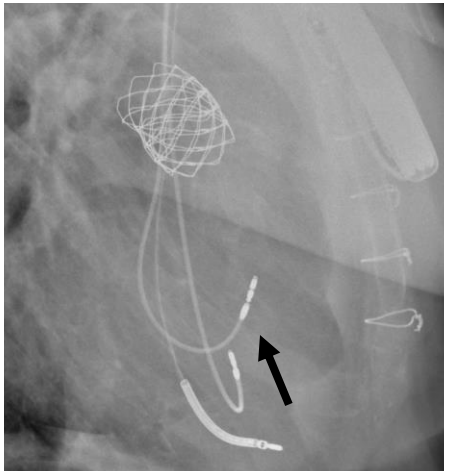
CASE #1

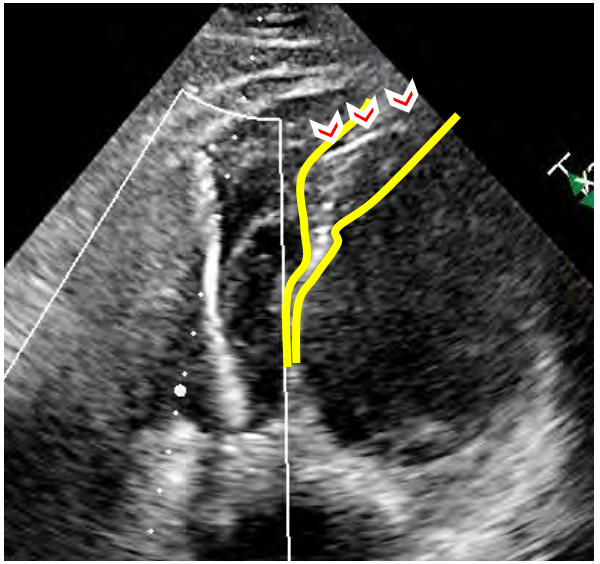

I
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
172 ms
11:49:01
43 ms
12:20:02
71 ms
121 ms

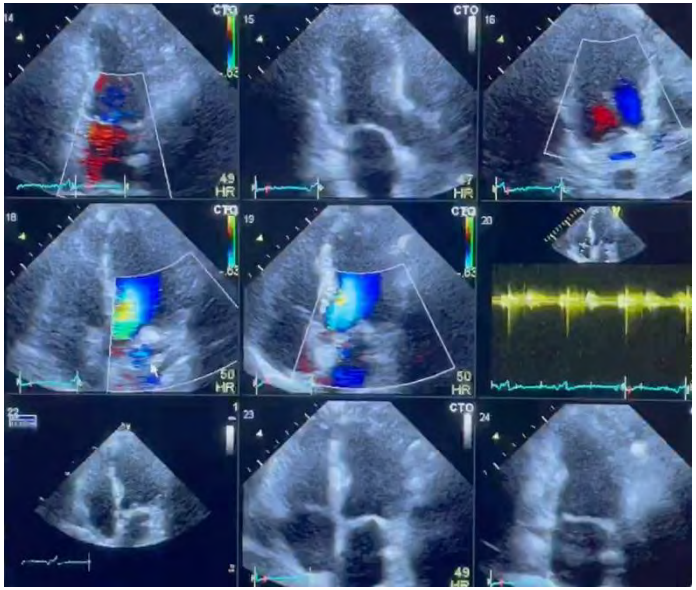

LA
O

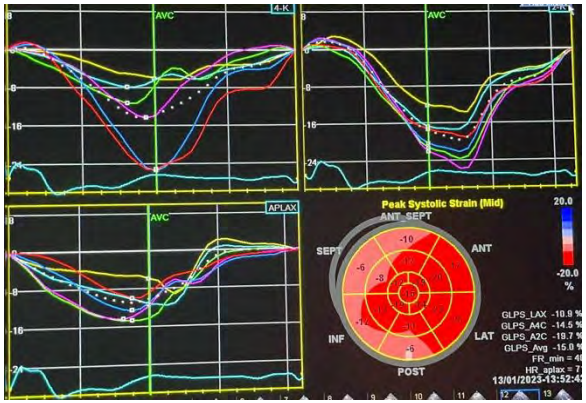
CASE #1



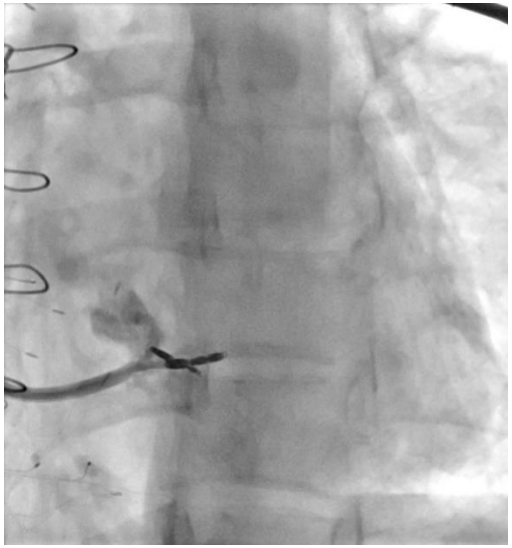


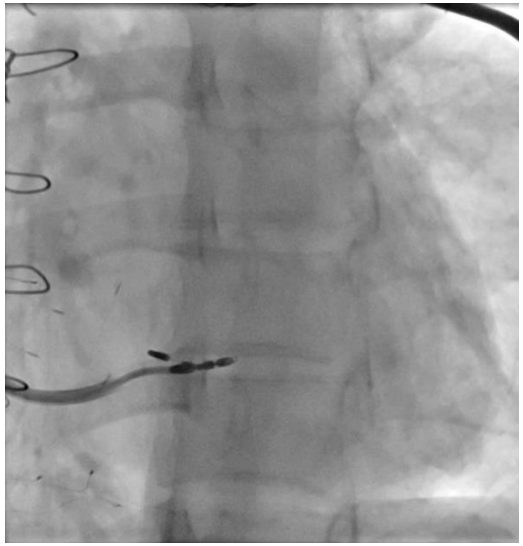


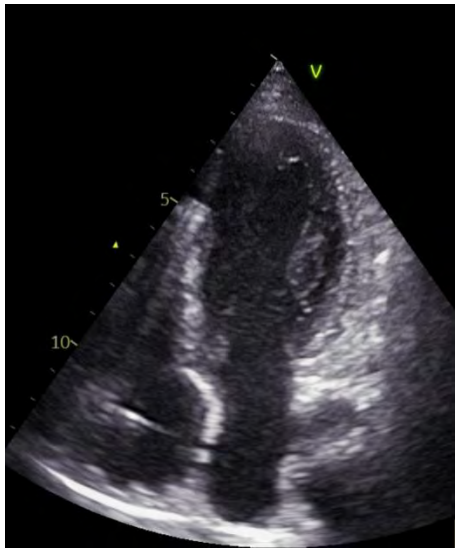


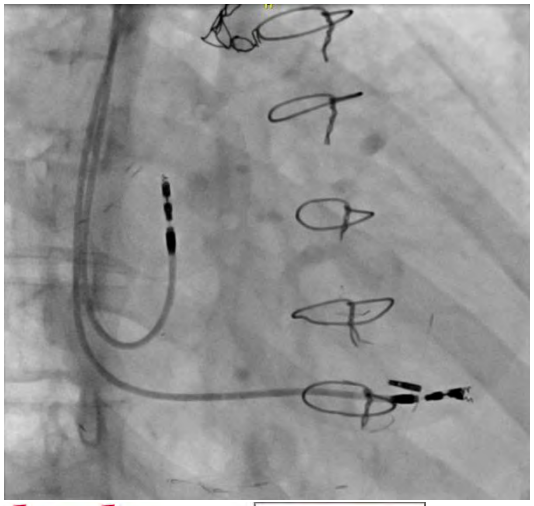

AVC
4-K
AVC
APLAX
Peak Systolic Strain (Mid)
ANT-SEPT
SEPT
ANT
LAT
INF
POST
20.0
-20.0
%

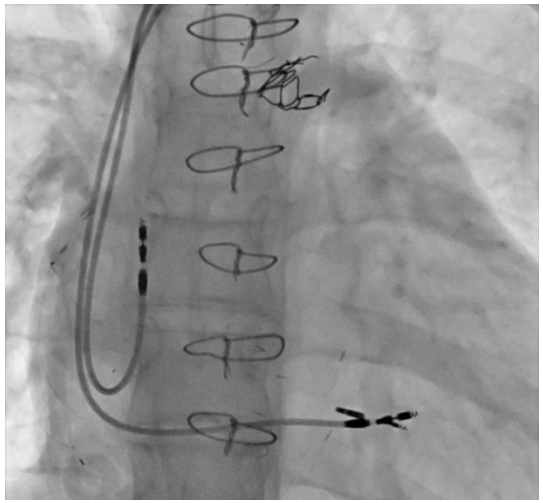
CASE #2

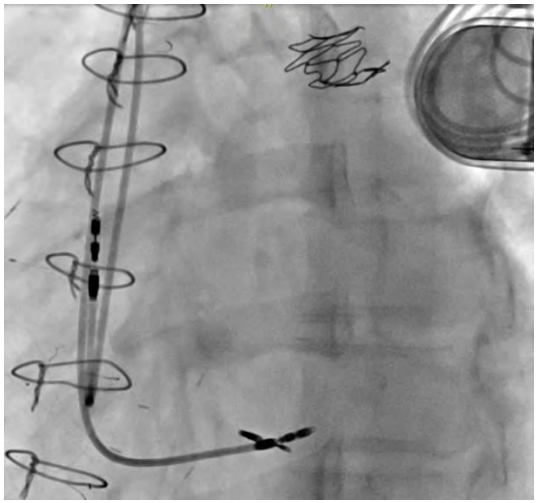




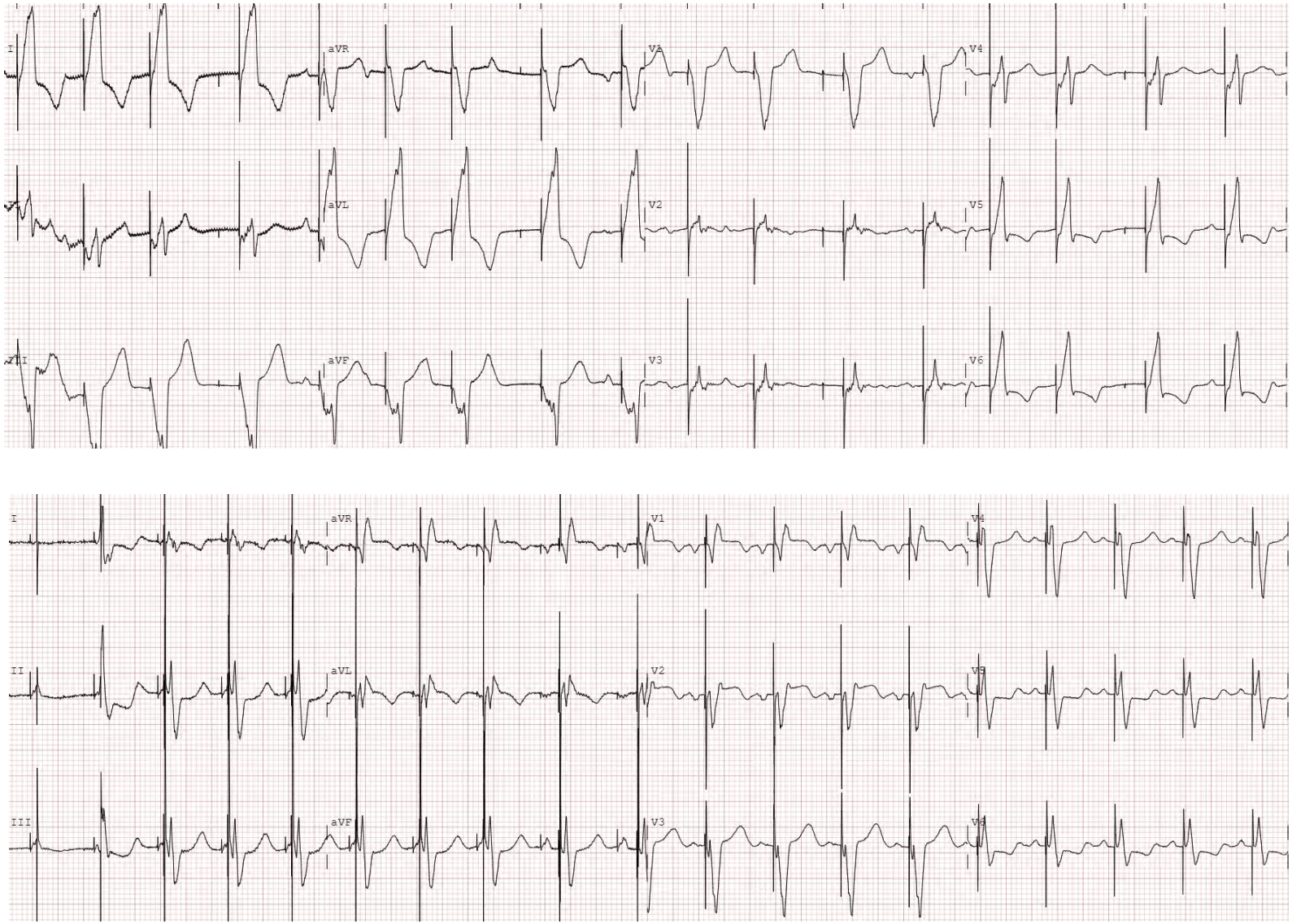








CASE #2



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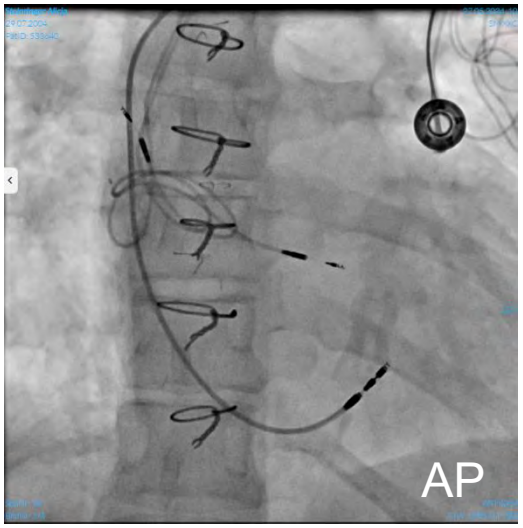
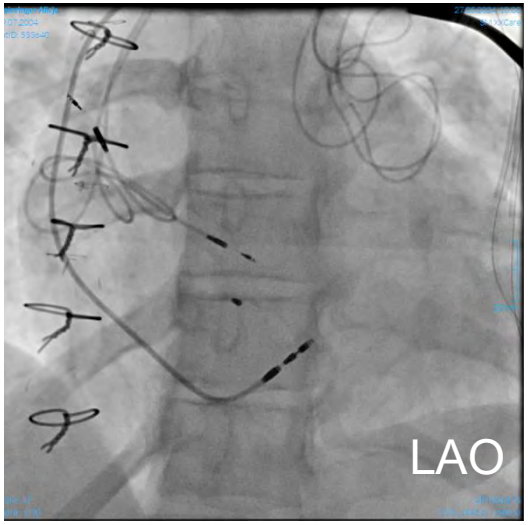
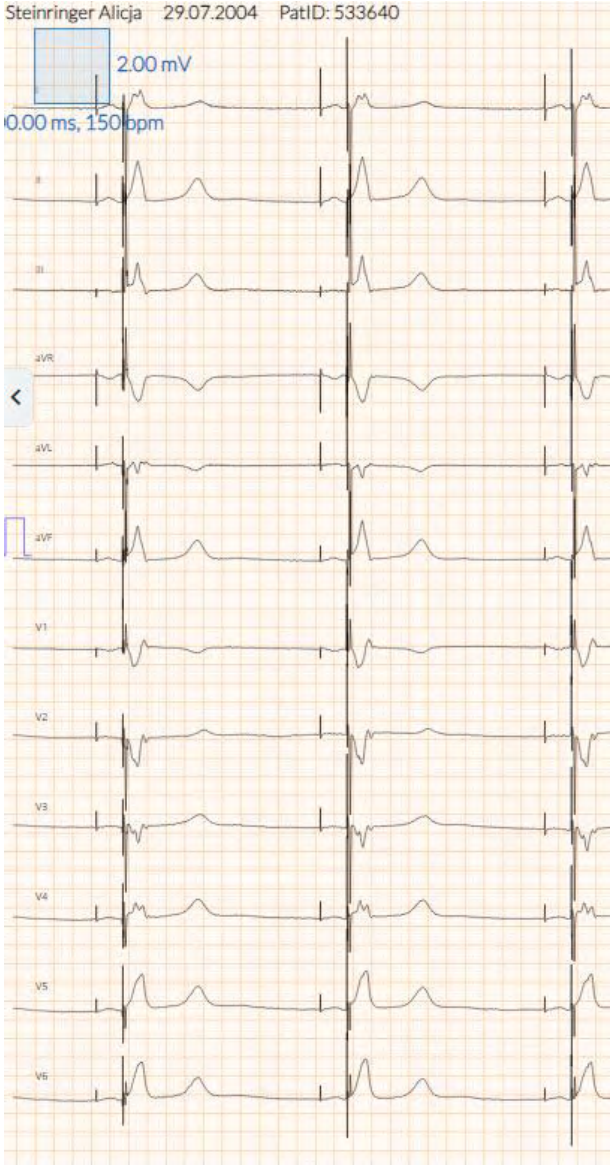
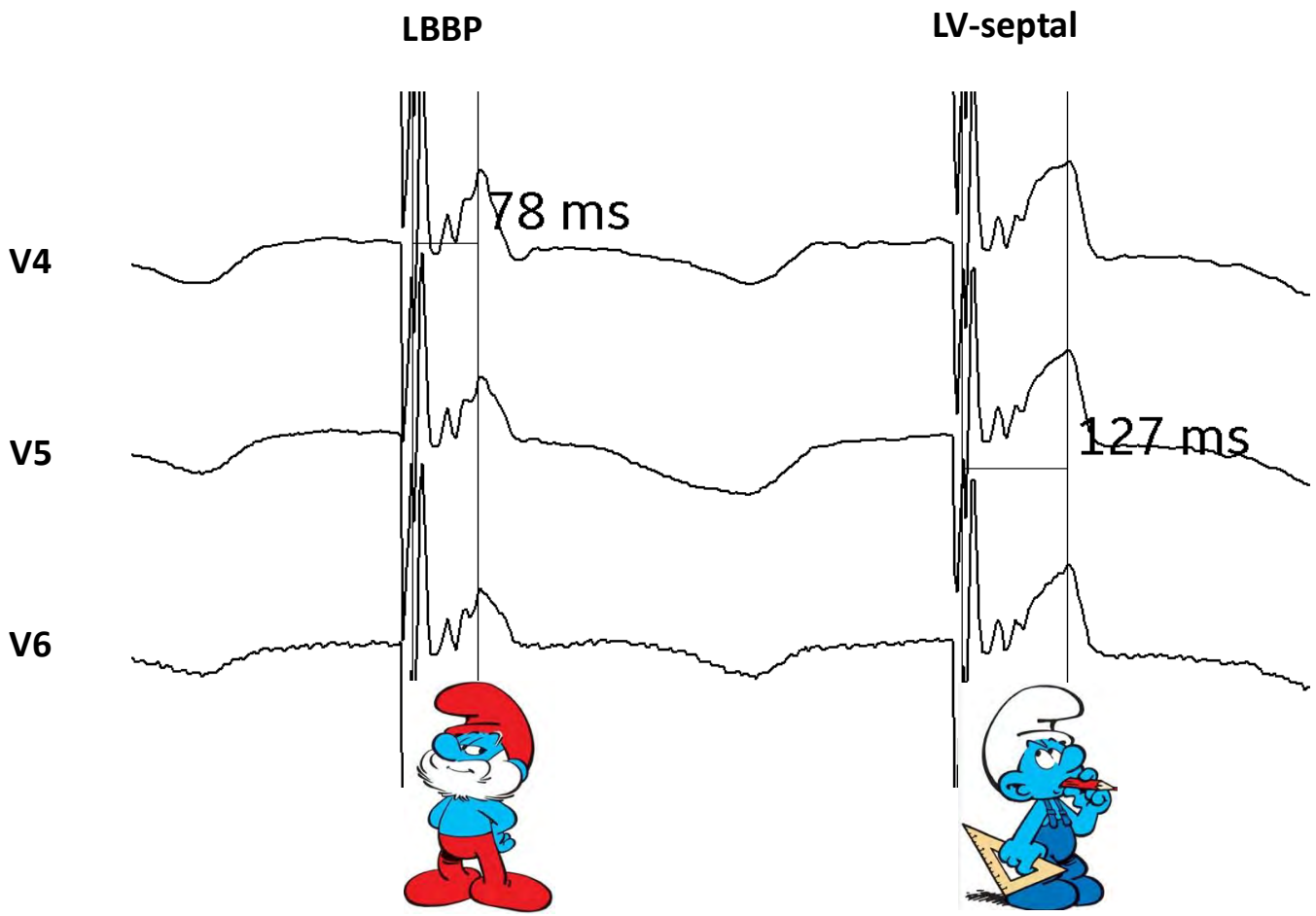
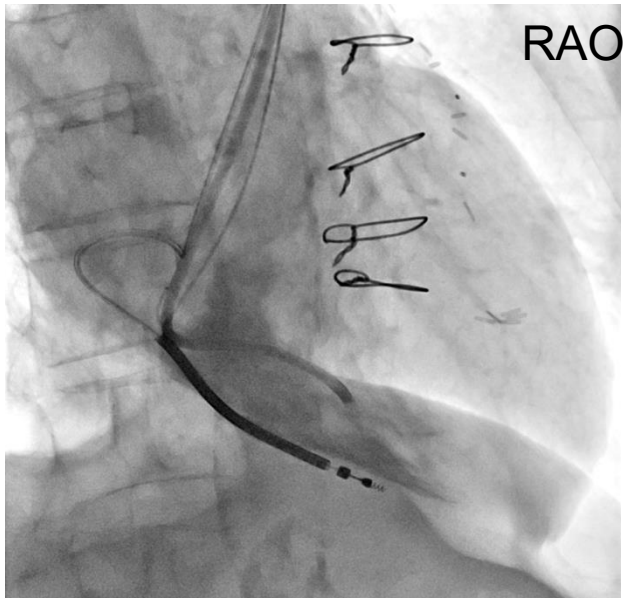

AP

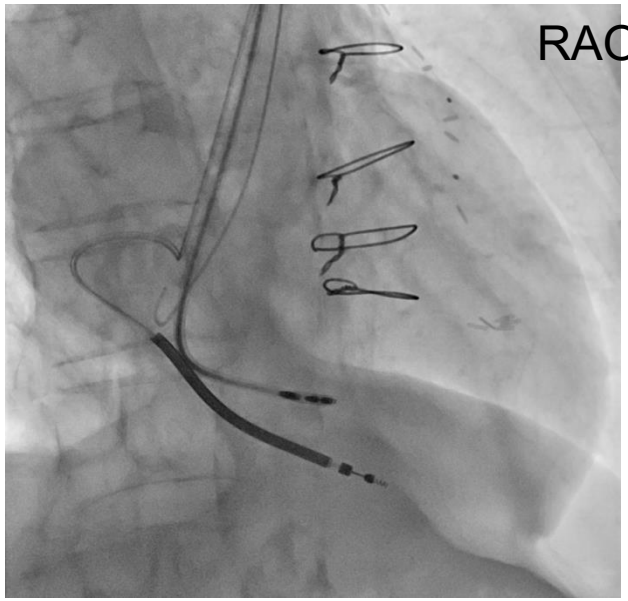

LAO

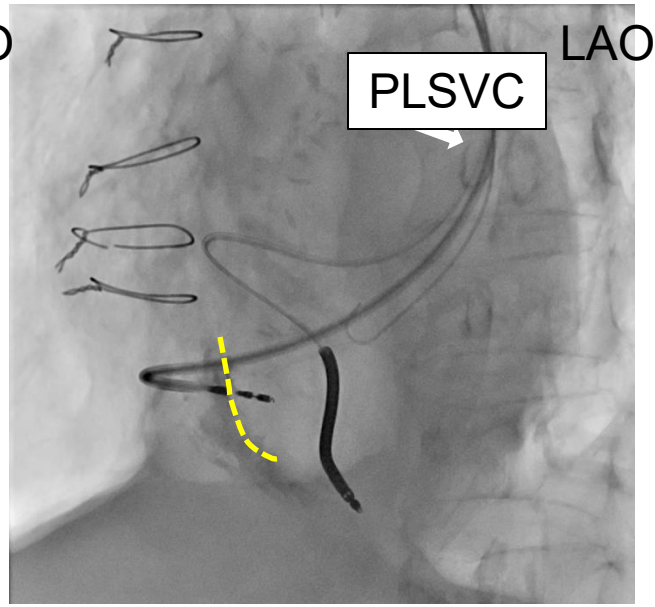

Steinringer Alicja 29.07.2004 PatID: 533640
2.00 mV
0.00 ms, 150 bpm
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6

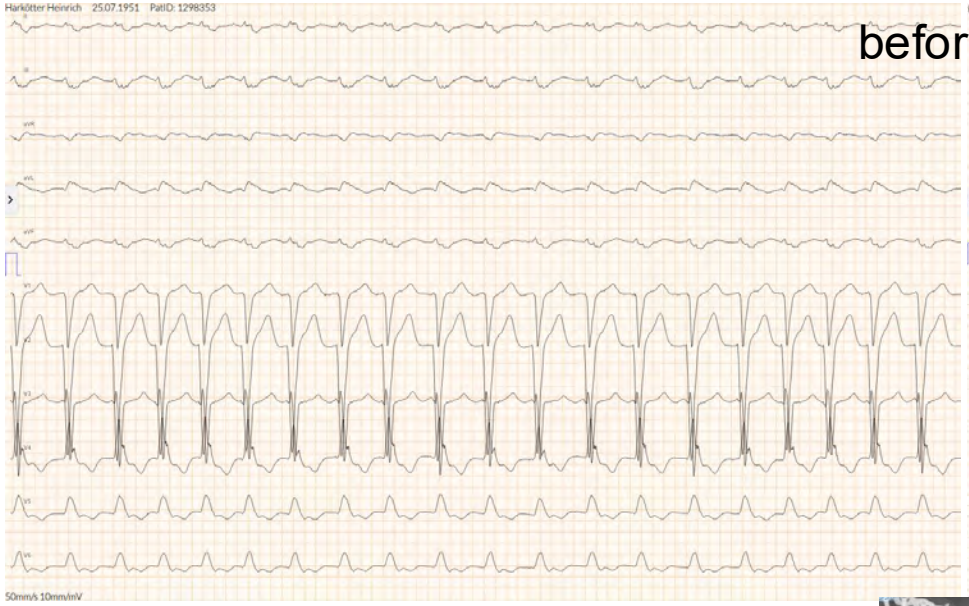

LBBP
LV-septal
V4
V5
V6
78 ms
127 ms

LBBAP through PLSVC





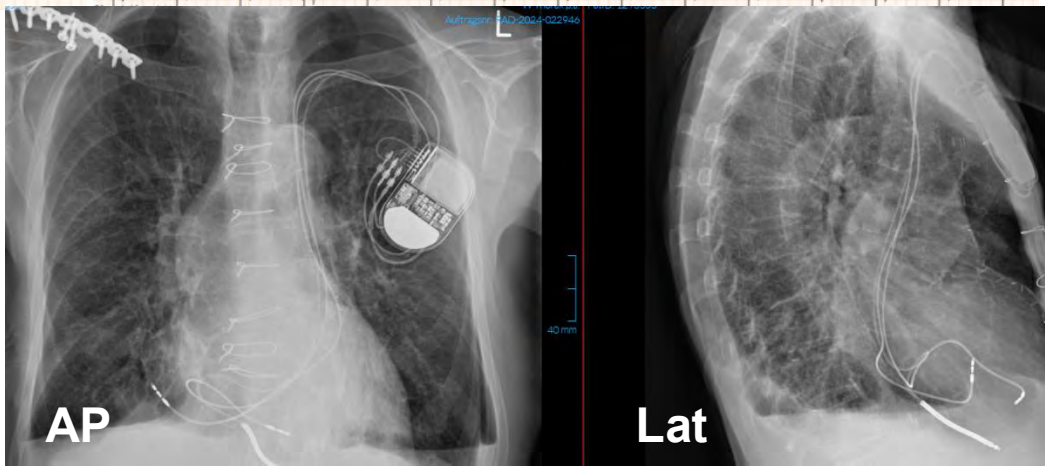




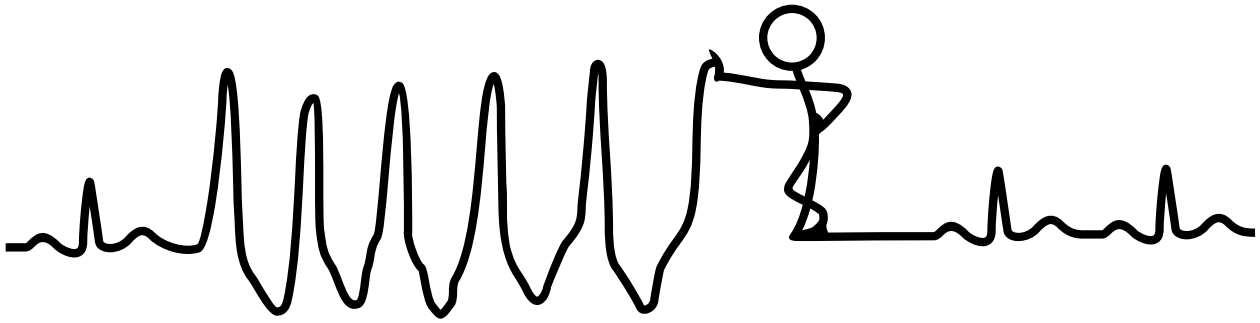
Initial QRS – 195ms, EF 15%, ICM

After implant QRS – 145ms

LVAT 52ms, V6V1 interpeak 56ms



Thank you for your attention!



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- CASE #5

Male, 71y

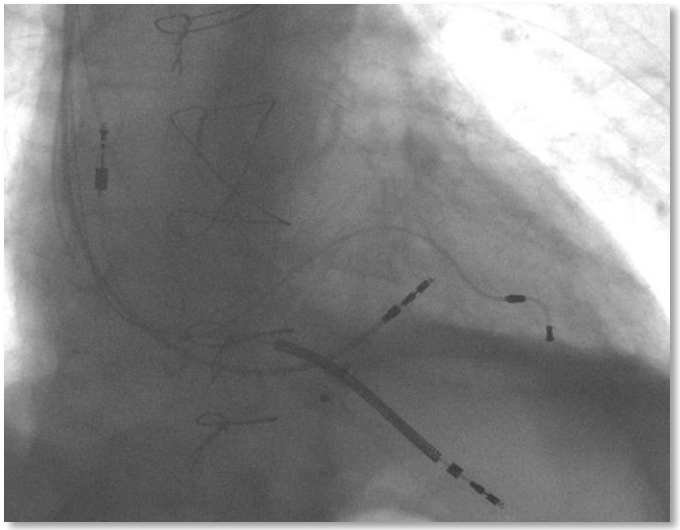
ICM, STEMI, EF 30%

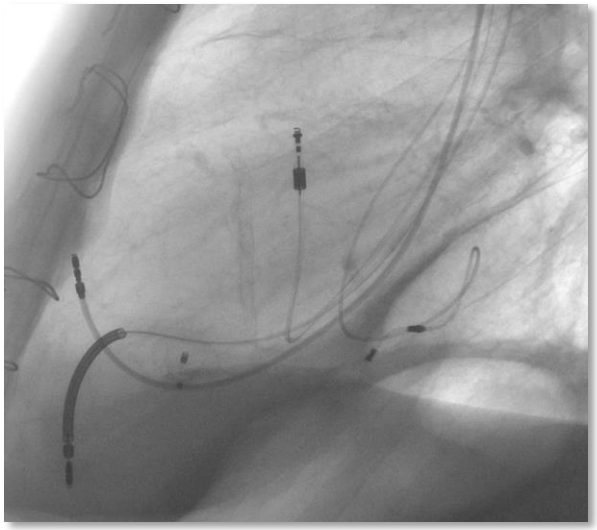
CABG & PTCA – 2016

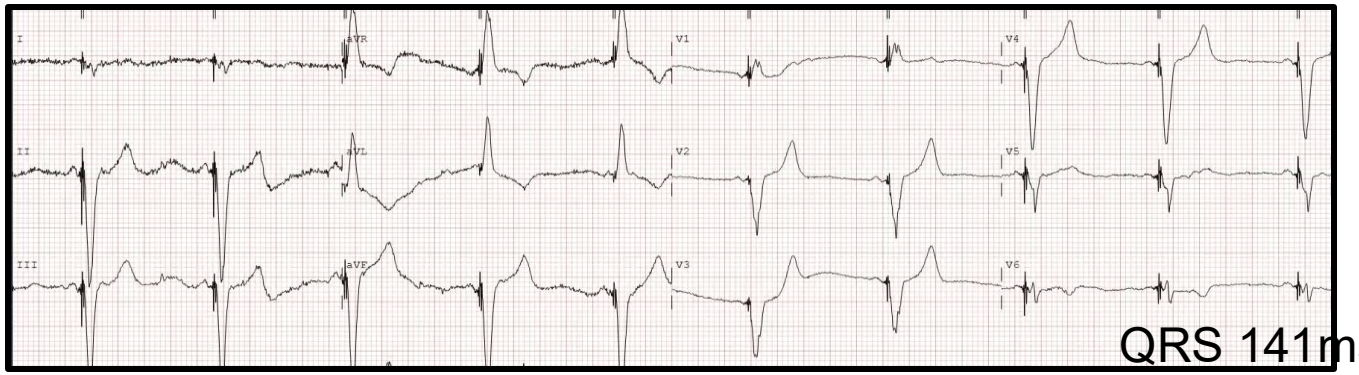
Interventional VSD closure – 2016

CRT-D (triventricular) Implantation – 2016

Triventricular CRT-D

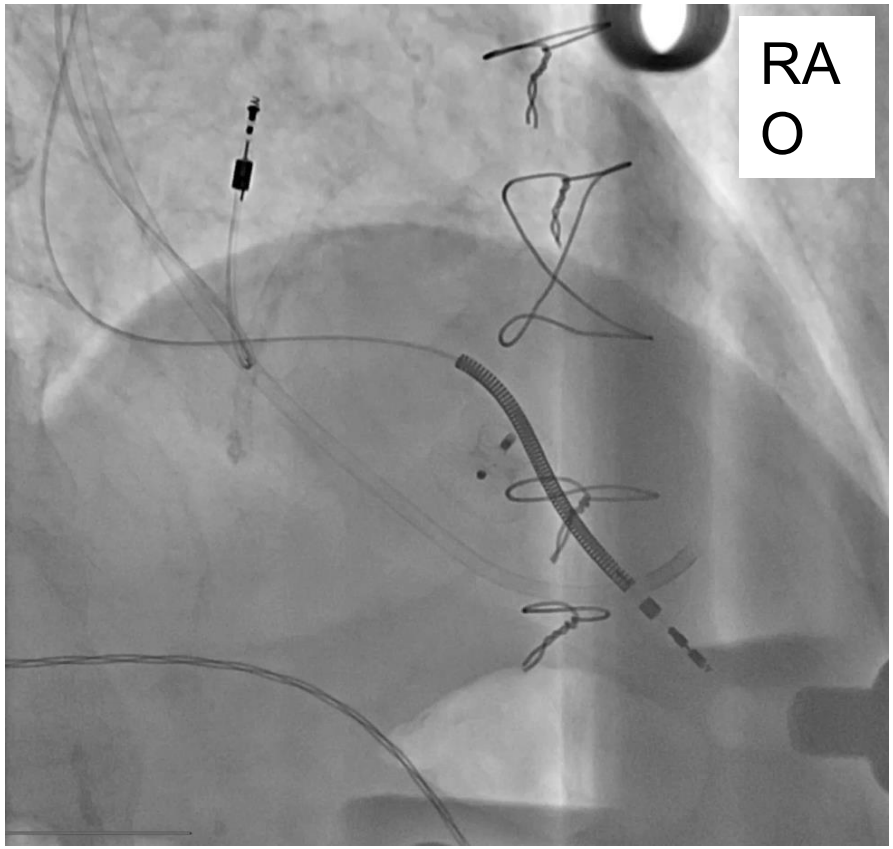


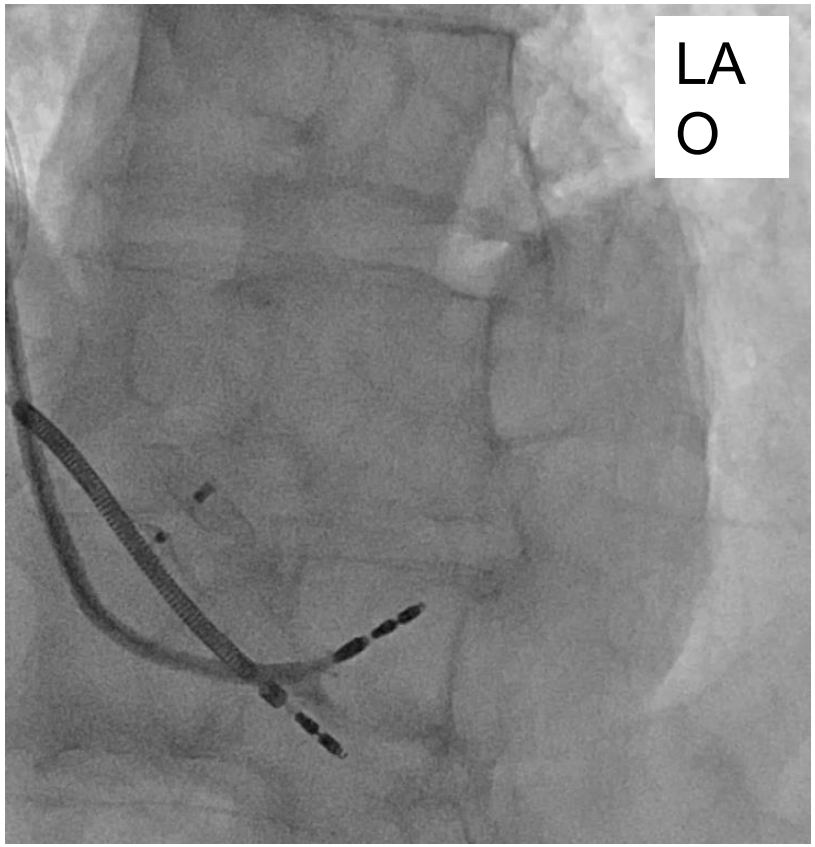


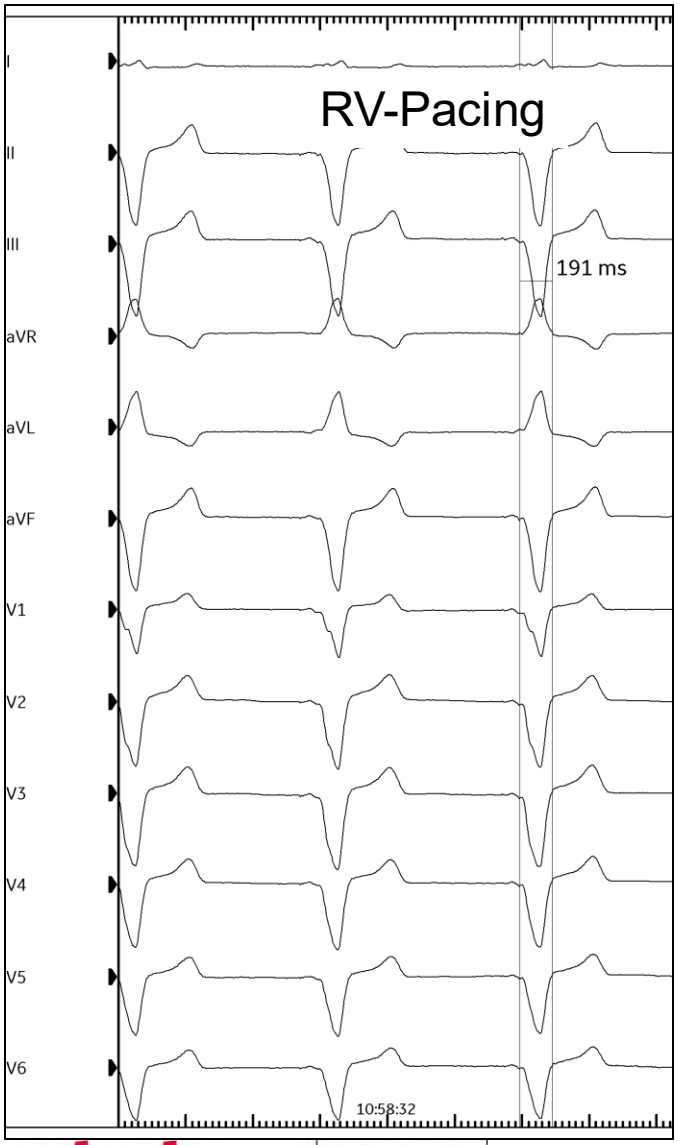


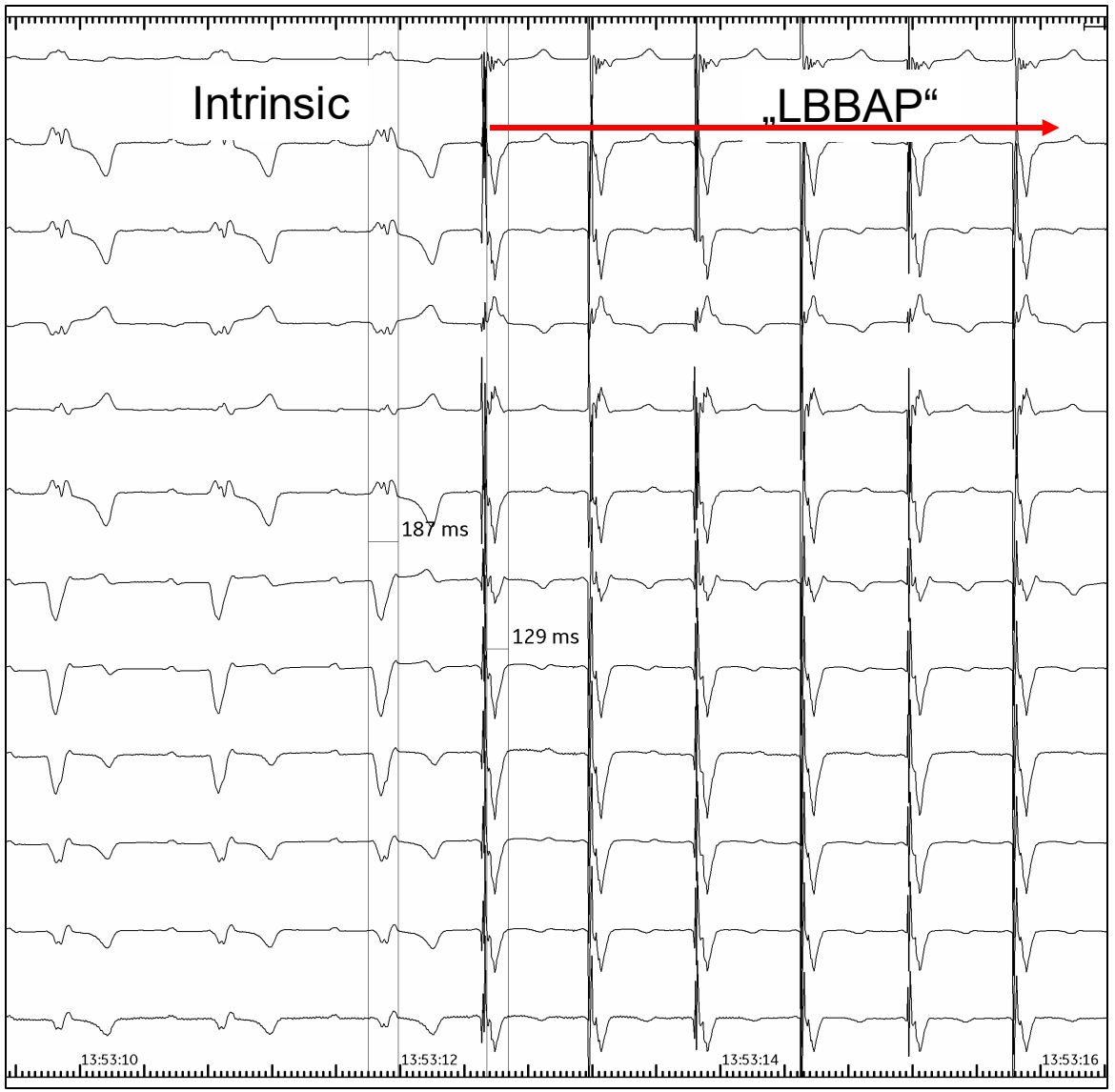
QRS 141ms

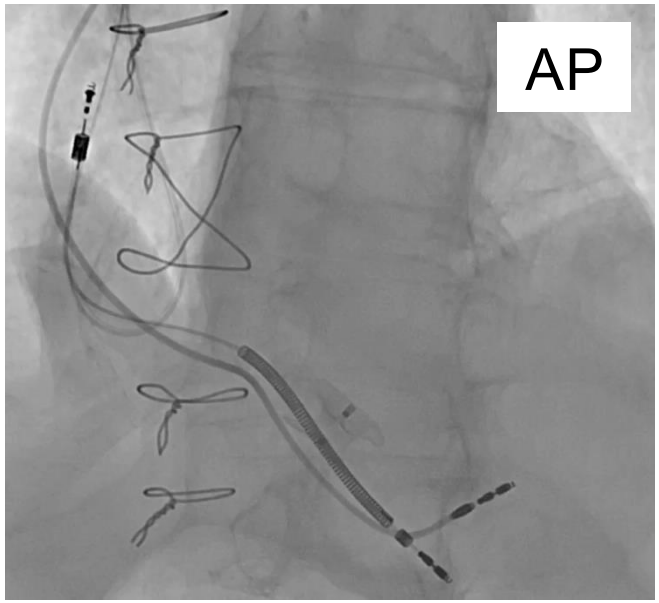
LBBAP?






RV-Pacing
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
191 ms
10:58:32


Intrinsic
„LBBAP“
187 ms
129 ms
13:53:10
13:53:12
13:53:14
13:53:16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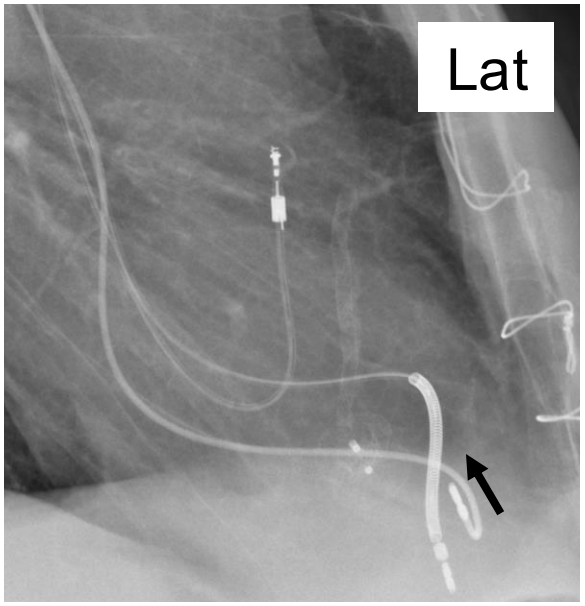
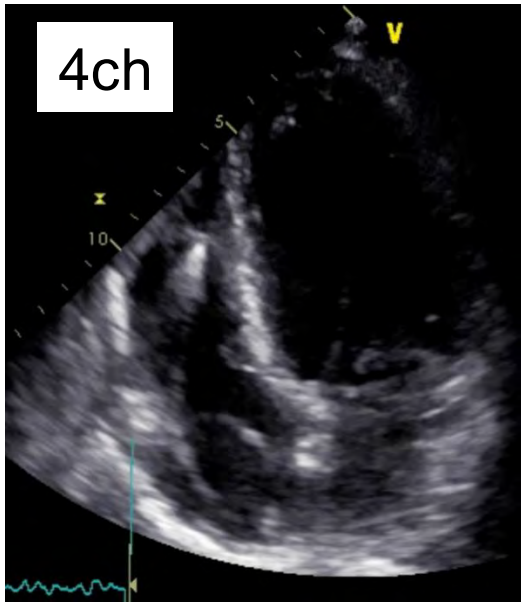
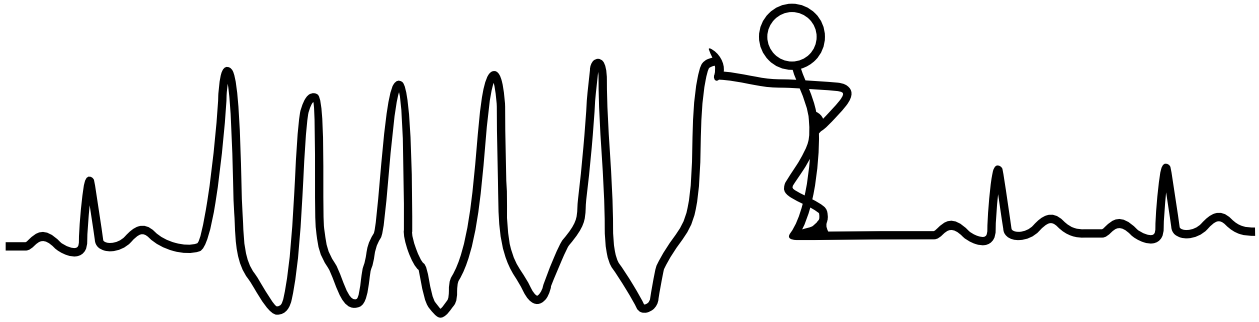

Lat


4ch

Thank you for your attention again!



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