



Minimal invasiveness, maximum safety: pacing therapy, evolves thanks to transcatheter pacing system

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Cardiac Pacing up to 2015: 50 years worldwide experience and advantages

- Extended Battery longevity
- Lead performance
- Device programming
- Home monitoring

Cardiac Pacing up to 2015: limitations

- Basic design unchanged :
subcutaneous pulse generator and 1-2-3
transvenous lead(s)
- Pocket: source of complication
(hematomas, erosion, infection)
- Lead(s): dislocation, perforation, failure

Cardiac Pacing up to 2015

Unmet needs

- Difficult or absent venous access
- Patients with infection related to conventional pacing system
- Very young patient
- Right/left ventricle not reachable

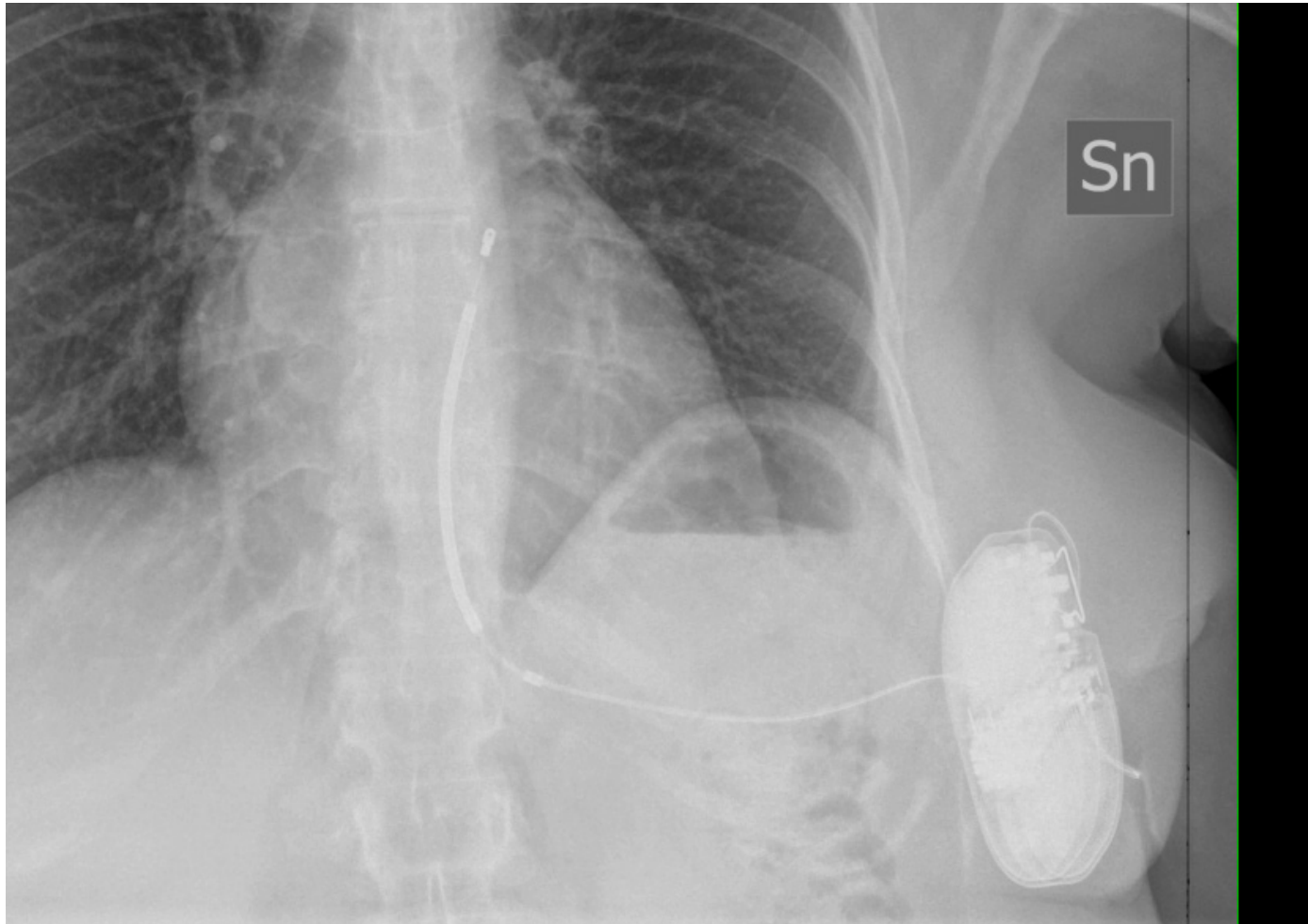
Patient #1 Medical History

- Female, 53 yo
- 1999: non Hodgkin lymphoma, Chemio
- 2000: drug related cardiomyopathy
- 2010: thyroid cancer, surgery chemio and radio
- 2015: very poor ejection fraction

Patient #1 Medical History



Patient #1 Solution. SICD



Patient #2 Medical History

- Male, 62 yo
- Aortic regurgitation in bicuspid aortic valve
- 2010: valvular aortic root replacement
- 2013: very poor ejection fraction and atrial fibrillation. CRT-D implant
- Feb. 2015: ICD shocks for high rate atrial fibrillation. No drug showed rate control

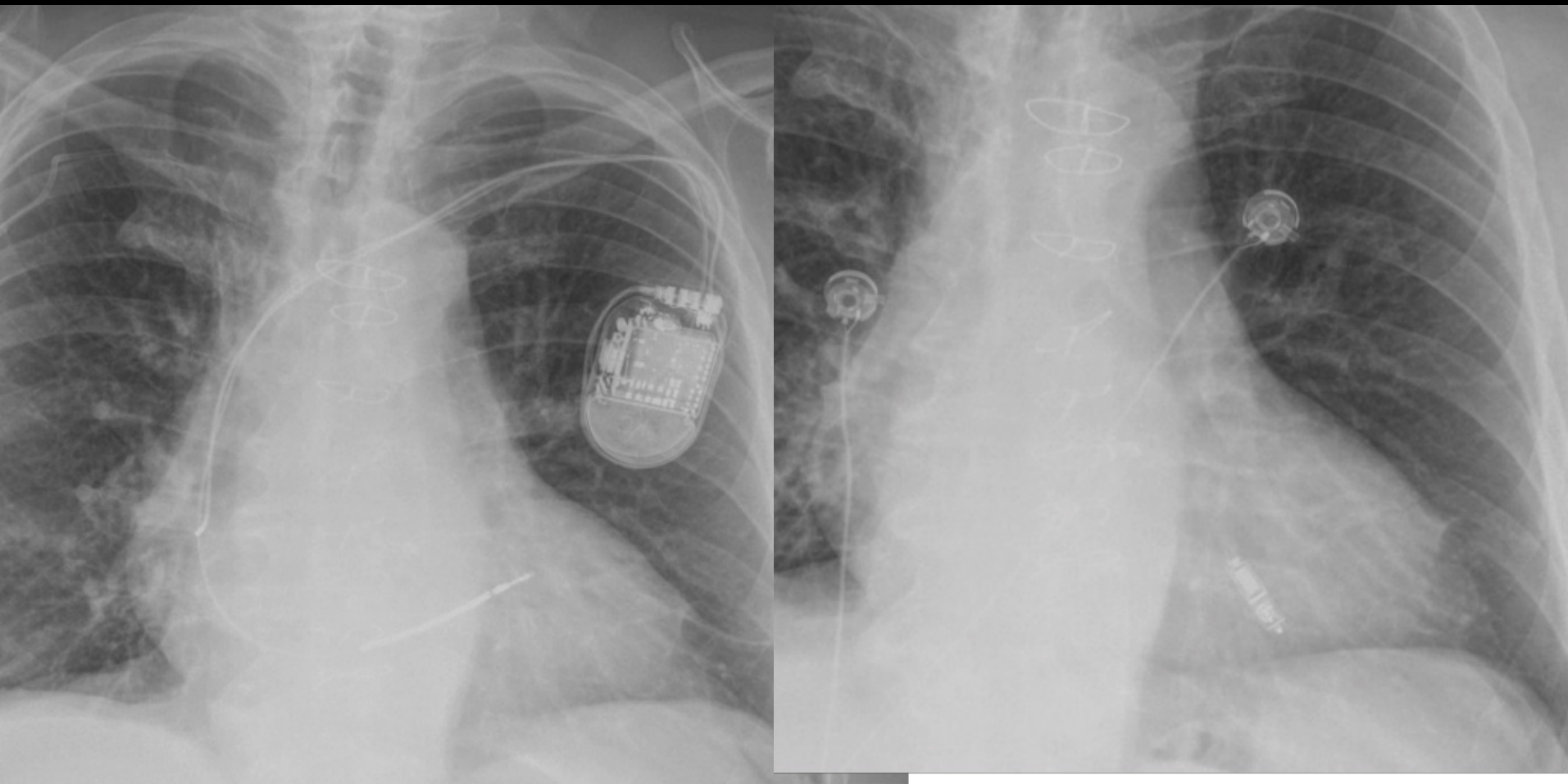
Patient #2 Medical History

- Feb 2015: AV node ablation, PM dependent
- August 2015: back pain, fever. TC-PET: infection in pectoral pocket, aortic root, vertebral column. Para paretic patient
- AB, but no improvement

Patient #2 Solution

- ▣ October 2015: complete CRT-D extraction and Micra implant
- ▣ March-June 2016: vertebral MR with total regression of the infection foci.
Patient free to walk

Patient #2 . Solution

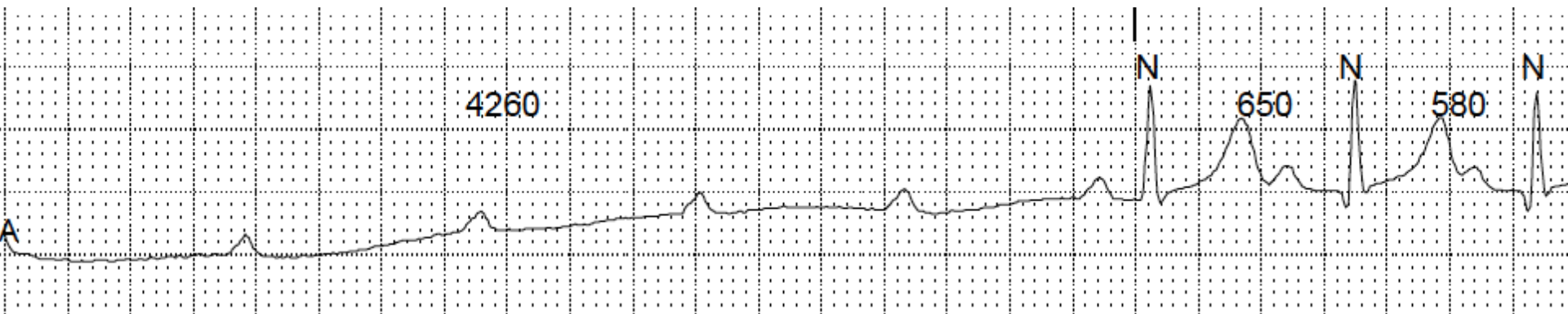
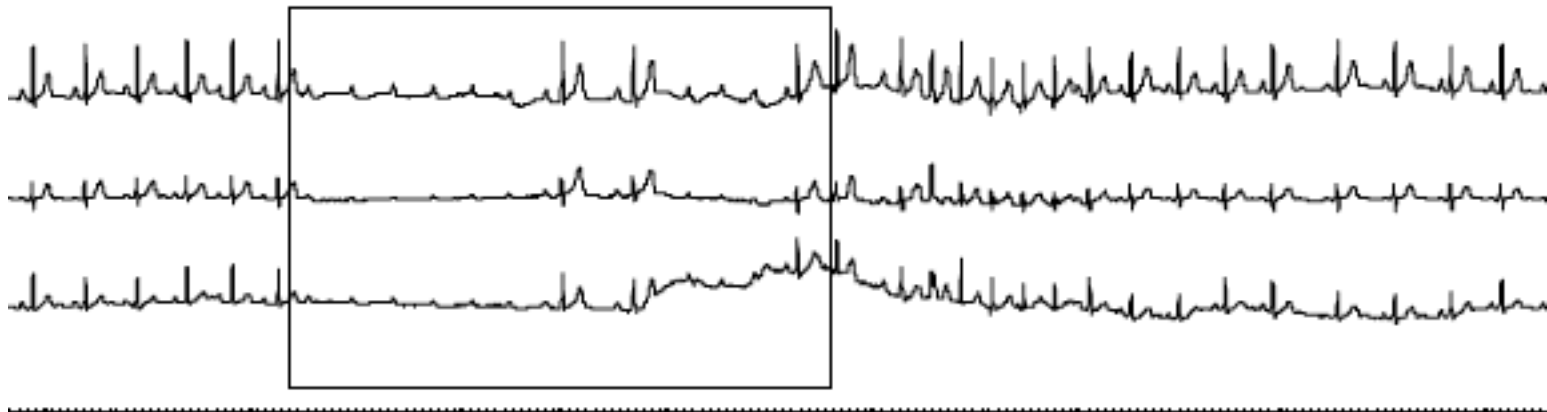


Patient #3 Medical History

- Female
- No heart disease or systemic disease
- Sport-woman
- Since childhood, frequent spell

Patient #3 Holter monitoring

But..She is 28 years old



Patient #3 Solution

- Waiting Micra implant because she is now pregnant

Patient #4 Medical History

- Female, 76 year old
- Type 1 Diabetes, Hypertension
- Rheumatic heart disease
- 1987: Prosthetic biological mitral valve implant
- 1997: Redo mechanical mitral valve implant and biological tricuspid valve implant. Epicardial PM for Atrial fibrillation and bradycardia

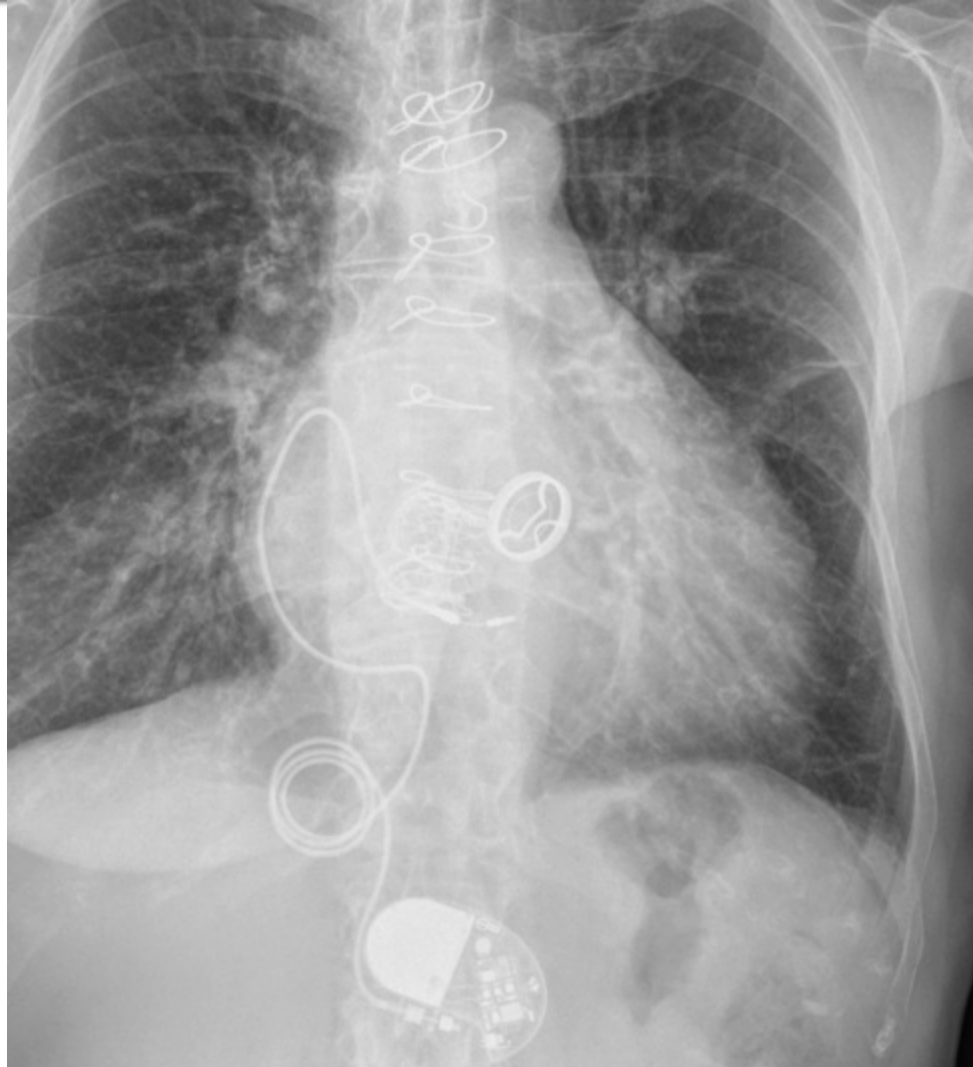
Patient #4 Medical History

- ▣ 2001: prosthetic tricuspid valve malfunction (stenosis)
- ▣ 2002 : redo tricuspid valve implant with biological valve. New epicardial PM
- ▣ 2002 : breast cancer treated with chemio and Rx.
- ▣ 2011: mild tricuspid valve stenosis

Patient #4 Medical History

- 2012:tricuspid valve stenosis (mean grad. 10-11 mmHg; area 0,5 cm)
- 2012:Successful Implant of a TAVI via right atriotomy in tricuspid position.
- 2015: Pacemaker intermittent loss of capture and low sensing. Reprogramming.
- 2016: Increased threshold.

Patient #4 Chest X-ray



TV before Micra

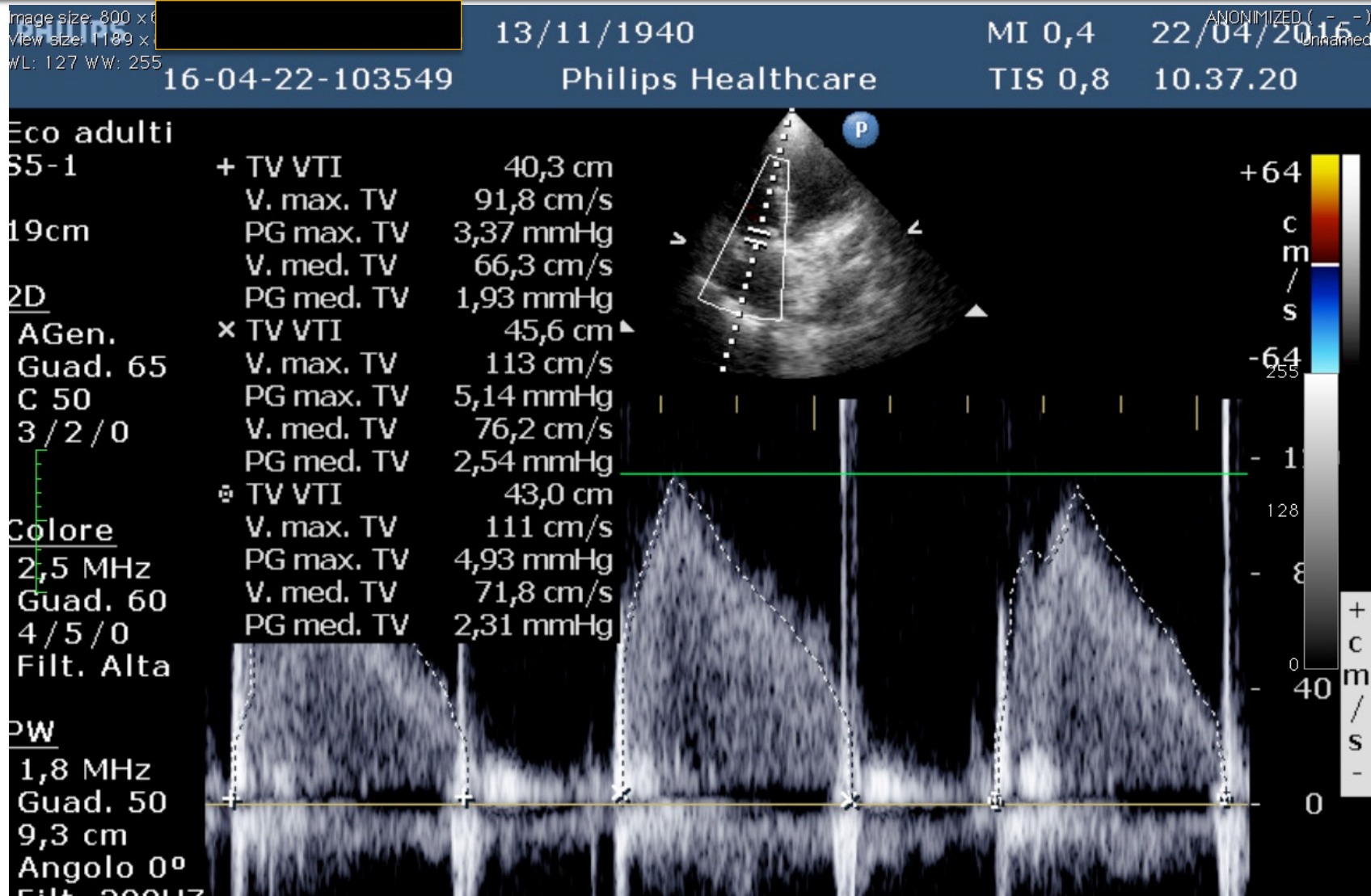
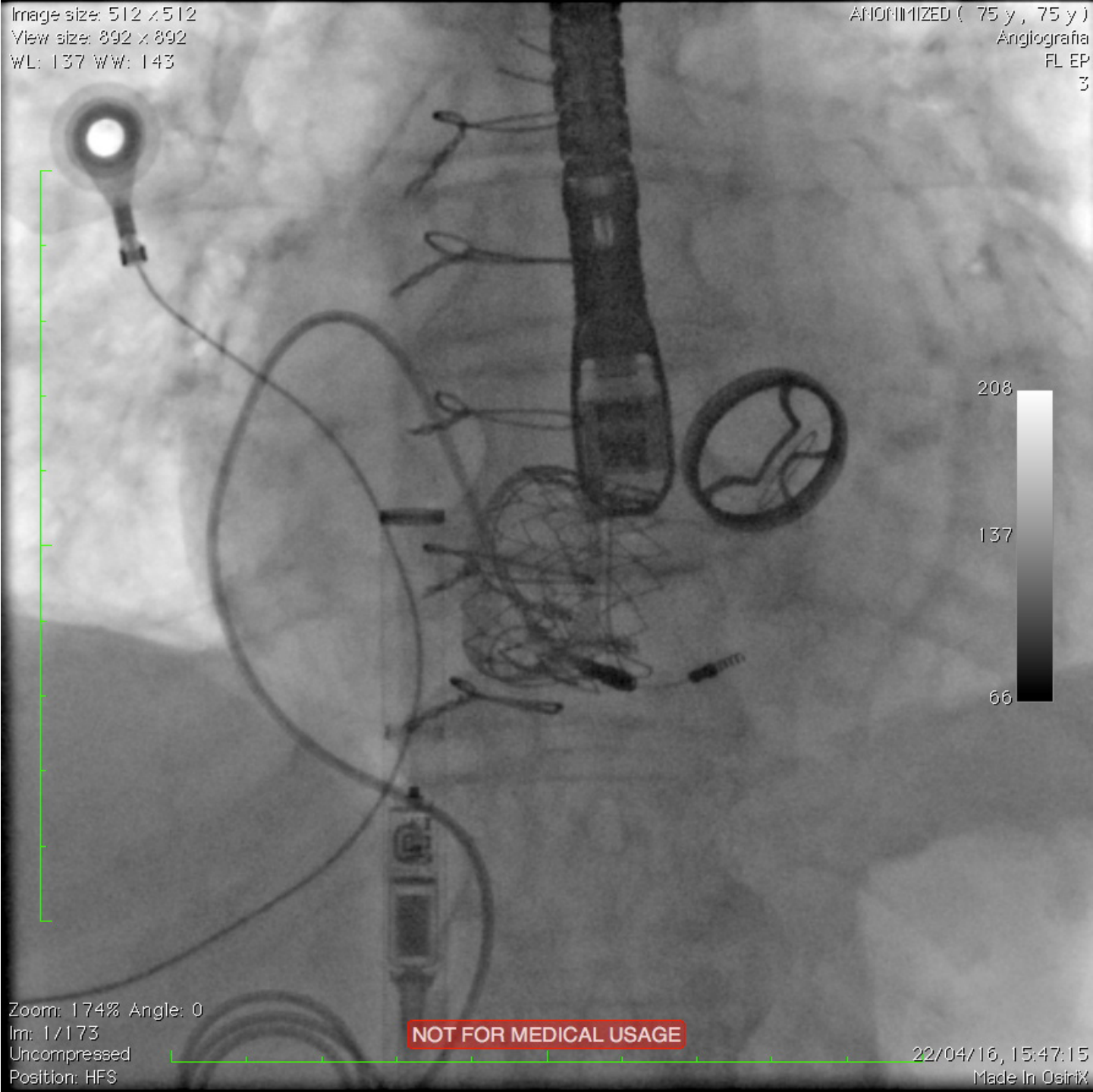


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ANONIMIZED (75 y, 75 y)
Angiografia
FL EP
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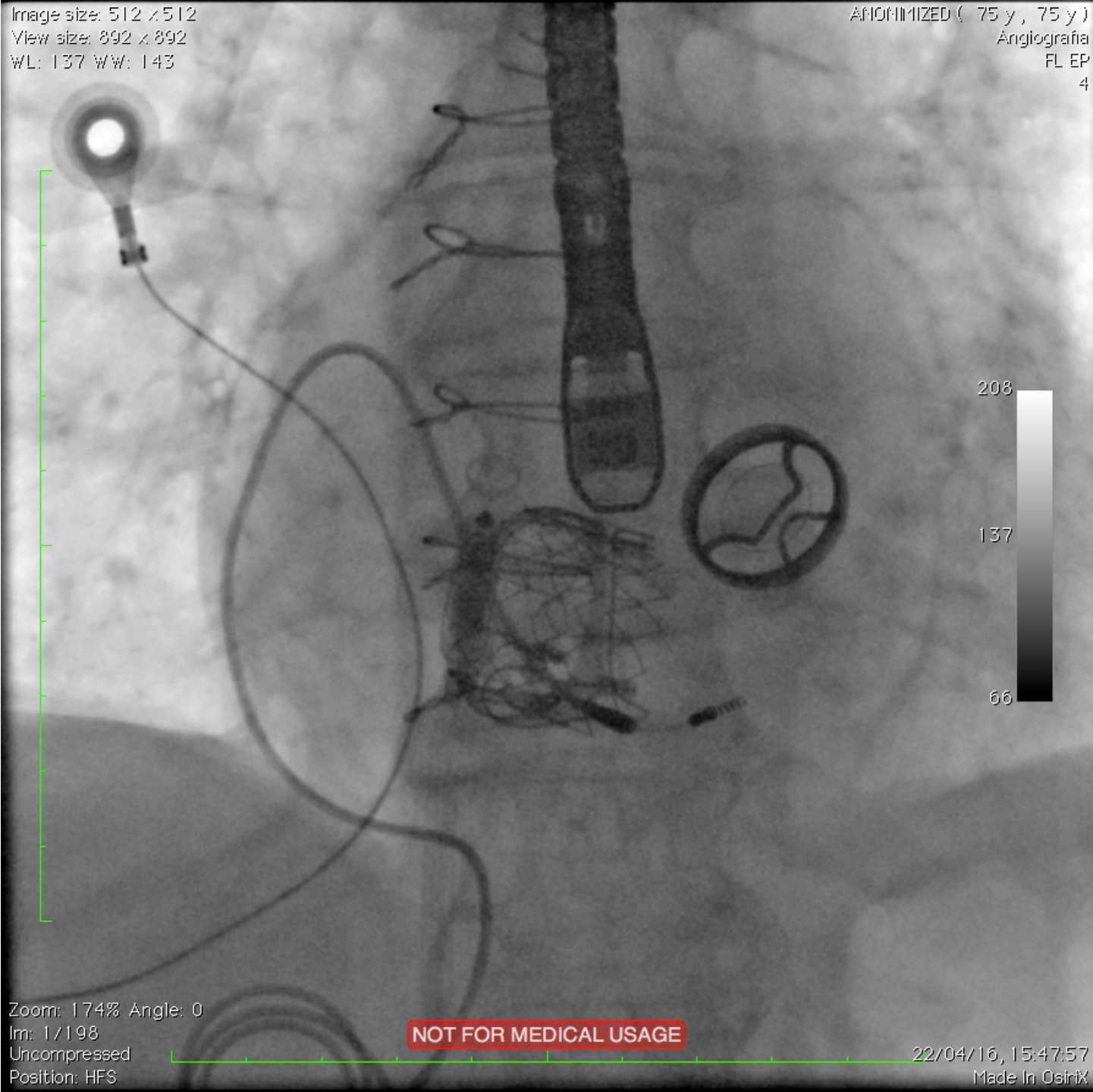
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NOT FOR MEDICAL USAGE

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ANONIMIZED (75 y , 75 y)
Angiografia
FL EP
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Zoom: 174% Angle: 0
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Position: HFS

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ANONIMIZED (75 y , 75 y)
Angiografia
FL EP
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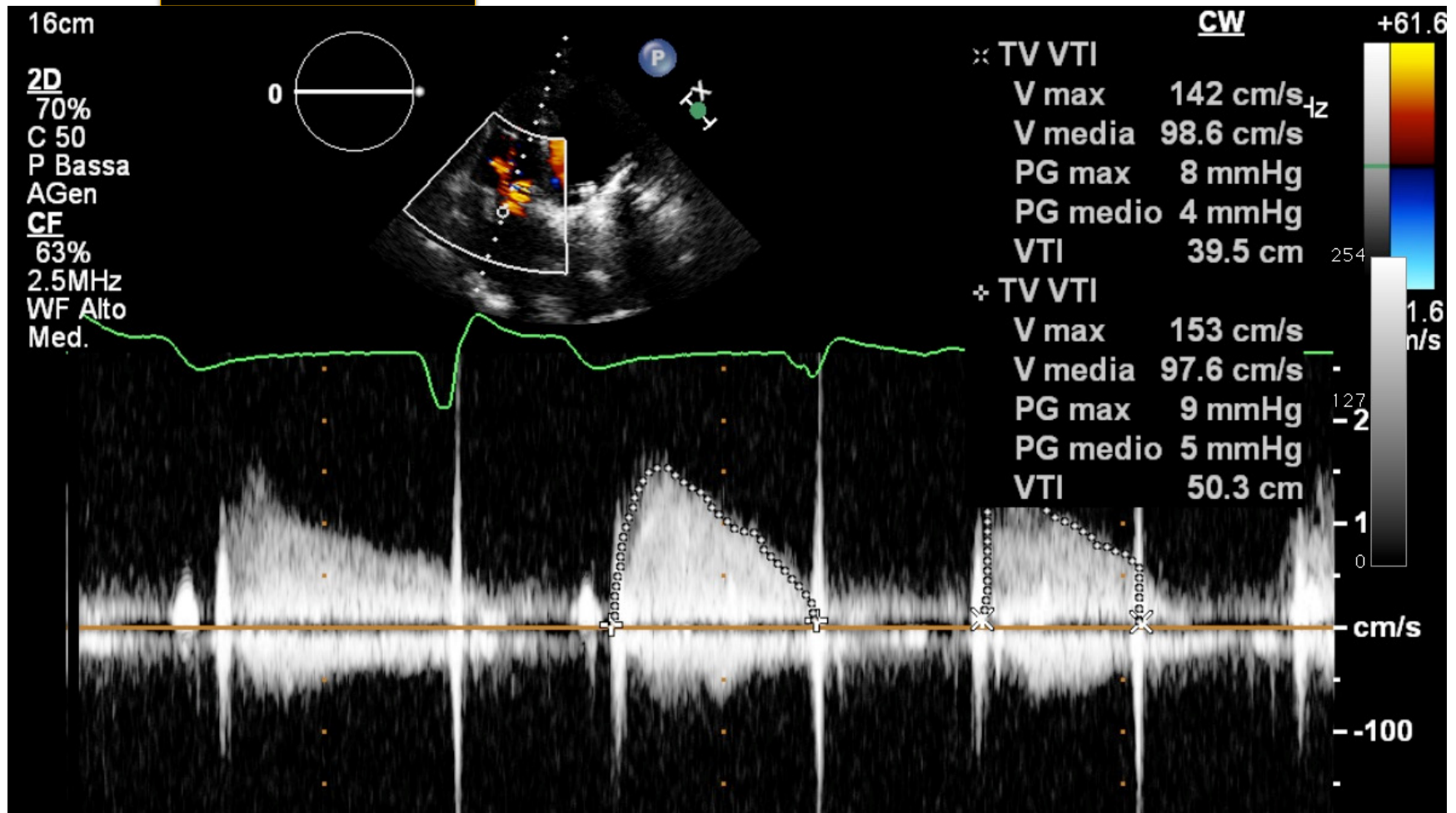


Leadless pacemaker.



Parameter	LCP	TCP
Polarity	Bipolar	Bipolar
Pacing modes	VVI (R)	VVI (R)
Rate modulation mechanism	Blood temperature	3-axis accelerometer
Battery technology	Lithium carbon monofluoride	Lithium silver vanadium oxide / carbon monofluoride
Programmer	St. Jude Medical, model 3650	Medtronic, model 2090
Energy capacity (mAh)	248	120
Estimated longevity		
ISO standard, yrs*	9.8 yrs	4.7 yrs
Alternative setting, yrs†	14.7 yrs	9.6 yrs
Size (h × w), maximum thickness, mm	42 mm × 5.99 mm	25.9 mm × 6.7 mm
Volume (cc)	1.0	0.8
Fixation mechanism	Helix (screw-in)	Tines

TV after Micra.



Micra TPS: our experience

Sex	Implant date	Age	Cause	ECG	Attempt	Threshold	Implant time	X-Ray time
F	17/11/15	69,00	Inf	FA	3	.25	65	17,00
M	17/10/15	62,00	inf	FA	1	.25	64	5,00
M	10/12/15	49,00	inf	RSPar BAV	2	0.25	58	6,00
F	19/02/15	73,00	inf	RS Par BAV	3	.25	116	11,00
F	22/04/16	76,00	No vein	FA	2	.5	60	7,00
F	07/06/16	80,00	Inf	RS Par BAV	1	.25	53	5,00
M	02/09/16	71,00	Inf	FA	4	.25	95	19,00
		68,57			2,28	.26	73	10,00

Conclusions: total transcatheter solution for heart disease

- CAD: percutaneous total revascularization**
- Valve disease: transcatheter valve replacement**
- Aorta disease: Endovascular Transcatheter device**
- Rhythm management: transcatheter pacing, subcutaneous ICD**

Conclusions:

- ▣ **New devices show minimal invasiveness and maximum safety.**
- ▣ **Special patients at the present time deserve transcatheter pacing system**
- ▣ **In the next years, new technology and evolution of the present pacing/ICD transcatheter systems will be the standard of care.**

First Micra Implant in Cuneo: the crew

