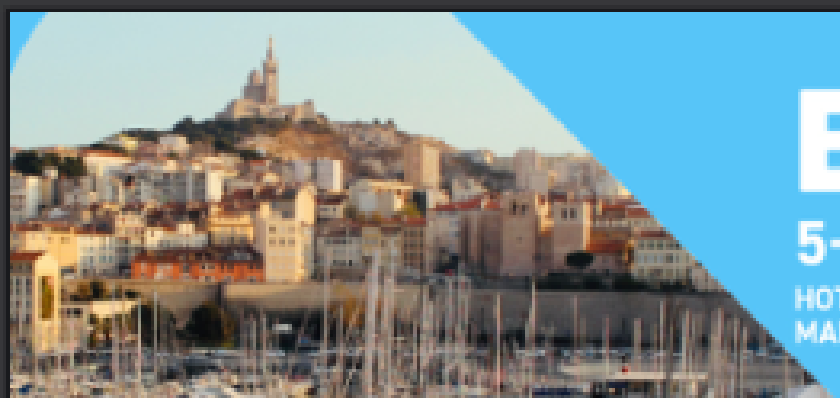


ELECTRA

5-6 DÉCEMBRE 2024

HOTEL VILLA MASSALIA,
MARSEILLE I FRANCE

18èmes journées françaises
pratiques de rythmologie
& de stimulation cardiaque

WWW.CONGRES-ELECTRA.COM

2004 - 2024
20 ans
ELECTRA

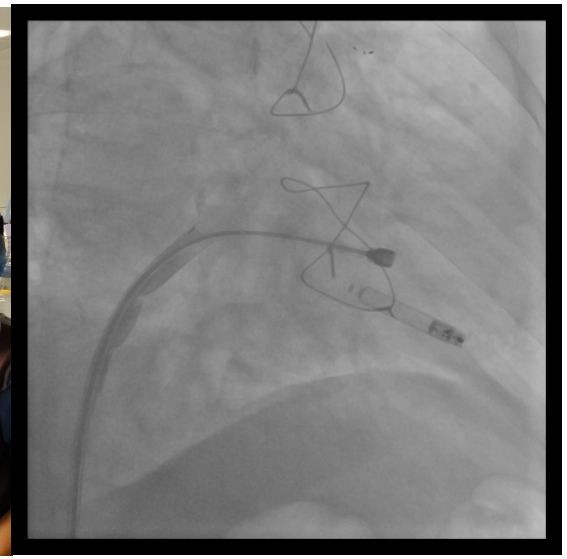
Stimulation sans sonde AVEIR
Retour d'expérience

CHU GRENOBLE ALPES

UGA Université Grenoble Alpes

Le leadless au CHU de Grenoble … une longue histoire…

2 premières implantations pm sans sonde (Nanostim) 19/11/2013

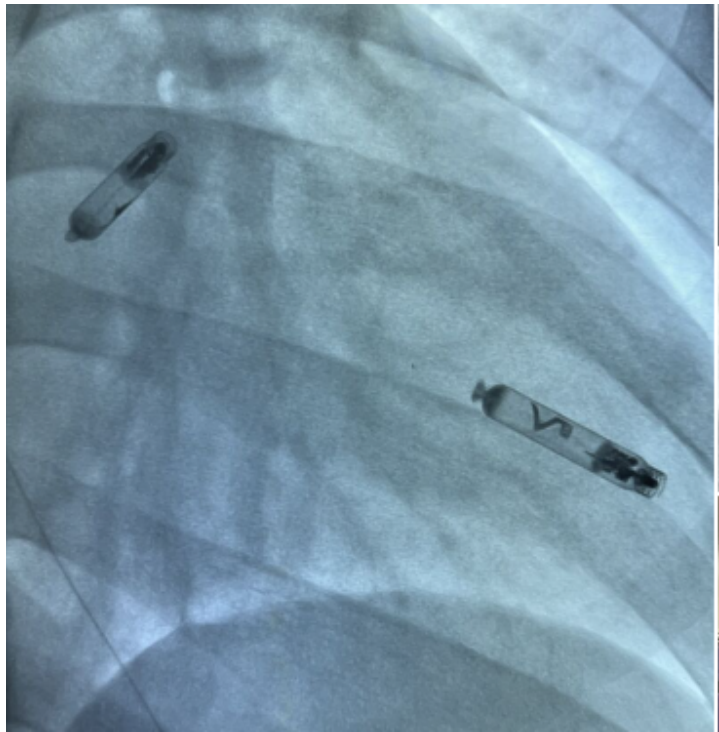


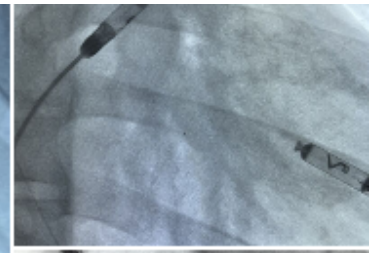
2013-2016 Nanostim

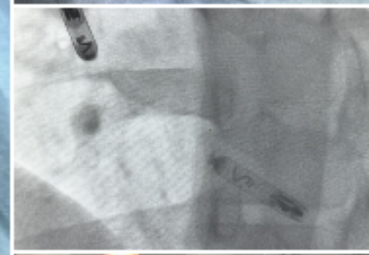
2022 LEADLESS 2 et Aveir DR i2i

2023 Aveir VR

Nov 2024 2 Premières implantations
Double leadless Aveir DR







Le PM sans sonde : pourquoi??

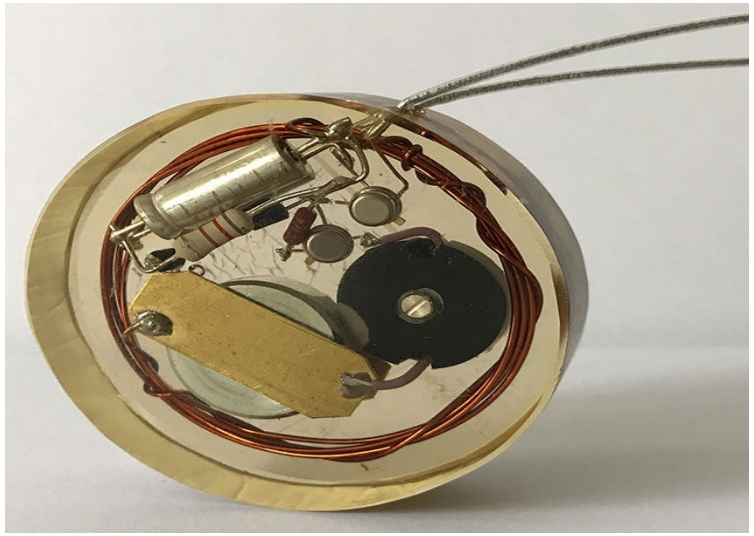
Complications after cardiac implantable electronic device implantations: an analysis of a complete, nationwide cohort in Denmark

Rikke Esberg Kirkfeldt[1,2*], Jens Brock Johansen[2,3], Ellen Aagaard Nohr[4], Ole Dan Jørgensen[2,5], and Jens Cosedis Nielsen[1]

Transvenous pacing : a very long story since 1958/ still imperfect

- *6000 Danish patients*
- *Cumulative incidence of complications at 6 months*

Any	10%
Major	**6%**
Lead reintervention	3%
PNO requiring drain	1%
Perforation no drain/drain	0,8%/0,4%
Infection	0,6%
Pocket revision	0,2%
Hematoma requiring reintervention	0,2%



European Heart Journal 2014; 35, 1186–1194

Le PM sans sonde : pourquoi??

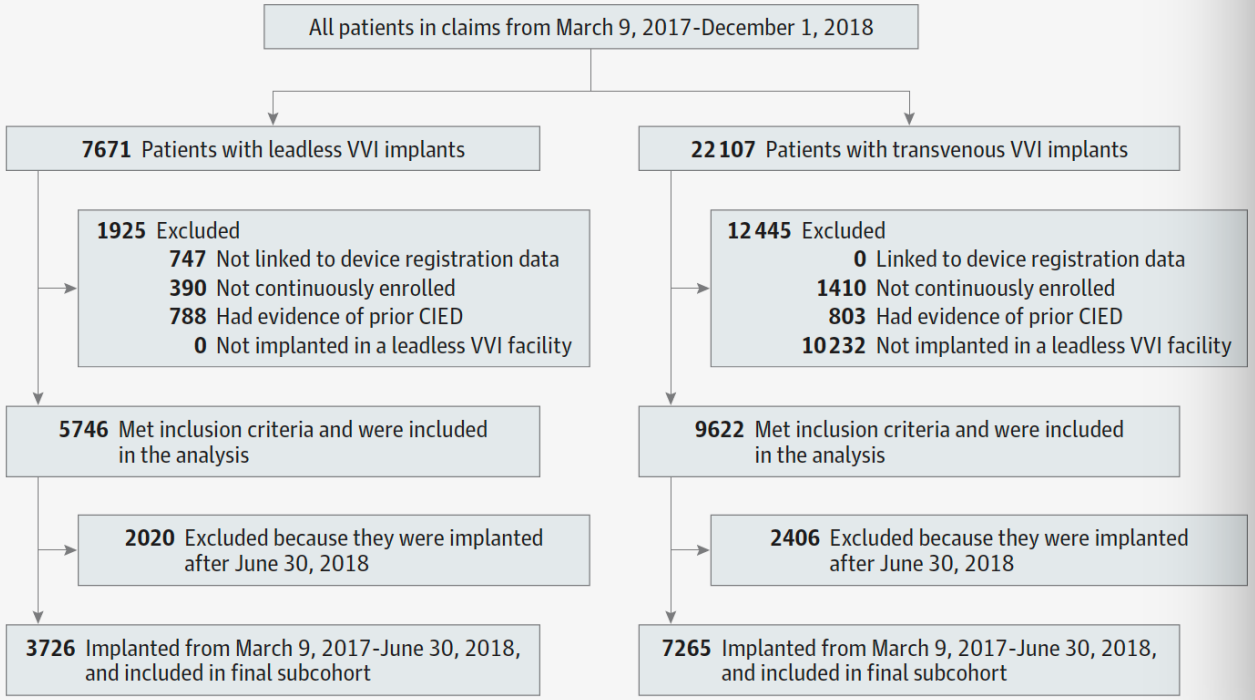
JAMA Cardiology | Original Investigation

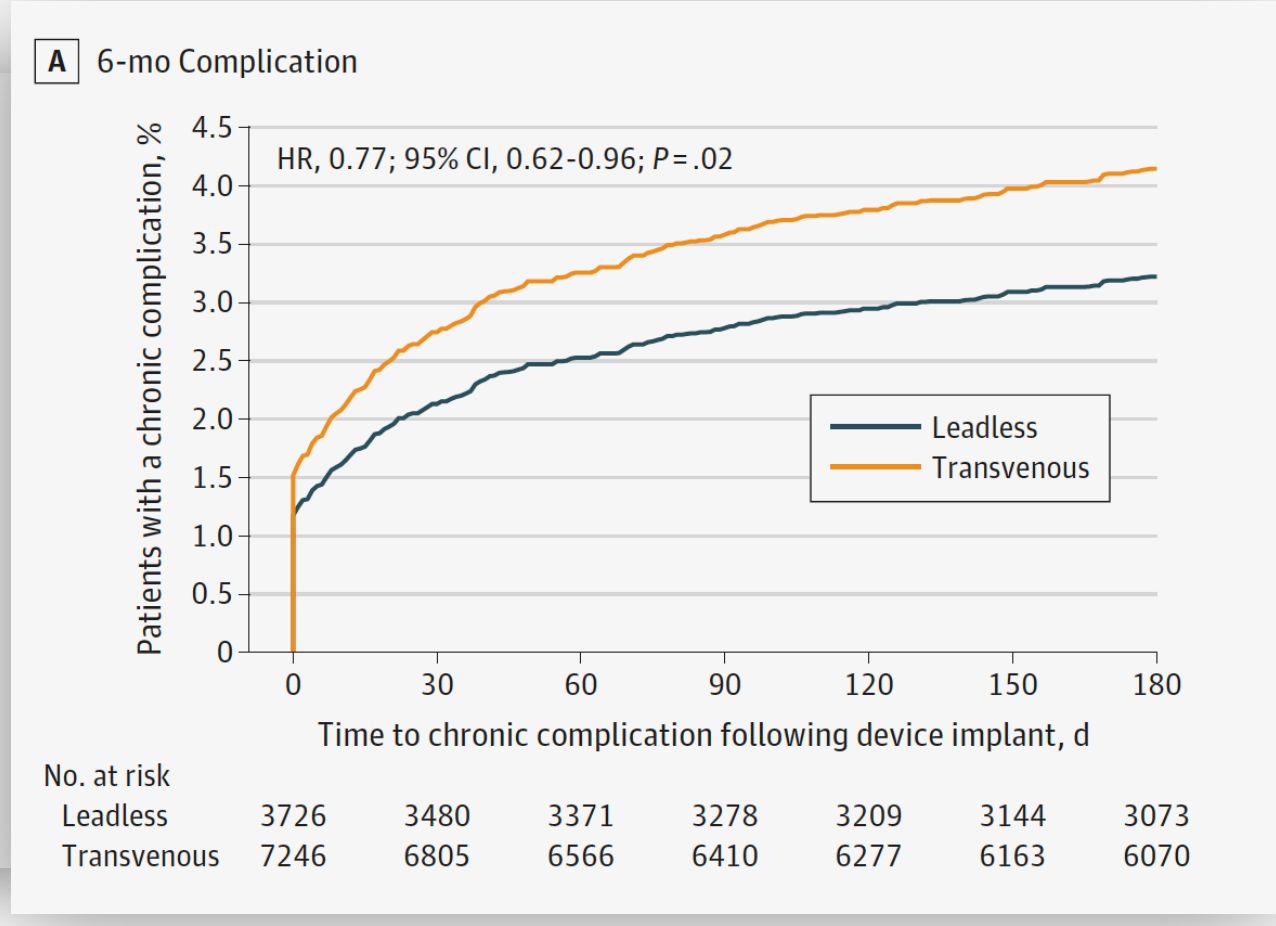
Contemporaneous Comparison of Outcomes Among Patients Implanted With a Leadless vs Transvenous Single-Chamber Ventricular Pacemaker

Jonathan P. Piccini, MD, MHS; Mikhael El-Chami, MD; Kael Wherry, PhD; George H. Crossley, MD; Robert C. Kowal, MD, PhD; Kurt Stromberg, MS; Colleen Longacre, PhD; Jennifer Hinnenthal, MPH; Lindsay Bockstedt, PhD

33% lower rate of chronic complications / transvenous VVI

Figure 1. Cohort Formation Flowchart





JAMA Cardiol. 2021;6:1187-1195.

Le PM sans sonde : pourquoi??

Quality of life of patients undergoing conventional vs leadless pacemaker implantation: A multicenter observational study

	1-mo			6-mo		
Variable	C-PM, n = 46	L-PM, n = 22	P	C-PM, n = 58	L-PM, n = 38	P
Chest discomfort	52%	41%	.385	39%	18%	.032
Restriction in physical activities due to chest discomfort	54%	23%	.014	37%	11%	.004
Restriction in daily activities due to chest discomfort	54%	18%	.005	32%	13%	.034
Discomfort in the area of intervention	48%	23%	.048	35%	13%	.017
Restriction in physical activities due to discomfort in the area of the intervention	57%	14%	.001	22%	8%	.067
Restriction in daily activities due to discomfort in the area of the intervention	54%	9%	<.001	20%	8%	.108
Restriction in physical activities due to concern over complications	61%	32%	0.025	27%	13%	.103
Restriction in daily activities due to fear of complications	65%	23%	0.001	29%	3%	.001
Preoccupation about general health	59%	23%	0.005	45%	21%	.017
Feeling of depression	28%	18%	0.369	22%	11%	.136

Cabanas-Grandío et al, J Cardiovasc Electrophysiol. 2020 Jan;31(1):330-336

L’expérience leadless

Marquage CE 2015 (VR)
2020 (AV)
Remboursement 2019 (VR)

Marquage CE 2023 (VR)
Juin 2024(DR)
Remboursement 2024 (VR)

EMPOWER

WISE

L’expérience leadless Aveir

AVEIR VR
AVEIR A

Marquage CE Juil 23 (VR)
Juin 24(DR)

Aveir dans le monde :
. 20000 à 30000 PM
- Environ 900 AR seul
- Environ 2100 DR (soit DR de novo, soit upgrade VR vers DR, soit upgrade AR vers DR)

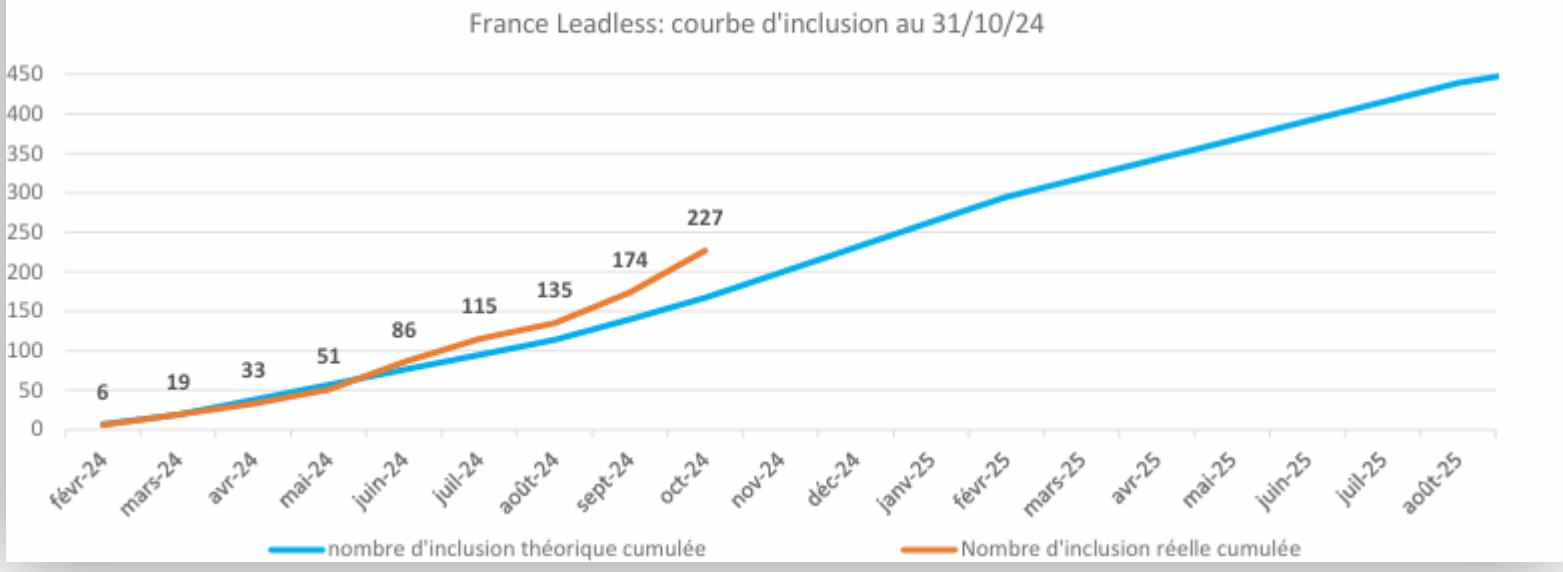
France leadless

ETAT DES LIEUX DES INCLUSIONS AU 31/10/2024

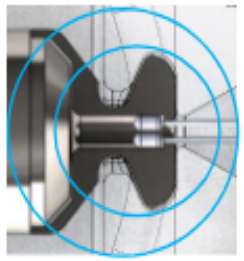
Etat des lieux des inclusions au 31/10/2024 :

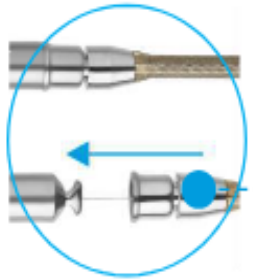
227 patients inclus par 24 centres (soit 57% de l’objectif).

Pour rappel : l’objectif est d’inclure 400 patients sur une période d’inclusion de 19 mois avec un suivi de 24 mois.

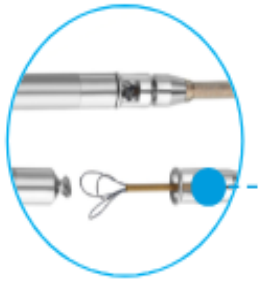


Le Pacemaker sans sonde AVEIR





Cathéter d'implantation



Cathéter de récupération

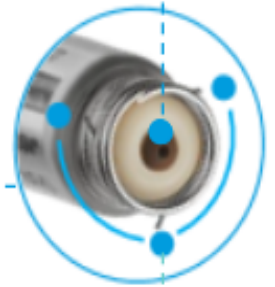
Mécanisme d'ancrage et de **récupération**

Vis de fixation

Électrode distale

Batterie

Code X-Ray : NT



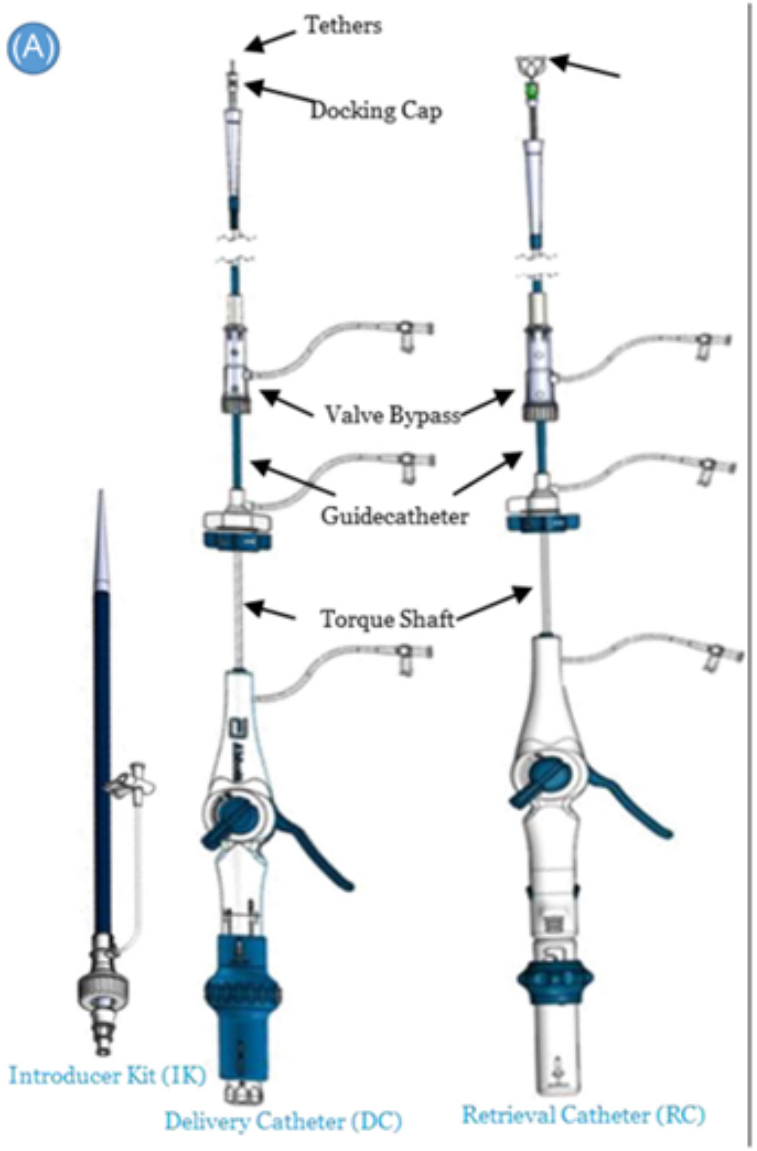
Suture anti-rotation

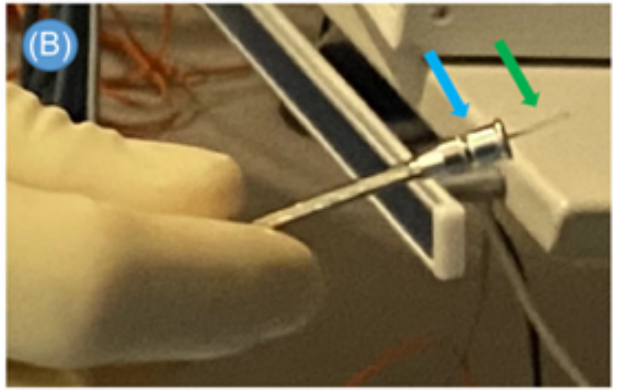
AVEIR™ VR

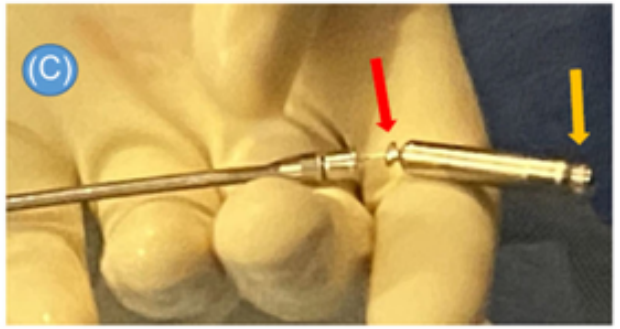
Stimulateur cardiaque sans sonde

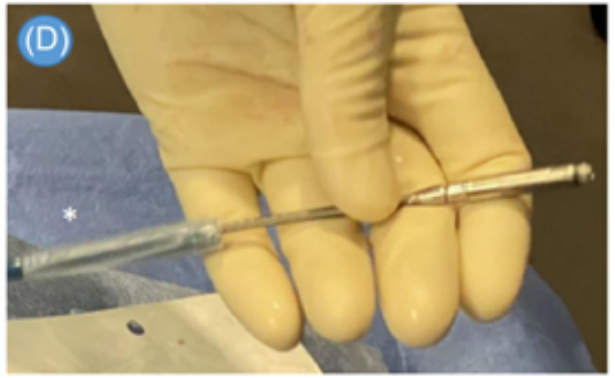
AV	E	I	R
Atrial & Ventricle Pacing	Expandable and Extended Longevity	I2i™ Communication	Retrievable
Stimulation atriale et ventriculaire	*Évolutif et longévité étendue*	*Communication i2i™*	*Récupérable*

Le Pacemaker sans sonde AVEIR : cathéter









RESEARCH CORRESPONDENCE

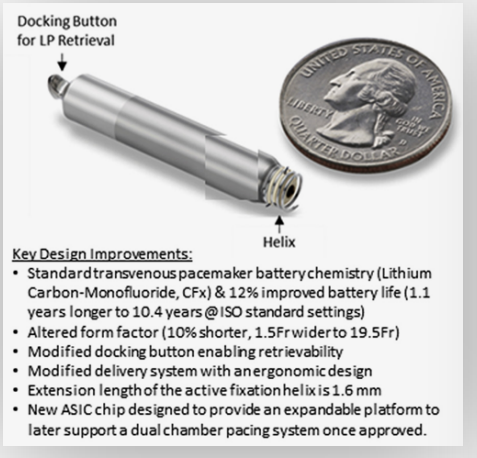
Primary Results on Safety and Efficacy From the LEADLESS II–Phase 2 Worldwide Clinical Trial

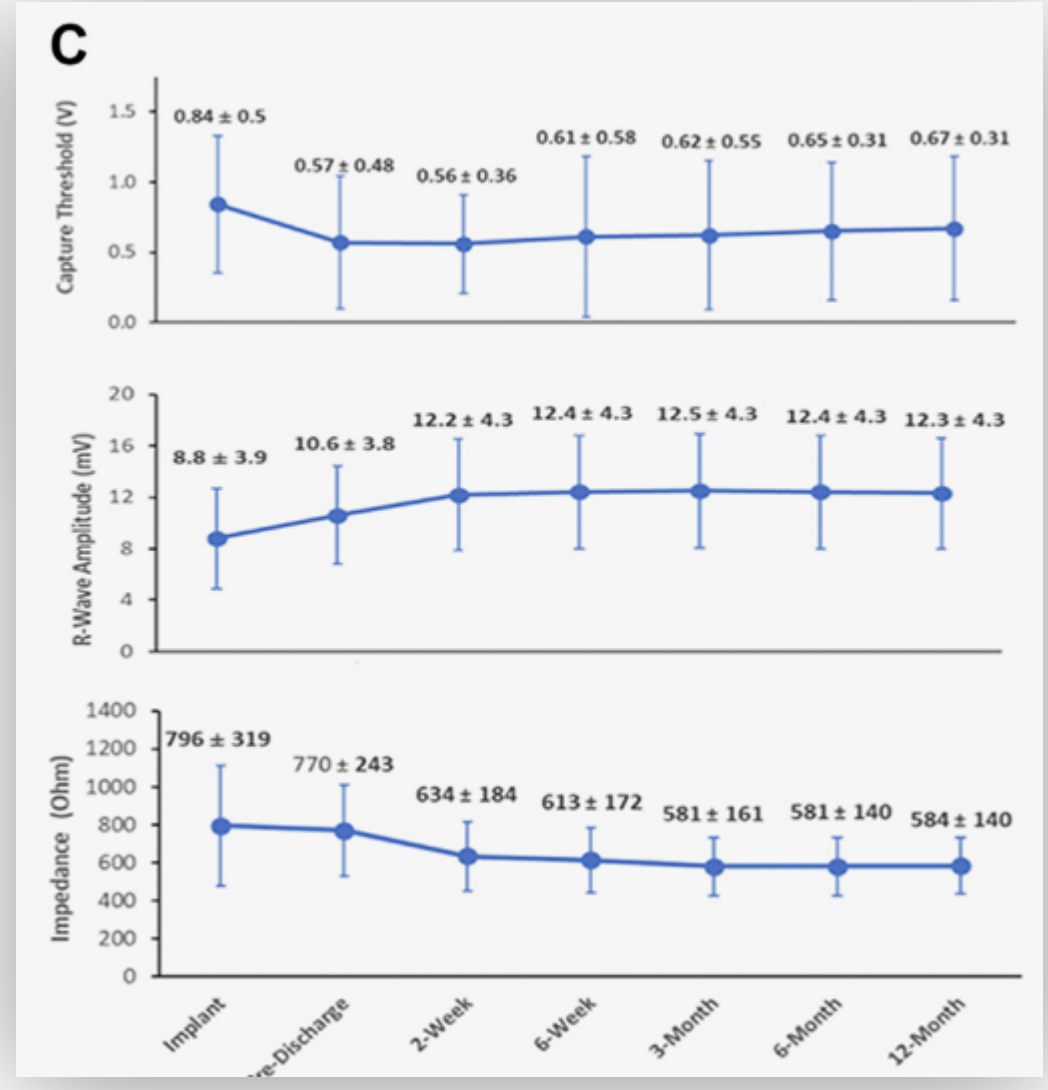
RESEARCH LETTER

1-Year Outcomes of a Leadless Ventricular Pacemaker

The LEADLESS II (Phase 2) Trial

Succès d'implantation 98%





Reddy et al, JACC Clin Elec trophysiol. 2022;8:115–117.

Reddy et al , JACC Clin Elec trophysiol. 2023;9:1187–1189.

Quelles différences par rapport aux autres pacemakers sans sondes?

TABLE 2 Safety of Single-Chamber Leadless Pacemakers in Regulatory Trials and Adjudicated Large Registries (>500 Patients)

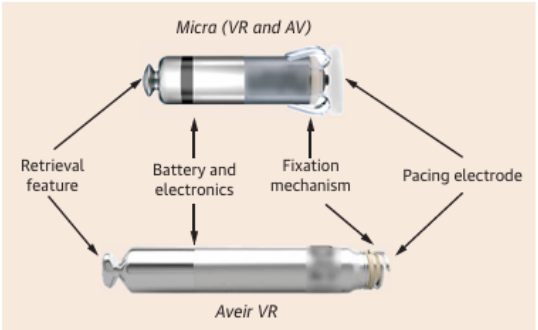
	LEADLESS[6,105]	LEADLESS II[8,10]	Leadless Observational[9]	LEADLESS II phase 2[13,14]	Micra IDE[15,16]	Micra PAR[17,28]	MAP EMEA[18]	Italian Registry[106]	Total
LP model	Nanostim	Nanostim	Nanostim	Aveir VR	Micra VR	Micra VR	Micra VR	Micra VR	
Short-term complication rate, %	6.1	5.8	5.3	4.8	2.9	2.5	2.6	0.5	3.0
No. of patients	33	718	300	210	726	1,809	928	665	5,389
Follow-up duration, mo	3	1	6[a]	1.5	1	1	1	1	1.3
Pericardial effusion/cardiac perforation	3.0	1.5	1.3	1.9	1.4	0.4	0.6	0.0	0.8
Dislodgement during procedure	0.0	0.3	0.0	1.4	0.0	0.1	0.0	n/a	0.1
Dislodgement after procedure	0.0	1.0	0.3	0.0	0.0	0.1	0.0	0.2	0.2
Vascular complications	0.0	1.1	1.3	1.0	0.7	0.6	1.1	0.2	0.7
Other	3.0	2.2	3.0	1.0	1.2	1.6	0.9	0.2	1.4
Long-term complication rate, %[b]	3.0	0.6	n/a	1.9	1.1[c]	1.8	1.0	0.0	1.1
No. of patients	33	718	n/a	210	726	1,809	928	665	5,089
Mean follow-up duration, mo	38[d]	10.6[d]	n/a	14.4	16.4	51.1[d]	9.7	39[e]	29.7
Dislodgement	0.0	0.0	n/a	0.0	0.0	0.0	0.0	0.0	0.0
Infection	0.0	0.0	n/a	0.0	0.0	0.1	0.1	0.0	0.0
Other	3.0	0.6	n/a	1.9	1.1	1.8	1.1	0.0	1.2

Breeman et al JACC. 2024;84:2131–2147

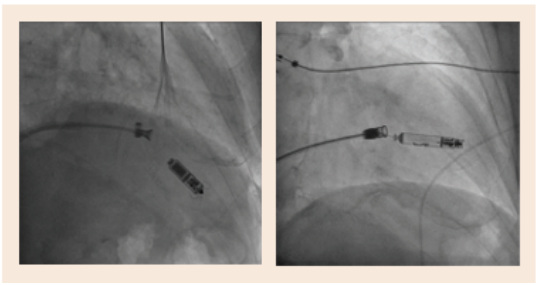
Quelles différences par rapport aux autres pacemakers sans sondes?

	Nanostim	Aveir VR	Micra VR[a]	Micra AV[b]	Aveir AR[c]	Empower[d]
						
Dimensions, mm	42 × 5.99	38 × 6.5	25.9 × 6.7	25.9 × 6.7	32.2 × 6.5	32.1 × 6.0
Volume, cc	1.0	1.1	0.8	0.8	1.0	0.75
Sheath size, F, ID/OD	18/21	25/27	23/27	23/27	25/27	21/23
Pacing mode	VVI(R)	VVI(R)	VVI(R)	VVI(R) or VDD(R)	AAI(R)	VVI(R) + S-ICD-directed ATP
Can be used as part of a dual-chamber LP	No	Yes	No	No	Yes	No
Fixation	Screw-in helix	Screw-in helix	4 nitinol tines	4 nitinol tines	Screw-in helix	4 nitinol tines
Battery	Lithium carbon monofluoride	Lithium carbon monofluoride	Lithium-hybrid carbon monofluoride silver vanadium oxide	Lithium-hybrid carbon monofluoride silver vanadium oxide	Lithium carbon monofluoride	Lithium carbon monofluoride
Battery longevity, y, at ISO standard setting: 2.5 V at 0.4 ms, 60 beats/min, 100% VP, 600 ohm	N/A	9.9 (VVIR); 7.3 (DDDR)	4.7 (VVIR)	4.8 (VDD)	6.8 (VVIR); 5 (DDDR)	N/A
Battery longevity, y, alternative setting[e]	N/A	16.1 (1.25 V at 0.4 ms, 60 beats/min, 100% VP, 500 ohm, single-chamber mode); 9.8 (1.25 V at 0.4 ms, 60 beats/min, 100% VP, 500 ohm, dual-chamber mode)	9.6 (1.5 V at 0.24 ms, 60 beats/min, 100% VP, 500 ohm)	8.6 (1.5 V at 0.24 ms, 60 beats/min, 100% VP, 500 ohm)	11.2 (1.25 V at 0.4 ms, 60 beats/min, 100% VP, 500 ohm, single-chamber mode); 6.8 (1.25 V at 0.4 ms, 60 beats/min, 100% VP, 500 ohm, dual-chamber mode)	N/A
MRI compatible	1.5 T	1.5 T, 3 T	1.5 T, 3 T	1.5 T, 3 T	1.5 T, 3 T	1.5 T, 3 T
Remote monitoring	No	No	CareLink	CareLink	No	No
Magnet mode	Yes, VOO 100/min for 8 cycles, then rate depending on battery status	Yes, VOO 100/min for 5 cycles, then rate depending on battery status	No	No	Yes, AOO (VOO in case of dual-chamber pacing) 100/min for 5 cycles, then rate depending on battery status	N/A

A



B



Breeman et al JACC. 2024;84:2131–2147

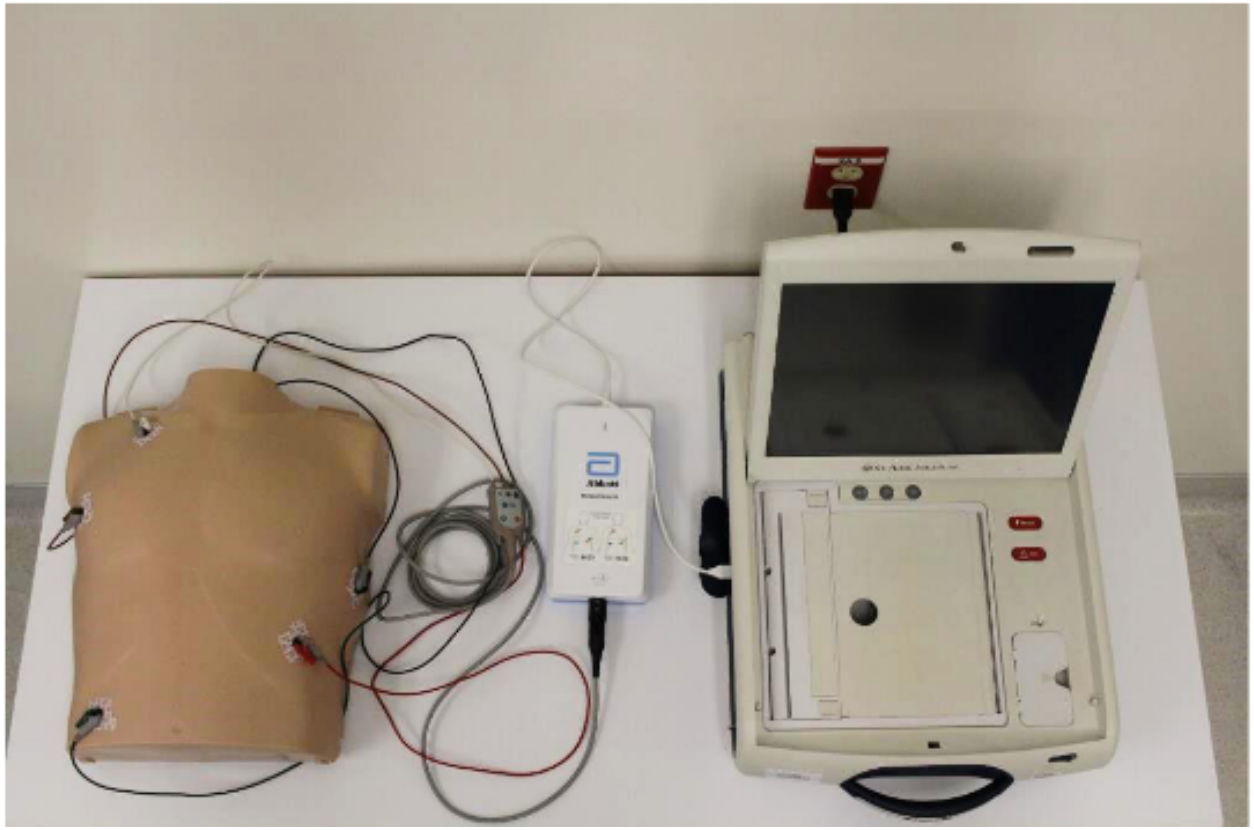
Laczay et al J Cardiovasc Electrophysiol. 2023 Mar;34(3):748-759.

Quelles différences par rapport aux autres pacemakers sans sondes? Système de communication

« télémétrie » conductive

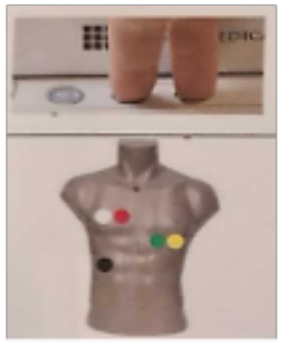
= données encodées dans des impulsions à haute fréquence entre le stimulateur cardiaque sans sonde et les électrodes de surface placées sur le patient

réduction de consommation de la batterie ++++



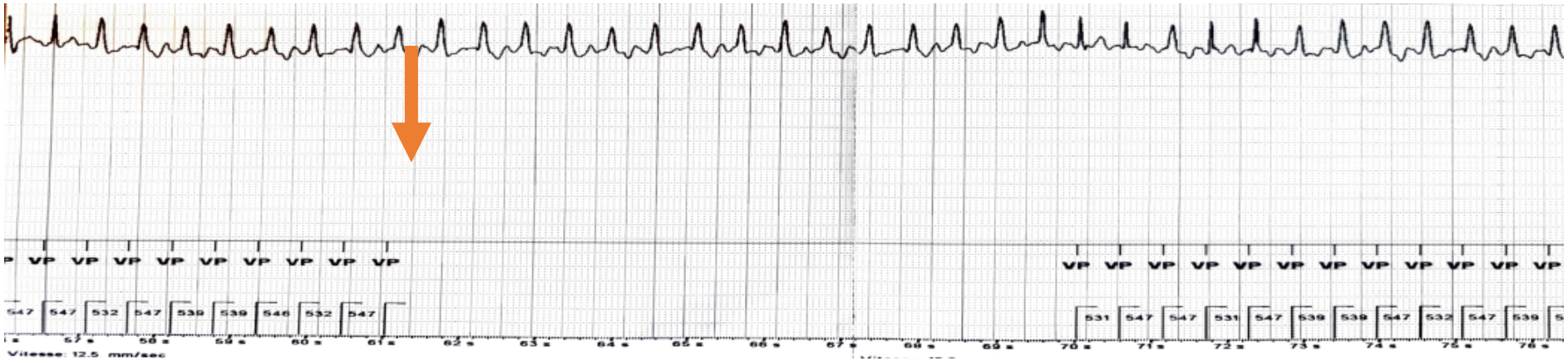
Quelles différences par rapport aux autres pacemakers sans sonde?
Système de communication

Module spécifique ++



Communication sensible

(penser à supprimer
Les bruits d'ambiance)



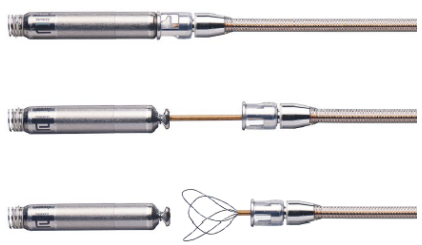
Exemple

Application Bistouri Electrique (4/40)

Leadless reglé en VVI
Tracé temps réel

Quelles différences par rapport aux autres pacemakers sans sonde?
Récupérabilité

AVEIR™ VR LP | RETRIEVAL SYSTEM



Tri-loop snare re-docking mechanism

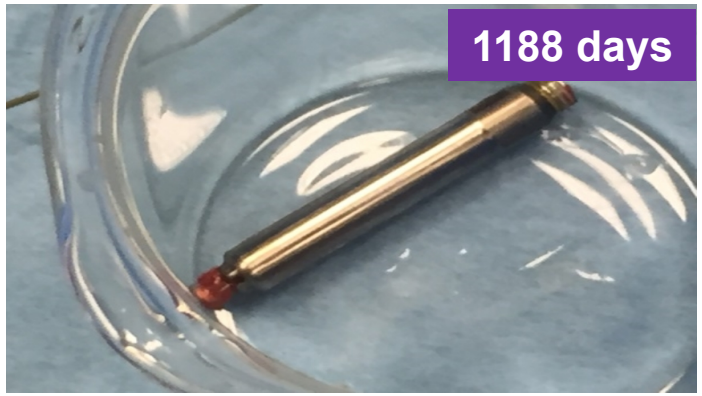
Steerable, deflectable delivery catheter with integrated guiding catheter

Protective sleeve fully covers the LP's helix during catheter navigation in order to reduce risk of damaging the helix or an injury to cardiovascular structures

A worldwide experience of the management of battery failures and chronic device retrieval of the Nanostim leadless pacemaker

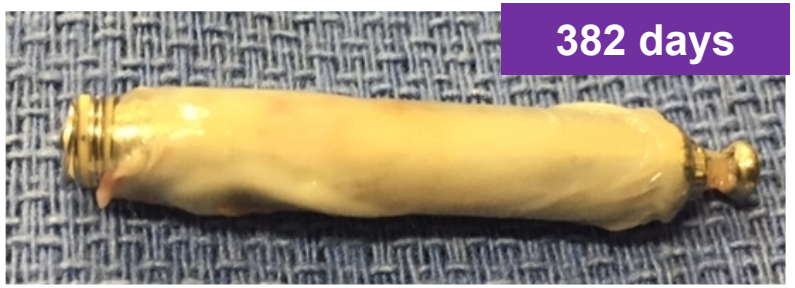
Dhanunjaya Lakkireddy, MD, FACC, FHRS,* Reinoud Knops, MD,† Brett Atwater, MD,‡ Petr Neuzil, MD,§ John Ip, MD,‖ Elkin Gonzalez, MD,¶ Paul Friedman, MD, FHRS,** Pascal Defaye, MD,†† Derek Exner, MD,‡‡ Kazutaka Aonuma, MD,§§ Rahul Doshi, MD, FHRS,‖‖ Johannes Sperzel, MD,¶¶ Vivek Reddy, MD***

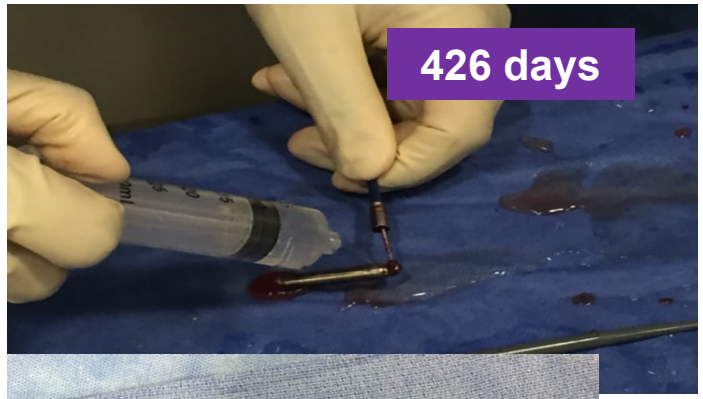
Possibility of leadless retrieval (Nanostim™/Aveir™)

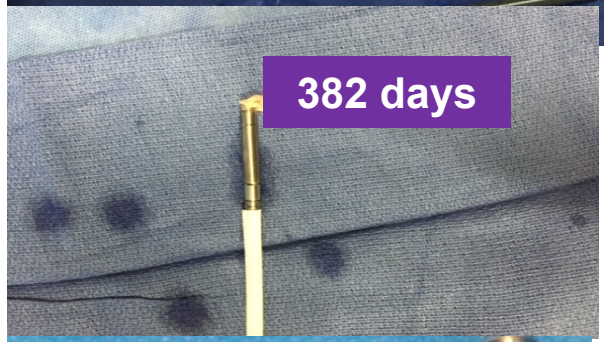


Nanostim Retrieval

Gross Pathology







90.4% success retrieval/implant duration range: 0.2–4.0 years

Heart Rhythm 2017;14:1756–1763

Quelles différences par rapport aux autres pacemakers sans sonde?
Evolutivité/possibilité d'upgrade

Implanter un dispositif auriculaire ou ventriculaire seul, ou les deux, pour une stimulation double chambre.

Commencer par le dispositif auriculaire

Traiter la dysfonction sinusale aujourd'hui

Ajouter ultérieurement un dispositif ventriculaire pour bloc cardiaque

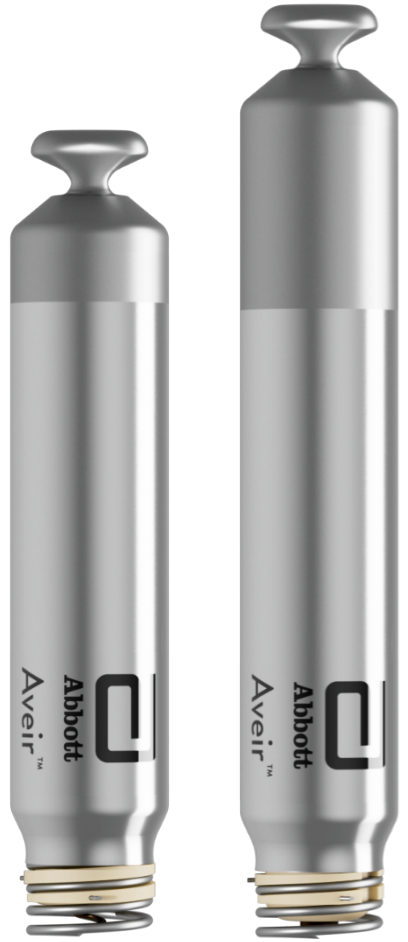
Ou le dispositif ventriculaire en premier

Traiter aujourd'hui un bloc cardiaque intermittent rare

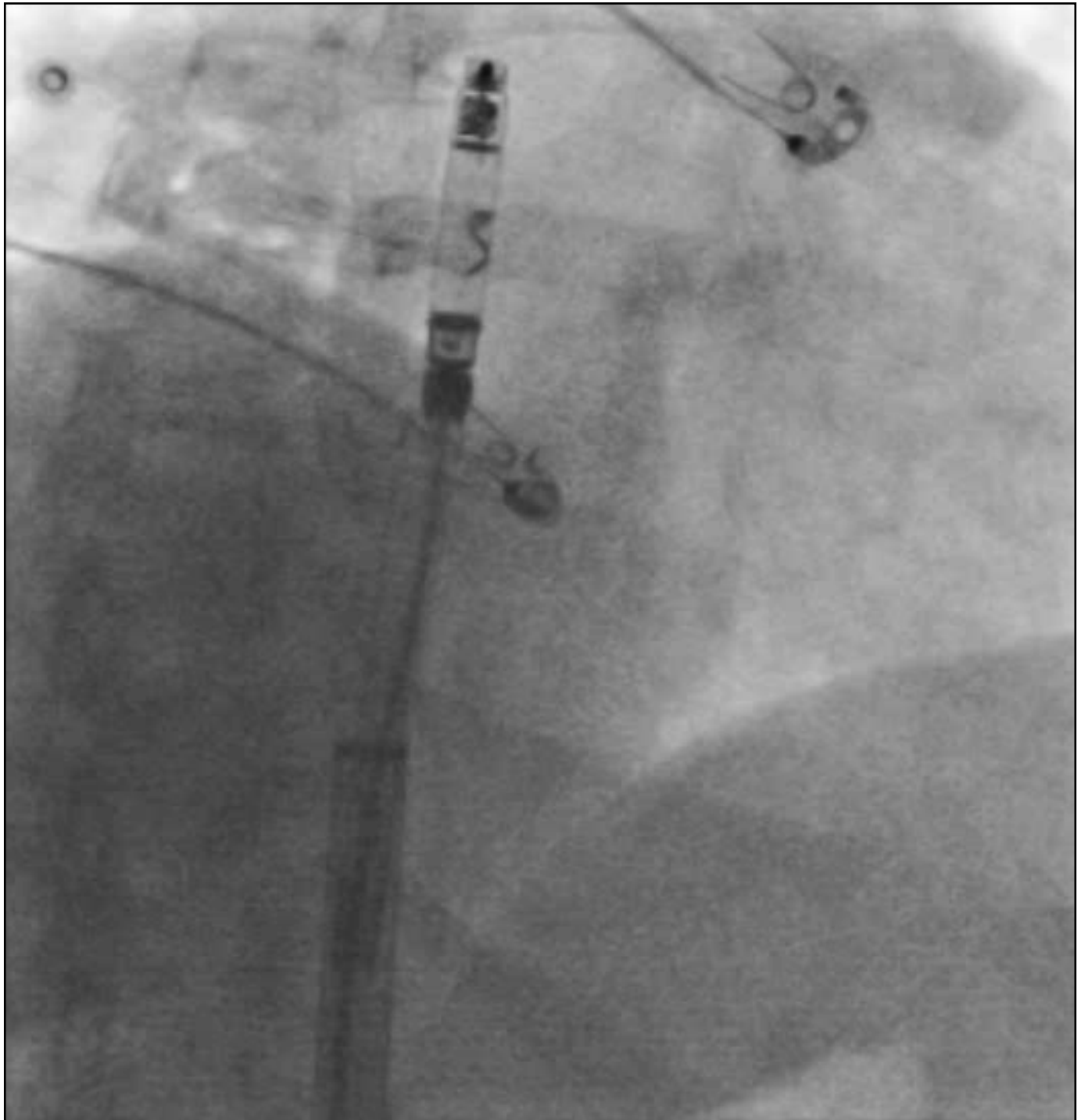
Ajouter ultérieurement un dispositif auriculaire pour la maladie du nœud sinusal

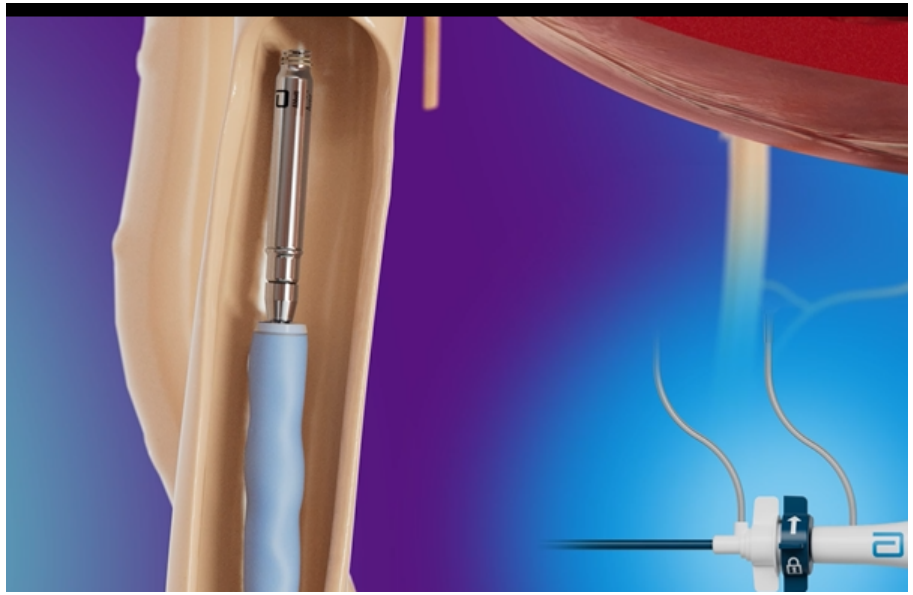
i2i

Activer la stimulation à double chambre (DDD(R)) via la communication i2i™

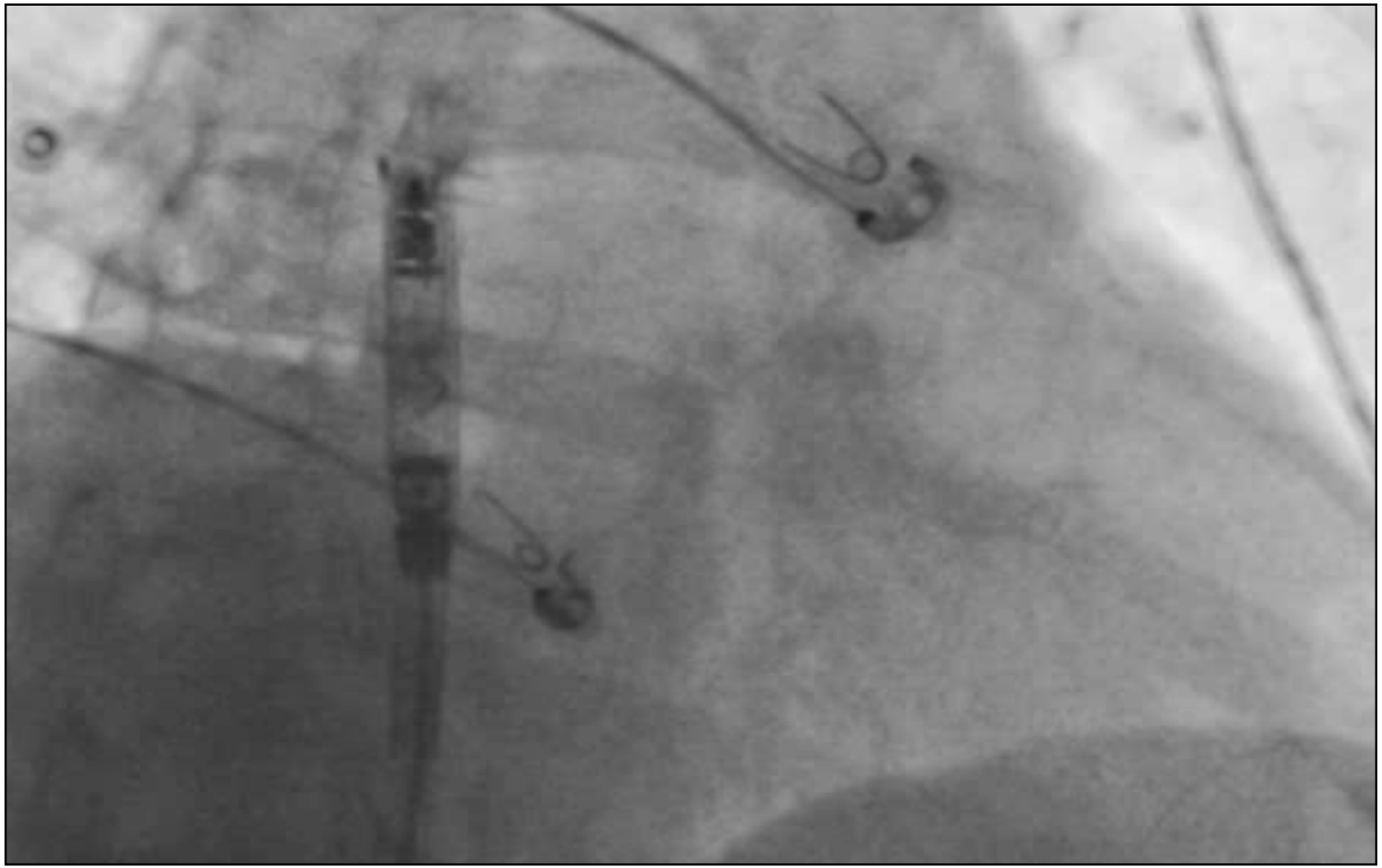


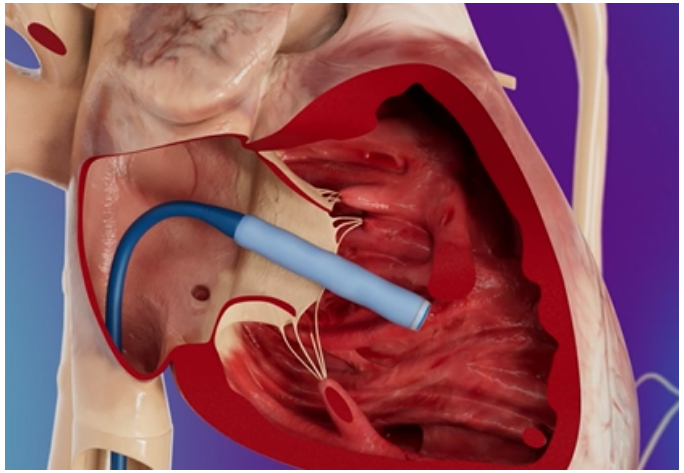
Exemple implantation Aveir VR

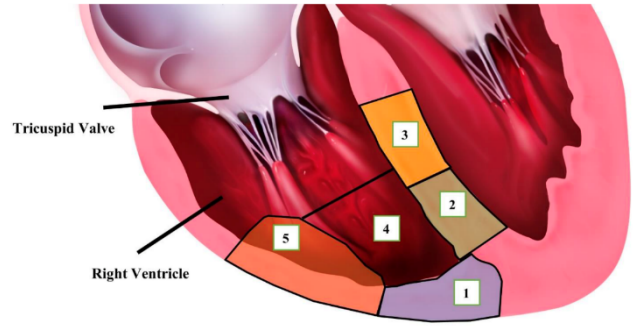


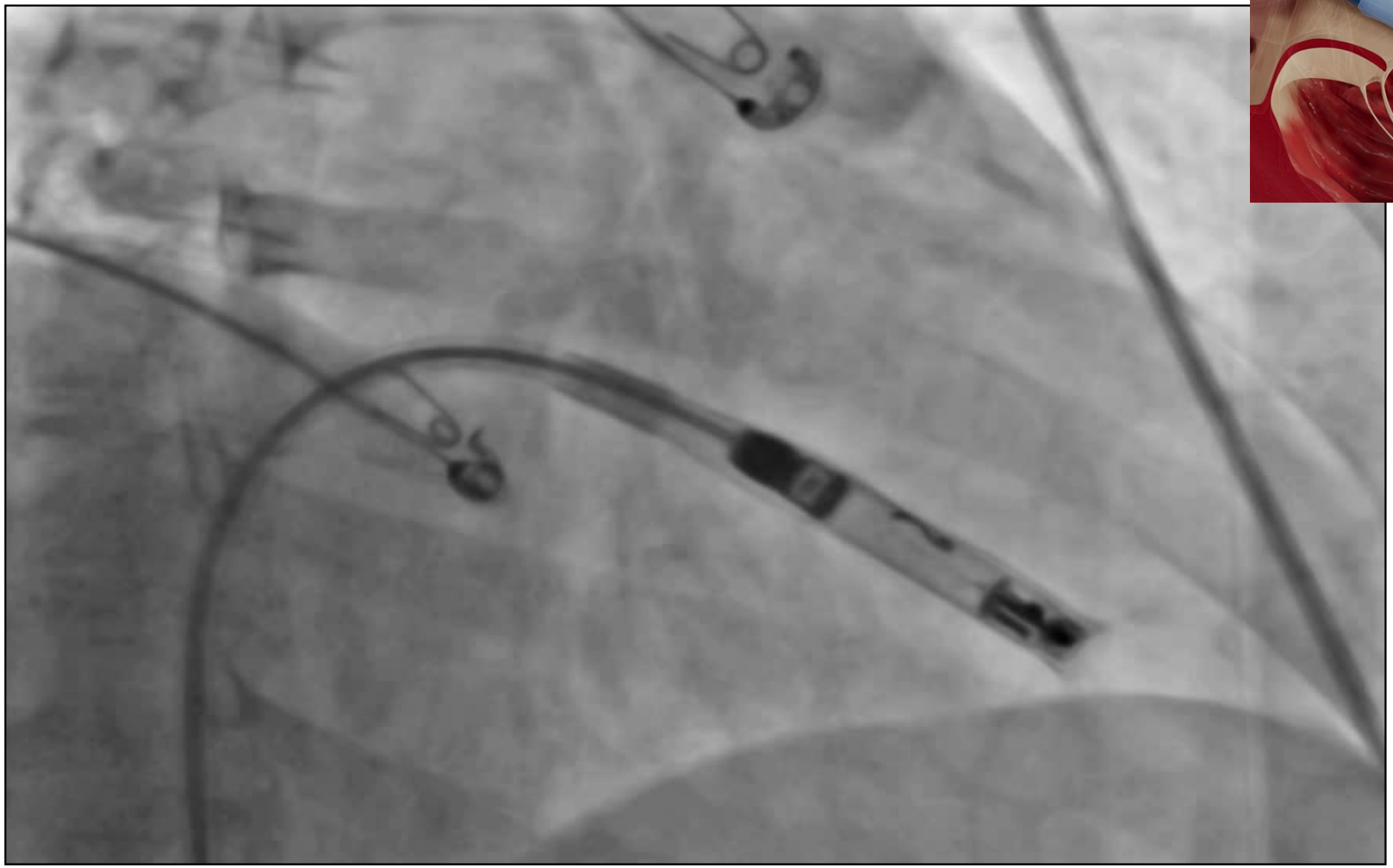


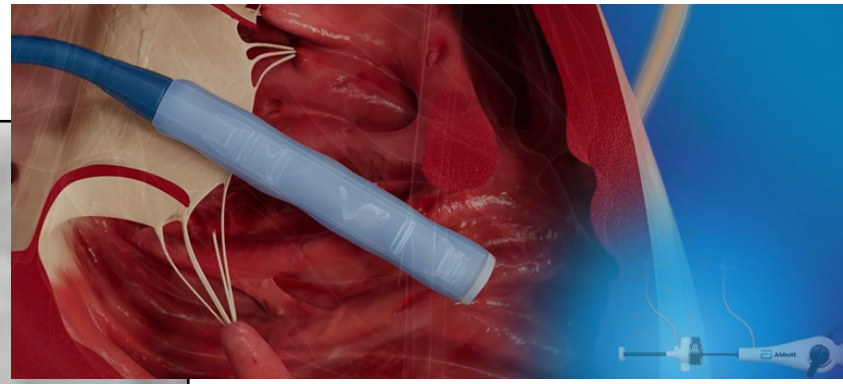
LAO

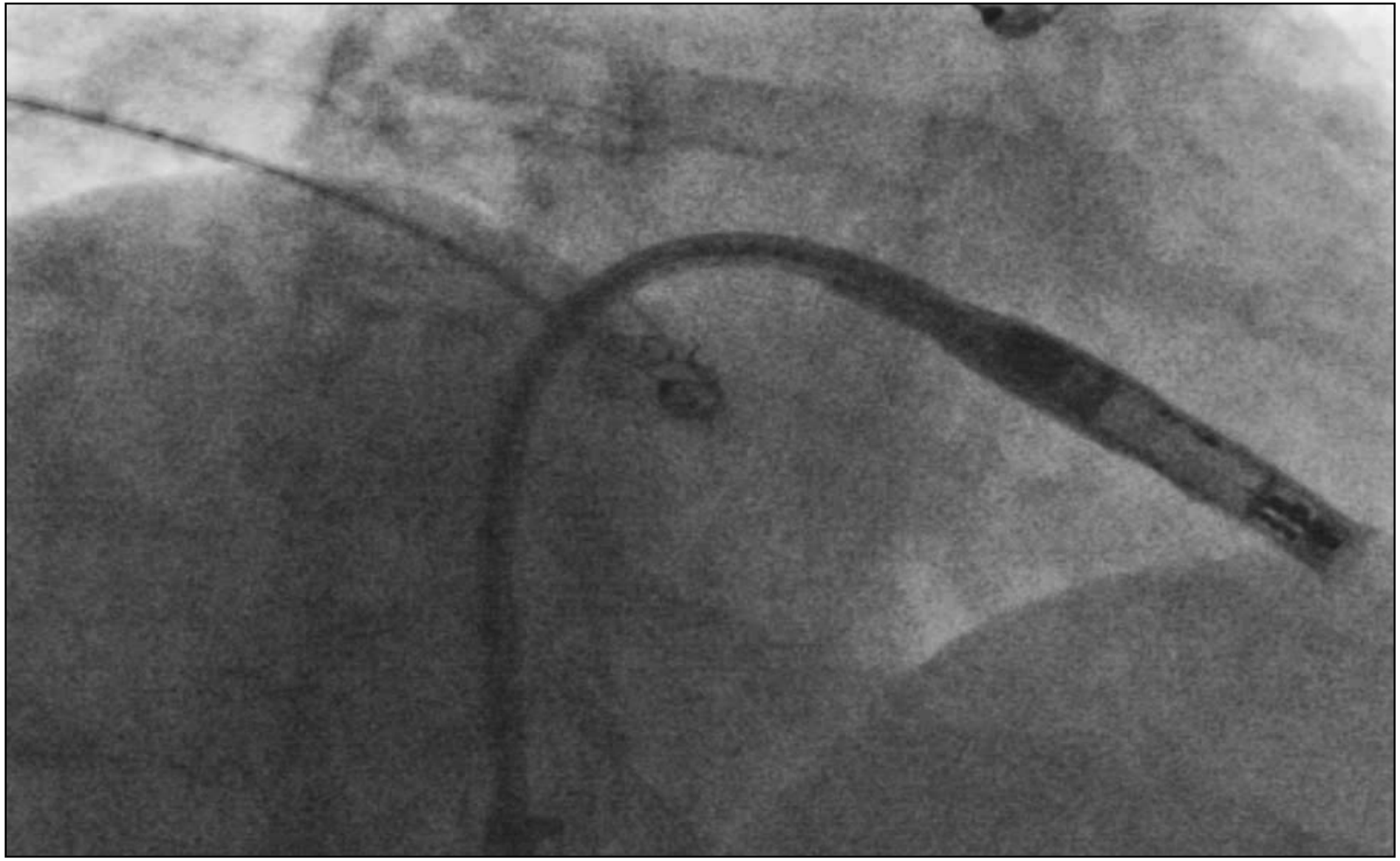


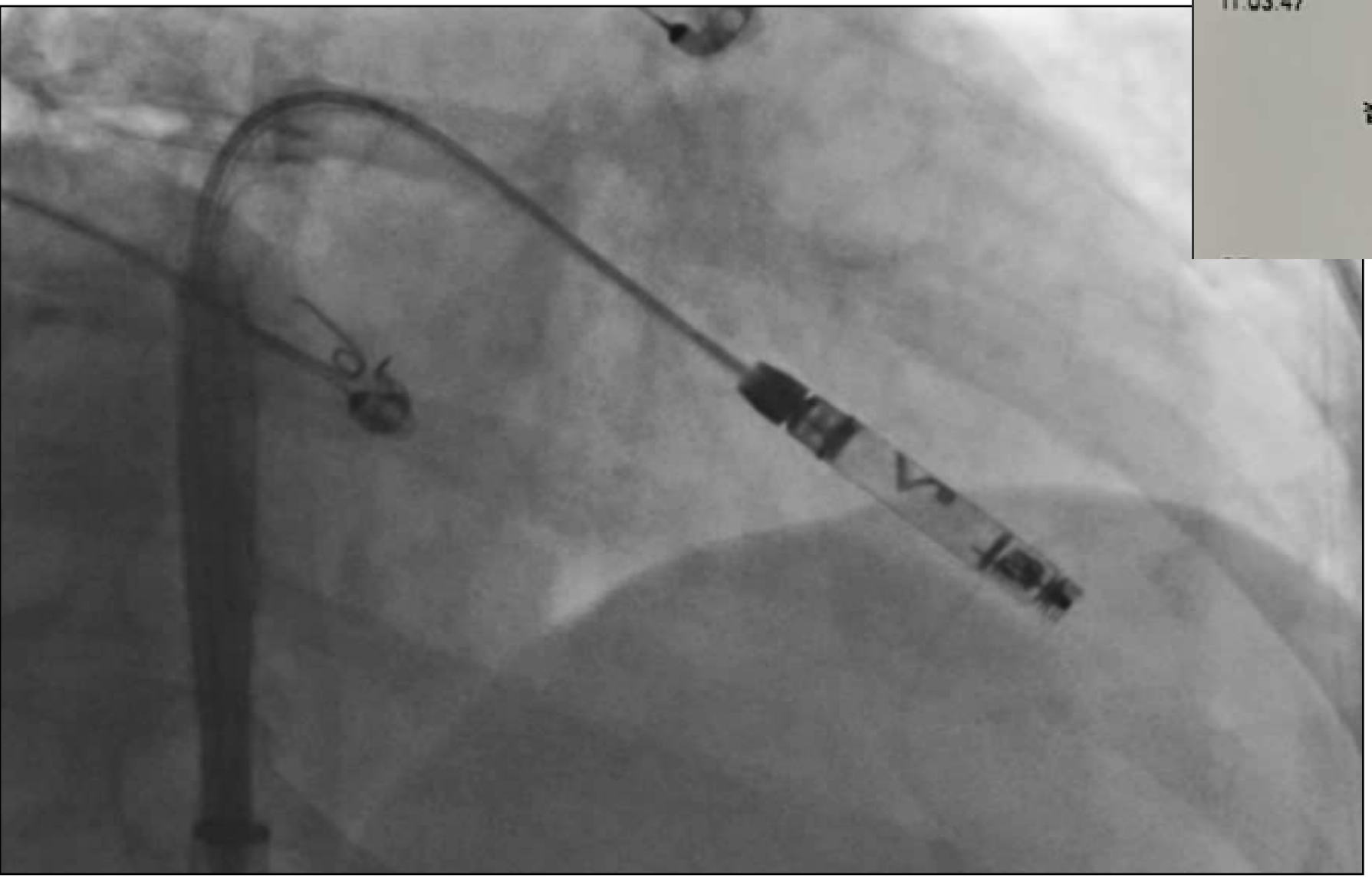


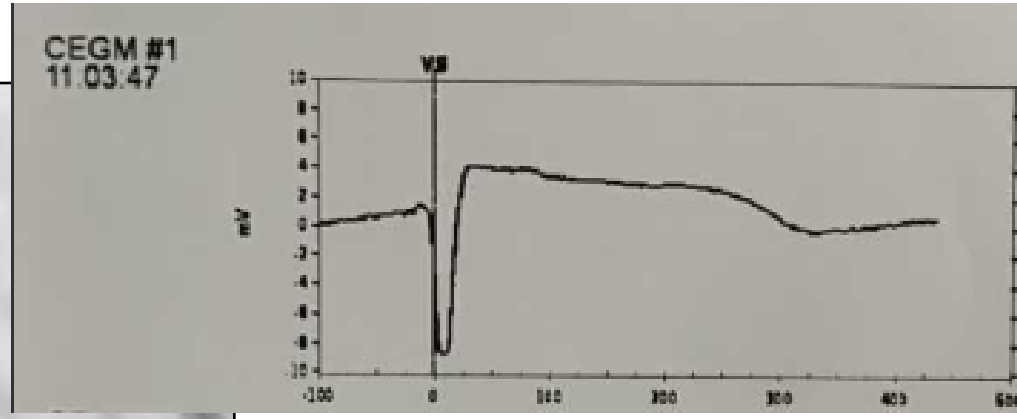

Tricuspid Valve
Right Ventricle
1
2
3
4
5

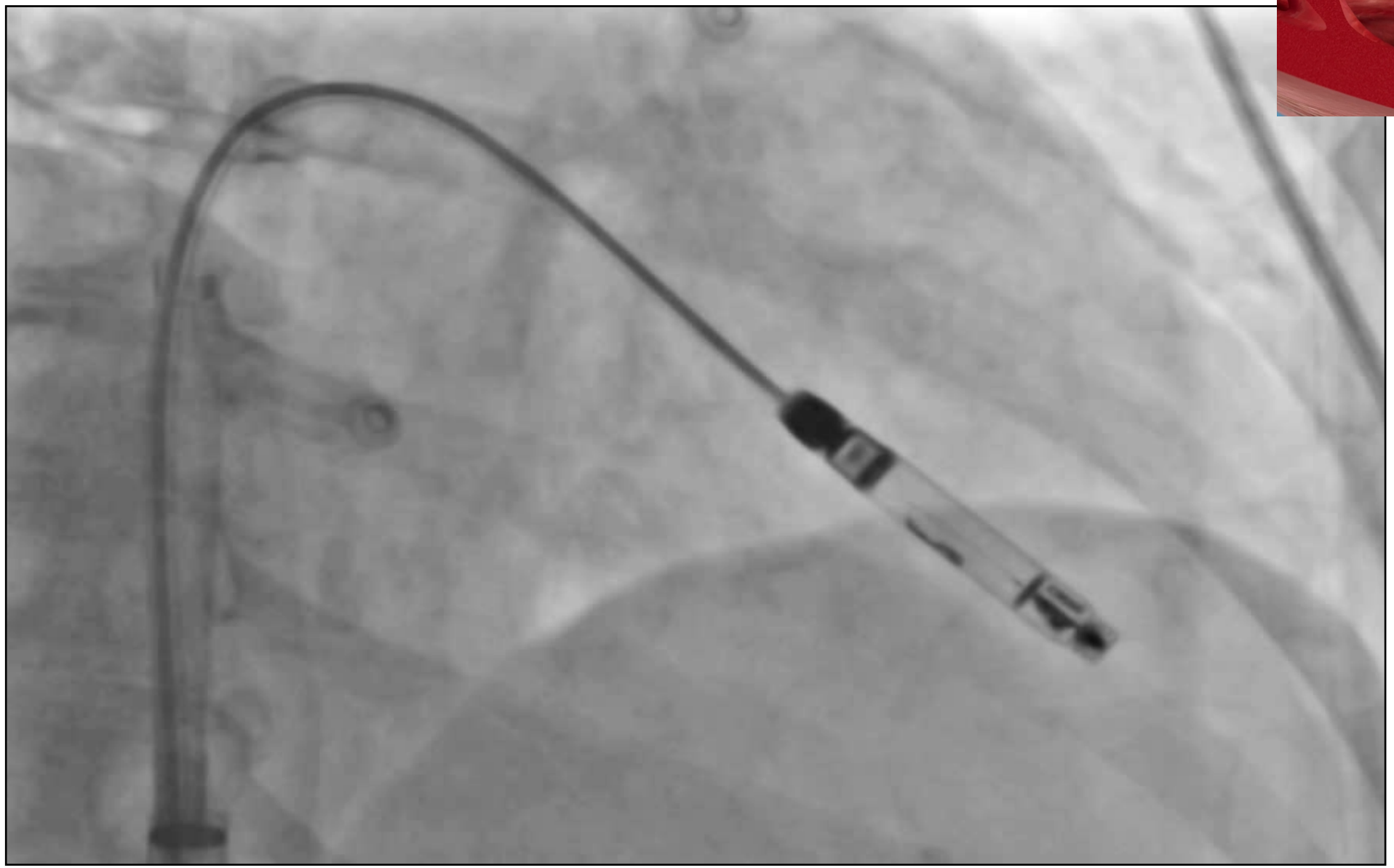


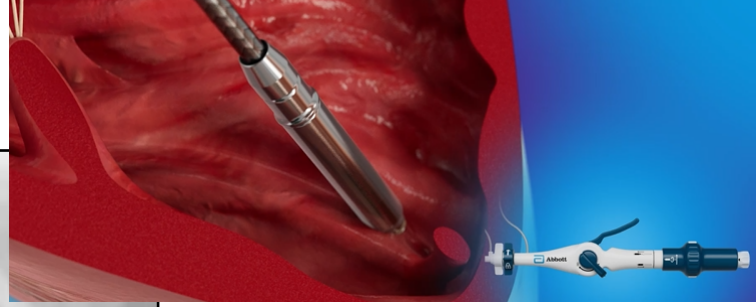


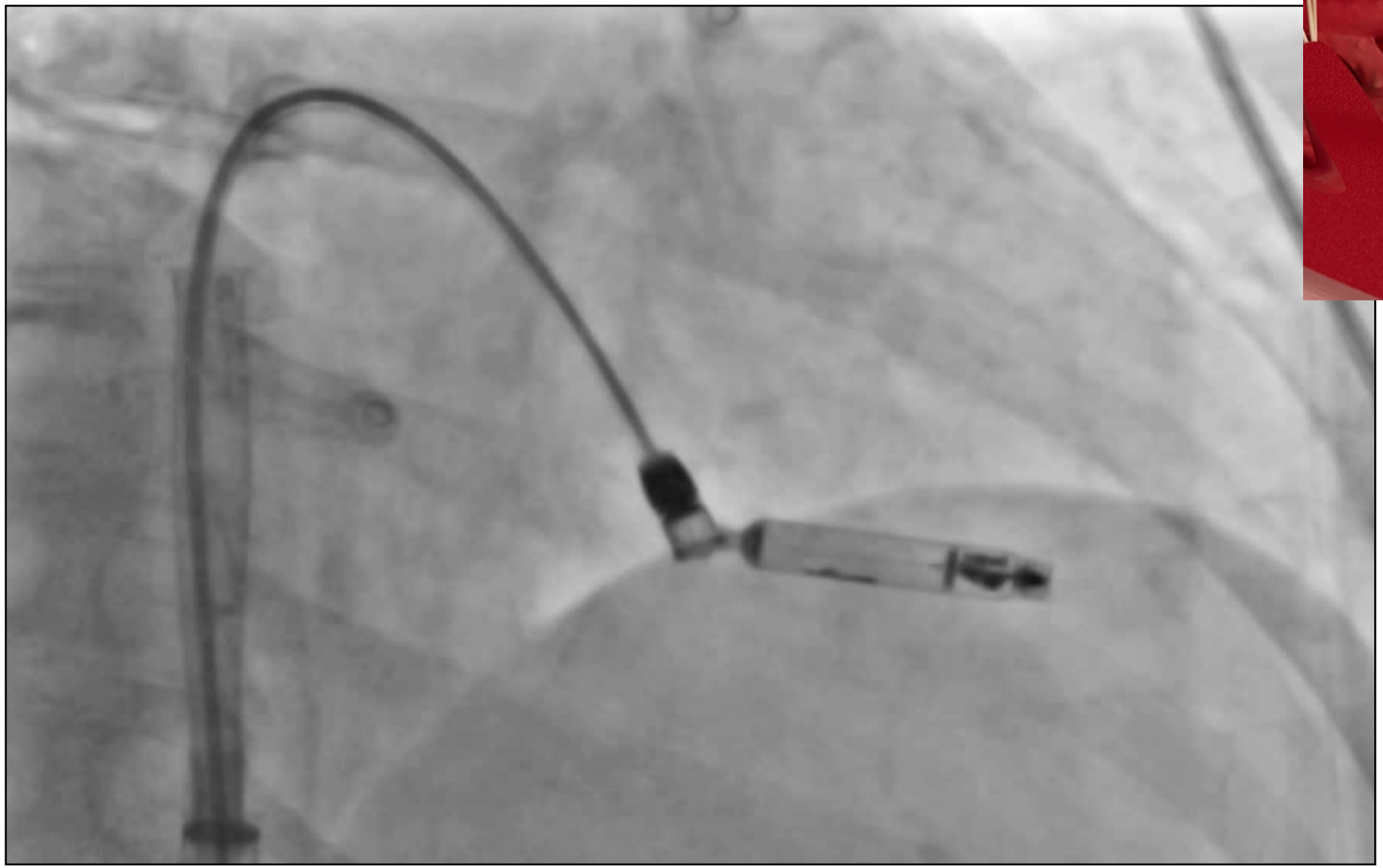


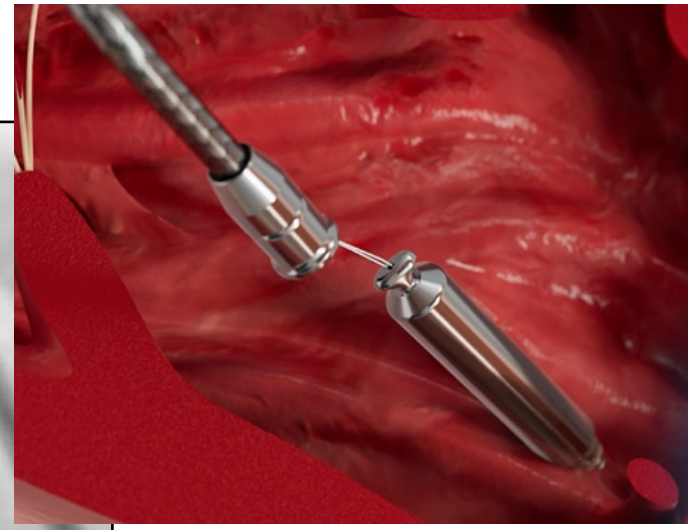


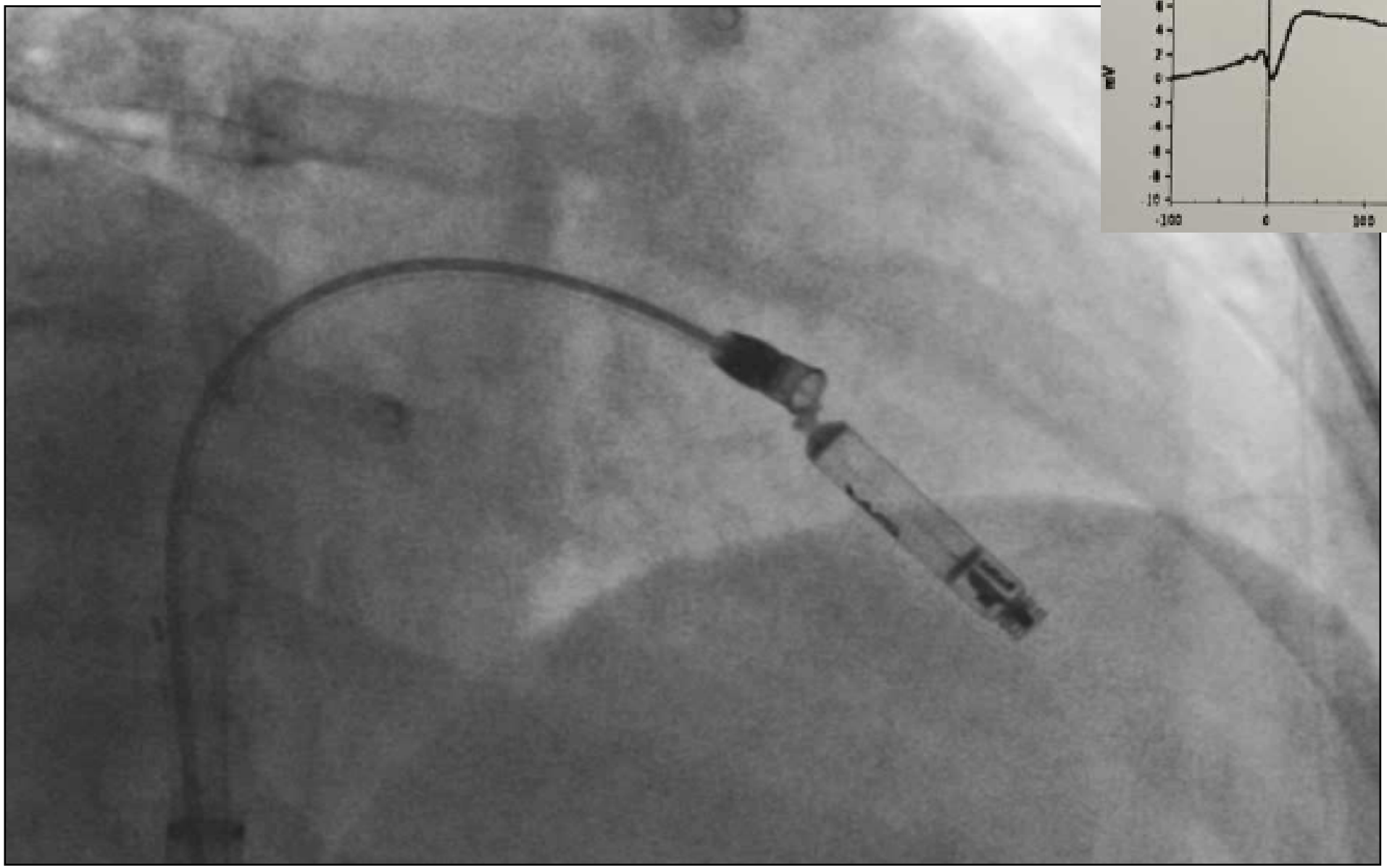

CEGM #1
11.03.47

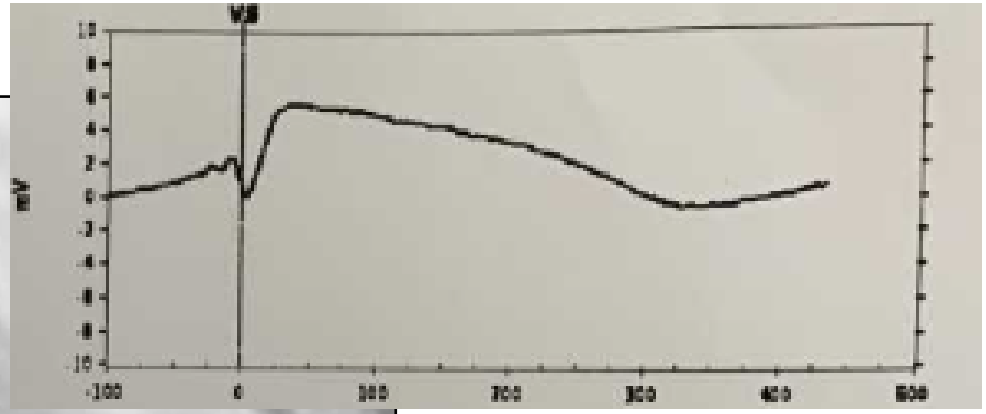


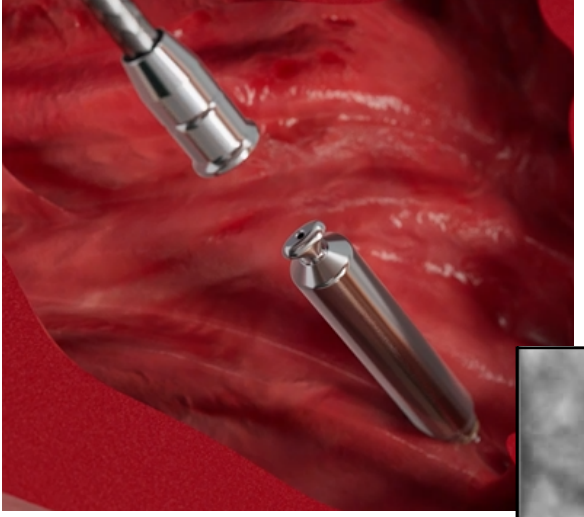

Abbott

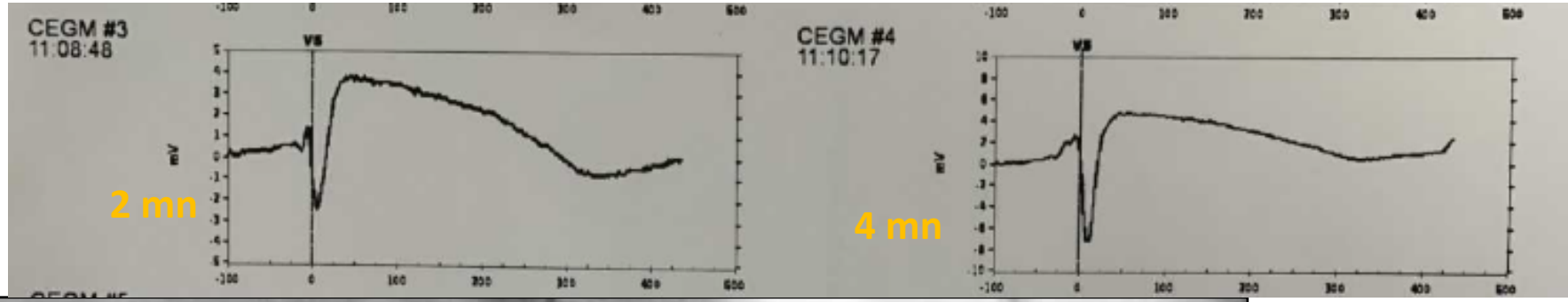


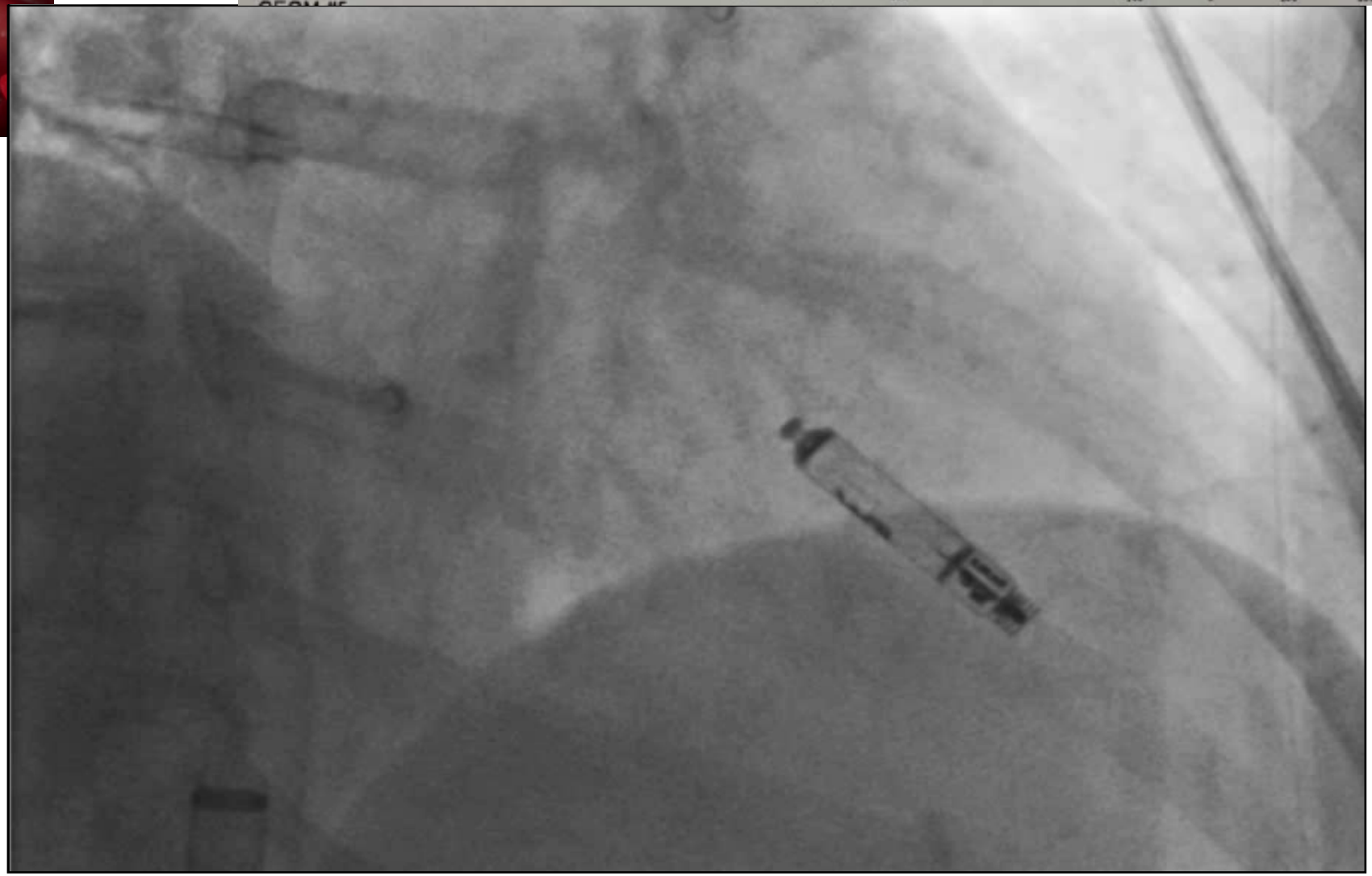


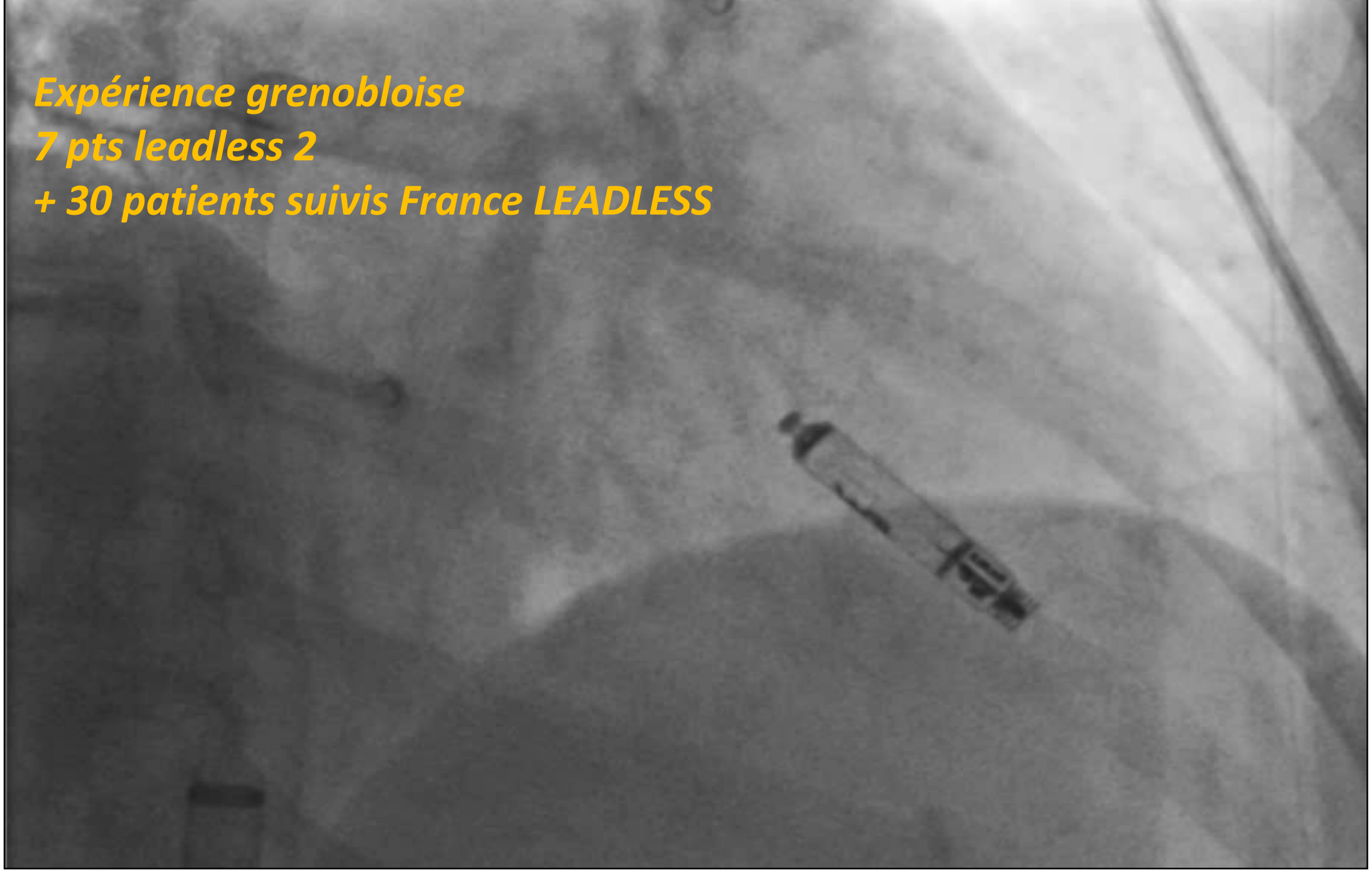



V3
mV
10
8
6
4
2
0
-2
-4
-6
-8
-10
-100
0
100
200
300
400
500




CEGM #3
11:08:48
VS
mV
2 mn
CEGM #4
11:10:17
VS
mV
4 mn



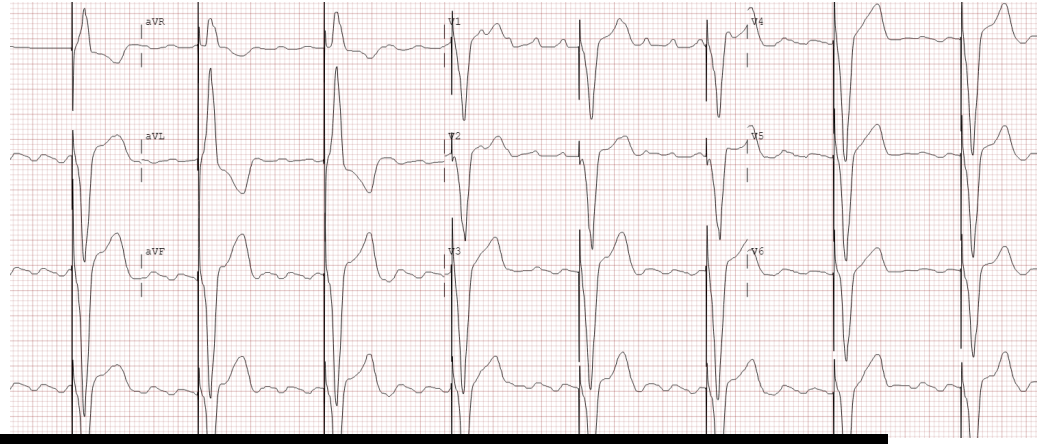

Expérience grenobloise
7 pts leadless 2
+ 30 patients suivis France LEADLESS

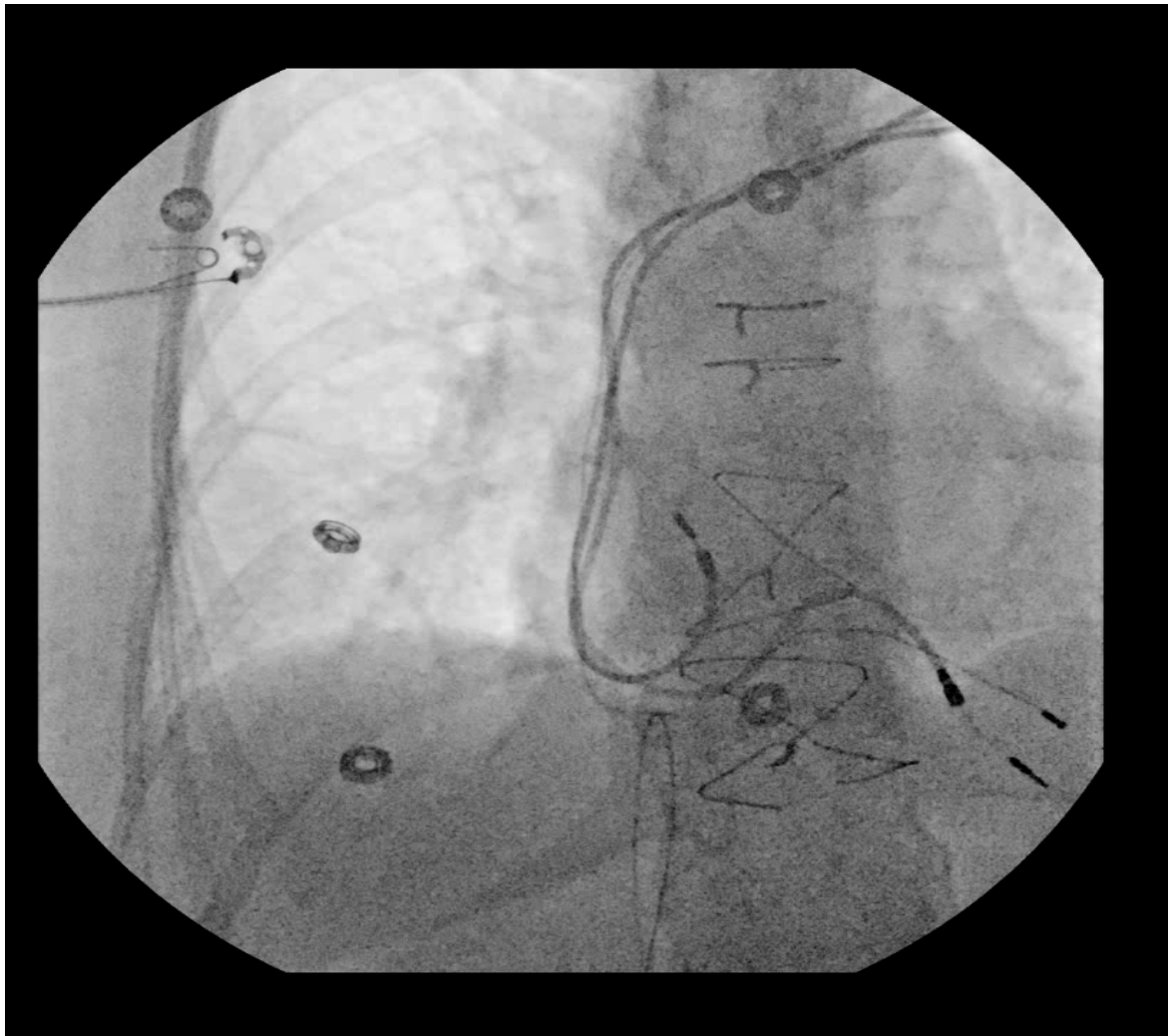
Mme S

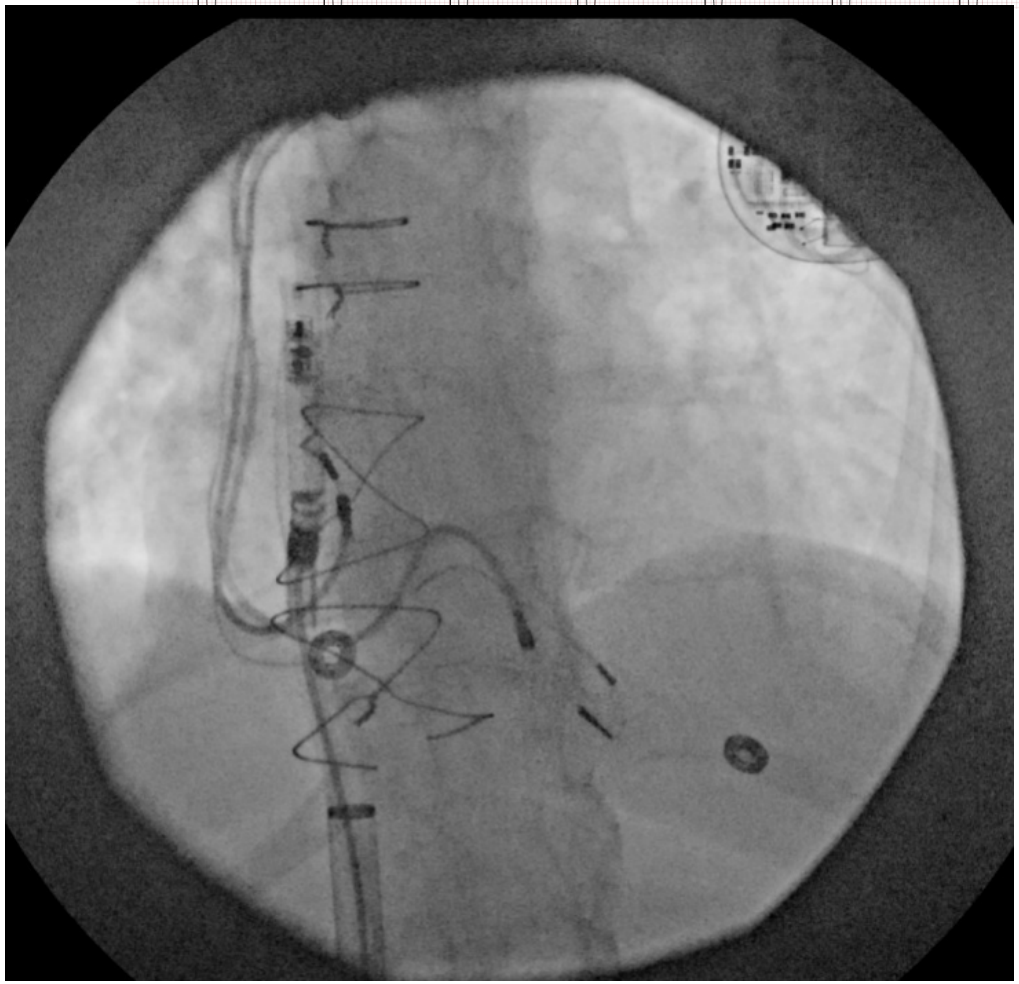
CP congénitale type canal AV, BAVc FA

PM post op pour BAV 1997 (2007-2016-2022)

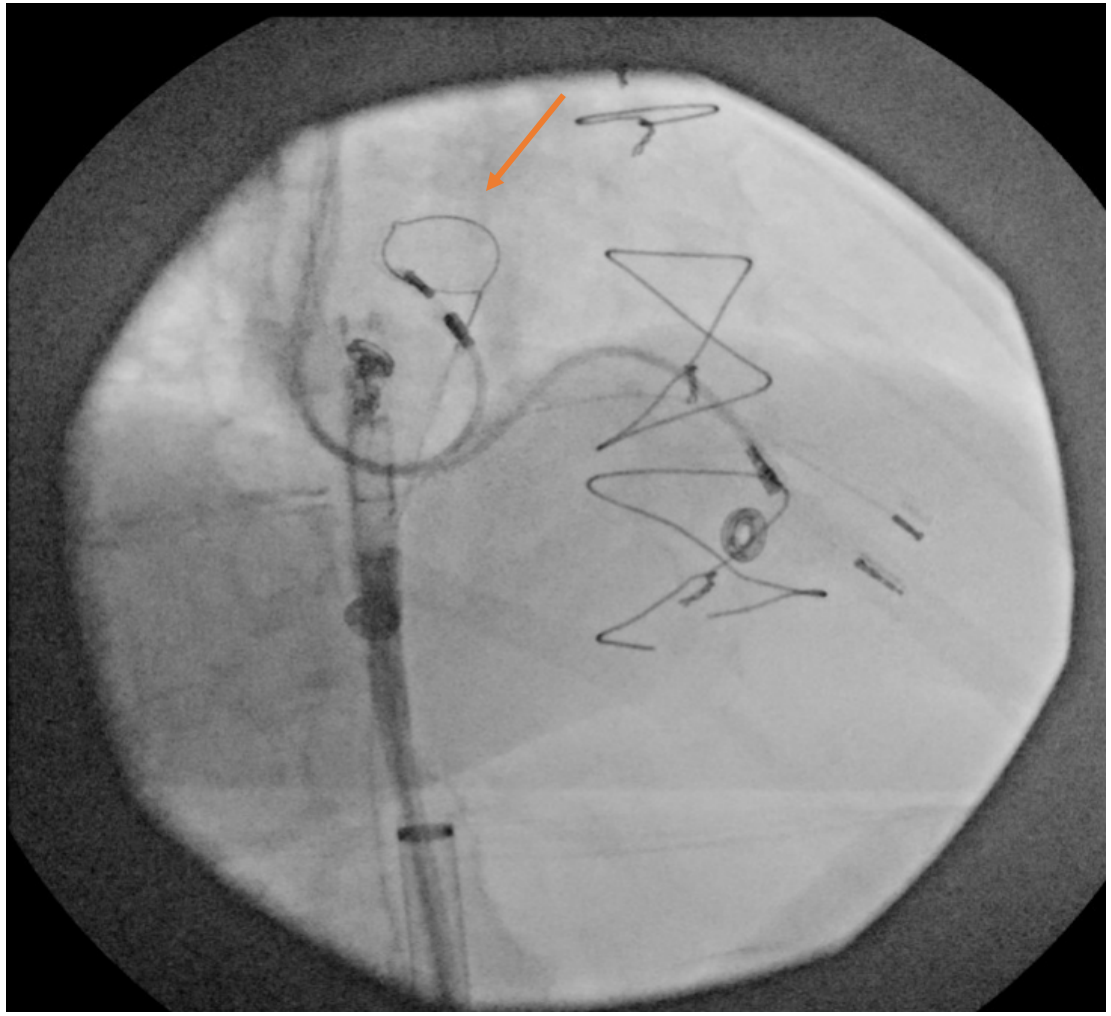
Sonde VD dysfonctionnelle

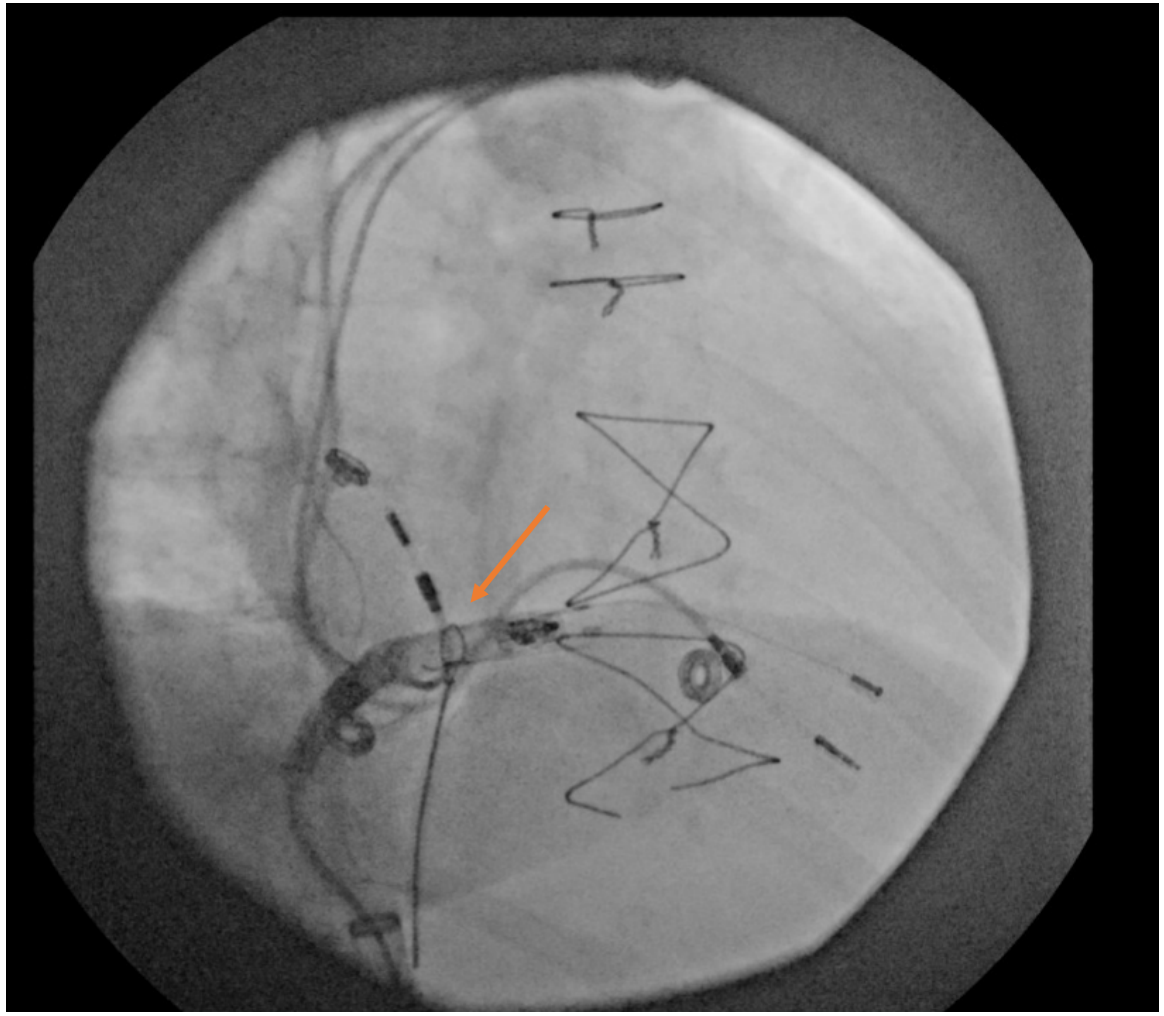


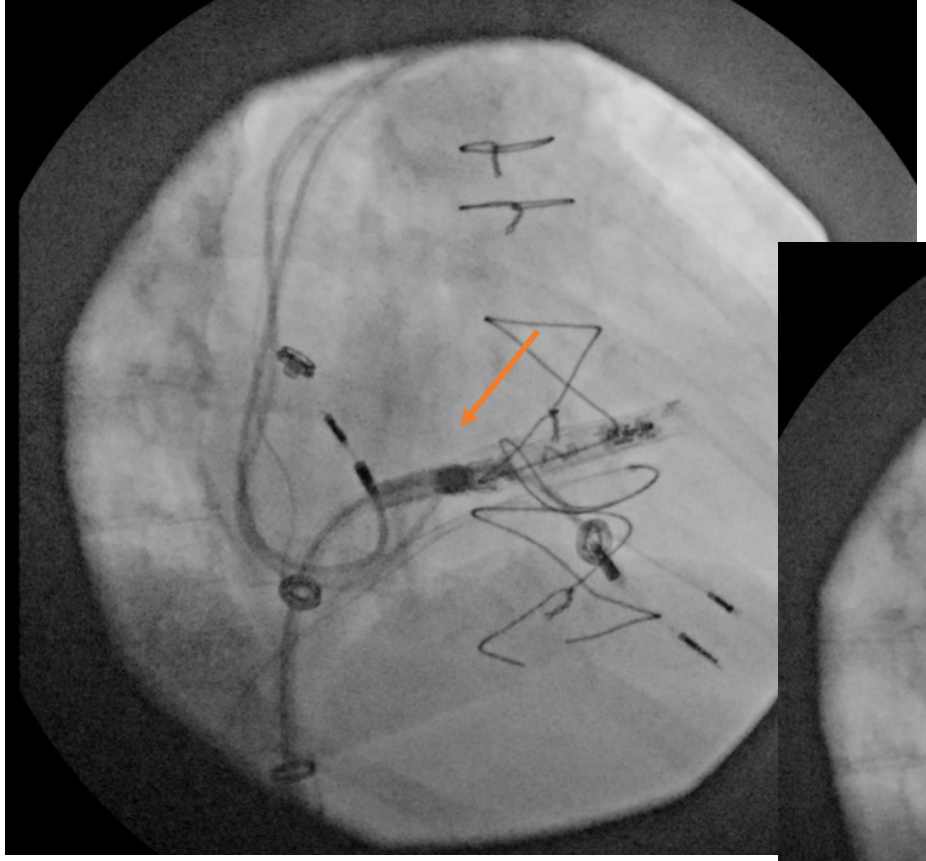


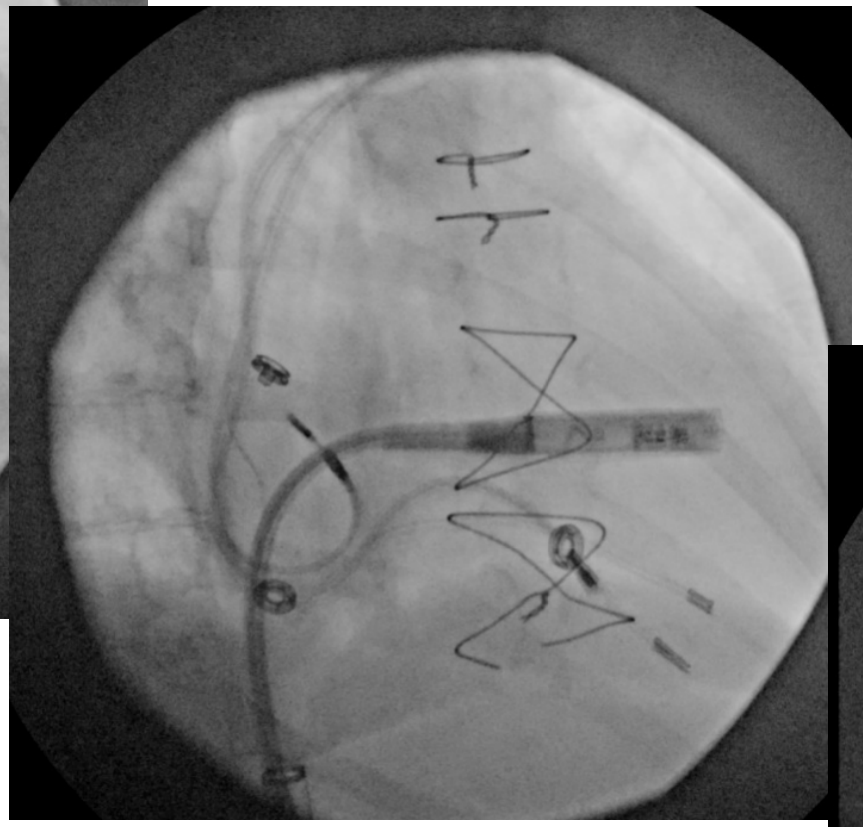


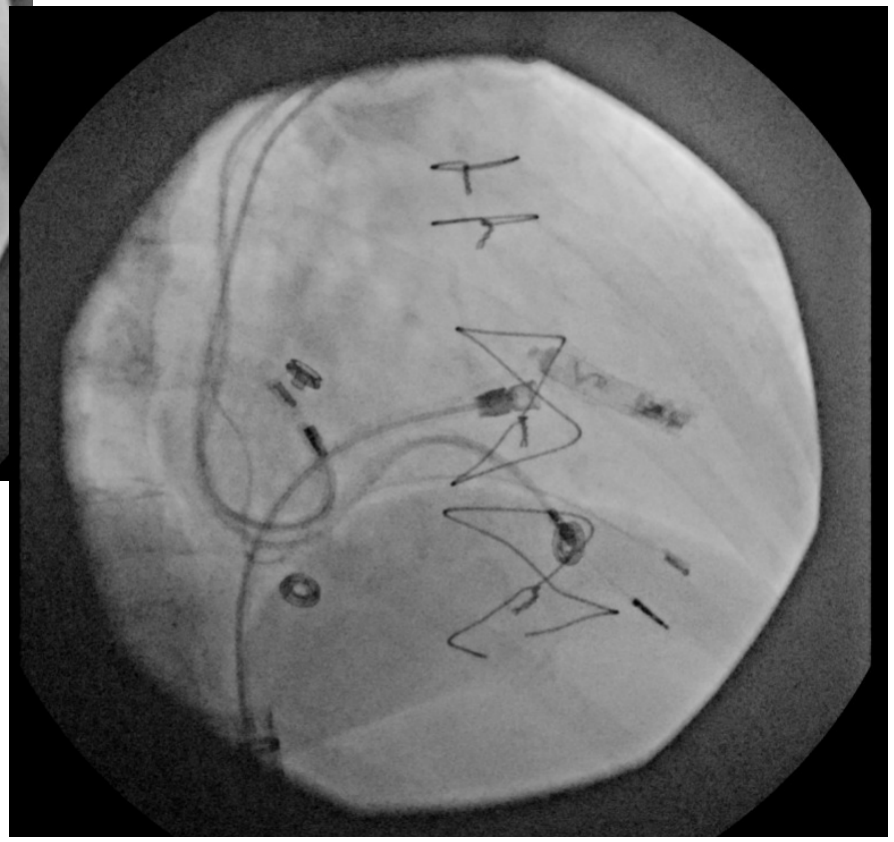
Lasso Goose Neck 30 mm pour franchir la tricuspide









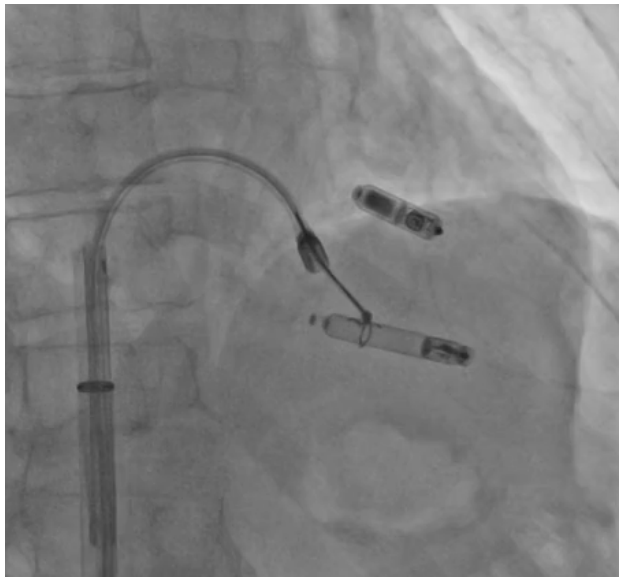
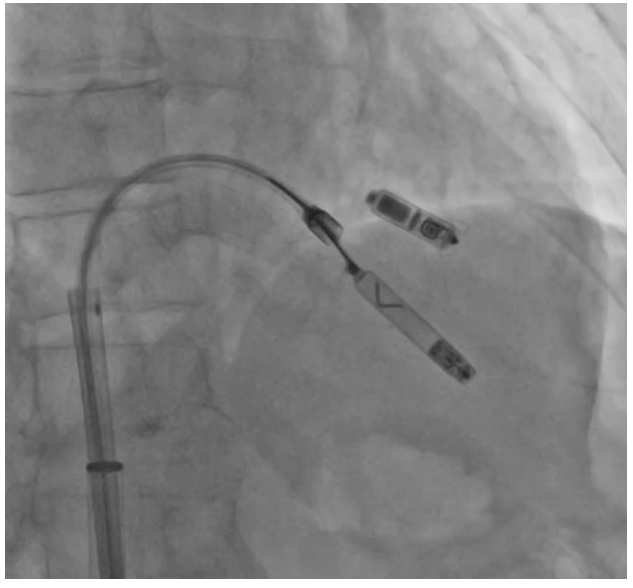
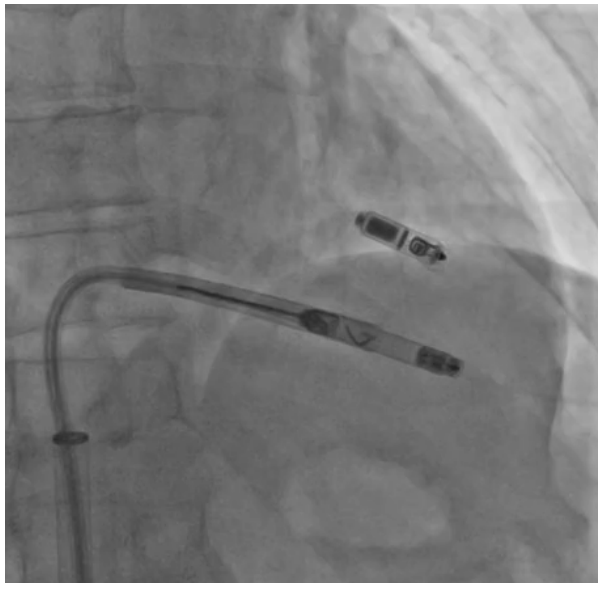
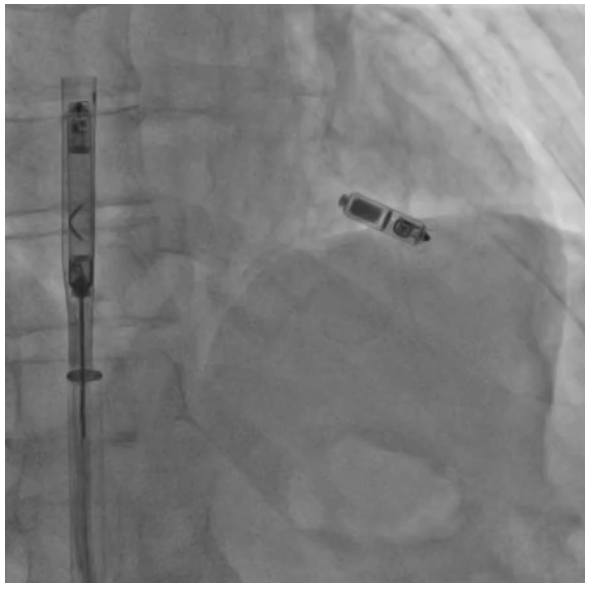


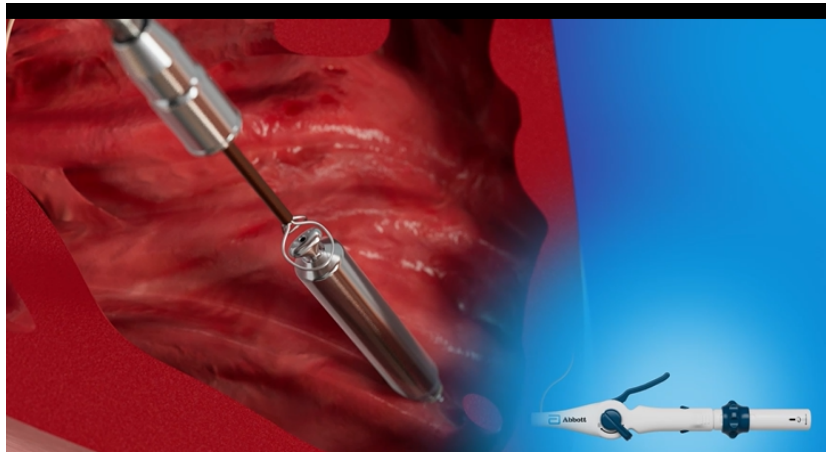
2 positions (unfundibulum bas inefficace, septal moyen OK)
Seuil 2,75V (lesion ++) puis 2,5 imp 960 ohms detection 4 mv
Seuil sortie hospit inf à 0,5V

leadless pacemakers extraction

Recall of a Nanostim leadless PM (2016) after reimplantation of a Micra AV

Removal of the old Nanostim™, 19/2/2021



L'AVEIR AR

Stimulateur cardiaque sans sonde auriculaire AVEIR™ AR

1. Bouton d'ancrage
2. Vis de fixation externe
3. Électrode hélicoïdale distale interne

Longueur : 32,2 mm **Diamètre :** 6,5 mm (19,5 F)

Conception à double vis

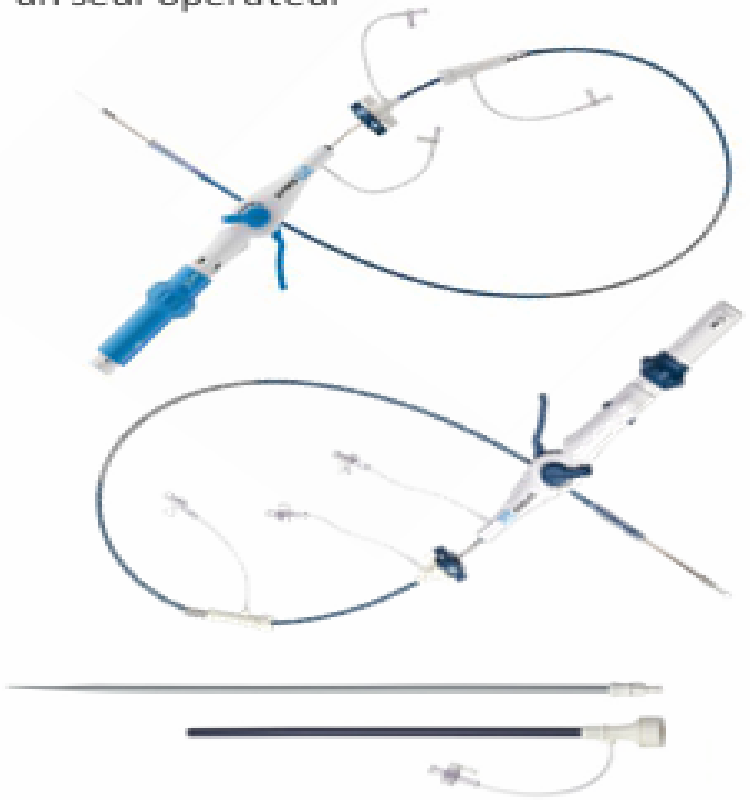
- Une externe inactive de 1,63 mm assure la fixation primaire
- La vis interne fait office d'électrode de stimulation et assure une fixation et une stabilité électrique supplémentaires
- Site d'implantation recommandé : base de l'auricule droit

Model	LSP201A (Right Atrial)	LSP202V (Right Ventricular)
Length	32.2 mm (1.27 in)	38.0 mm (1.50 in)
Diameter	6.5 mm (0.26 in)	6.5 mm (0.26 in)
Volume	0.96 cm^3	1.1 cm^3
Mass	2.1 grams	2.4 grams
Electrode Tip	Helical	Semispherical

L'AVEIR AR

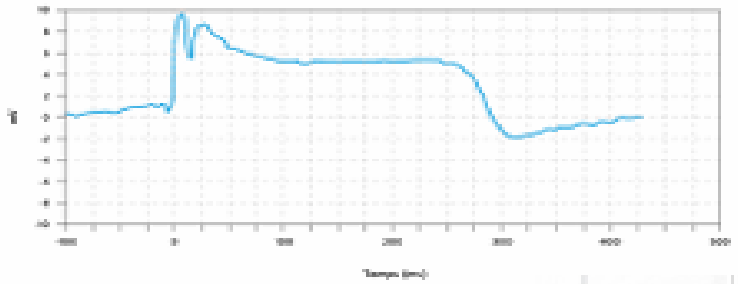
CATHÉTERS D'IMPLANTATION ET DE RÉCUPÉRATION AVEIR™

Conçu pour une utilisation ergonomique par un seul opérateur



MODULE AVEIR™ LINK ET PROGRAMMATEUR MERLIN™ (PCS)

Pas de cout additionnel adapté au programmeur actuel

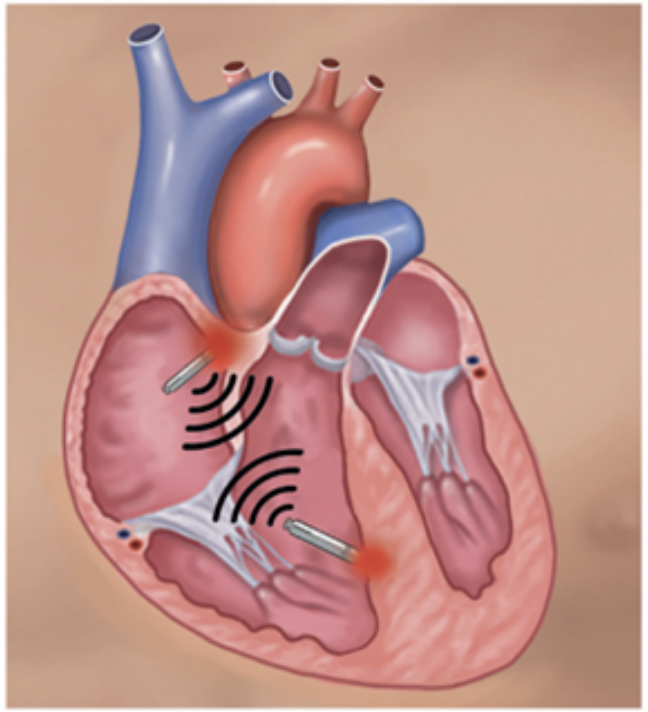


Même catheter , même programmateur…..

L'AVEIR DR : système de communication

A

Communication Between the Leadless Pacemakers

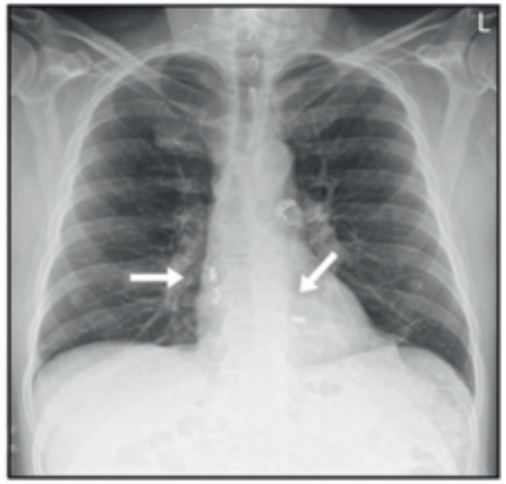


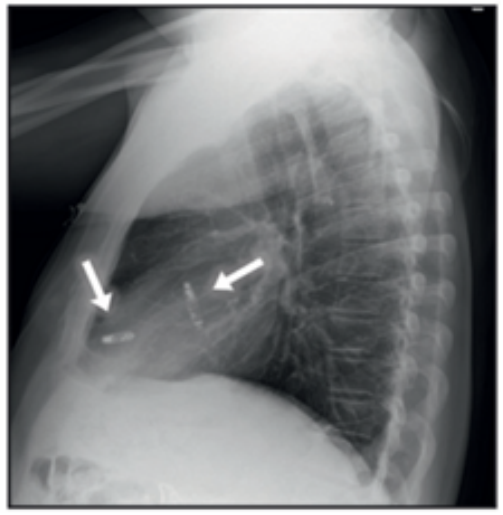
Communication:

- After each sensed event
- Before each pacing stimulus
- To update target pacing rate
- Automatic mode switch entry/exit
- Upon magnet detection
- When reaching recommended replacement time

B

Position on Chest Radiographs





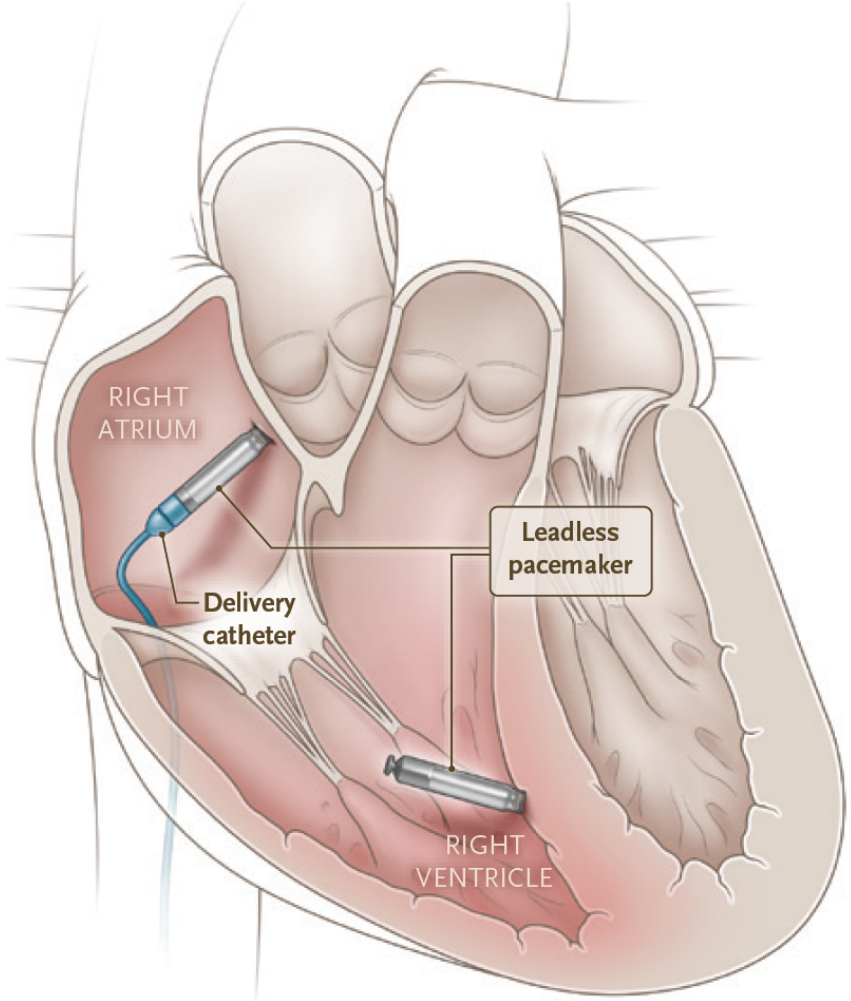
TECHNOLOGIE i2i

Breeman et al JACC. 2024;84:2131–2147

Knops et al, New England Journal of Medicine 2023

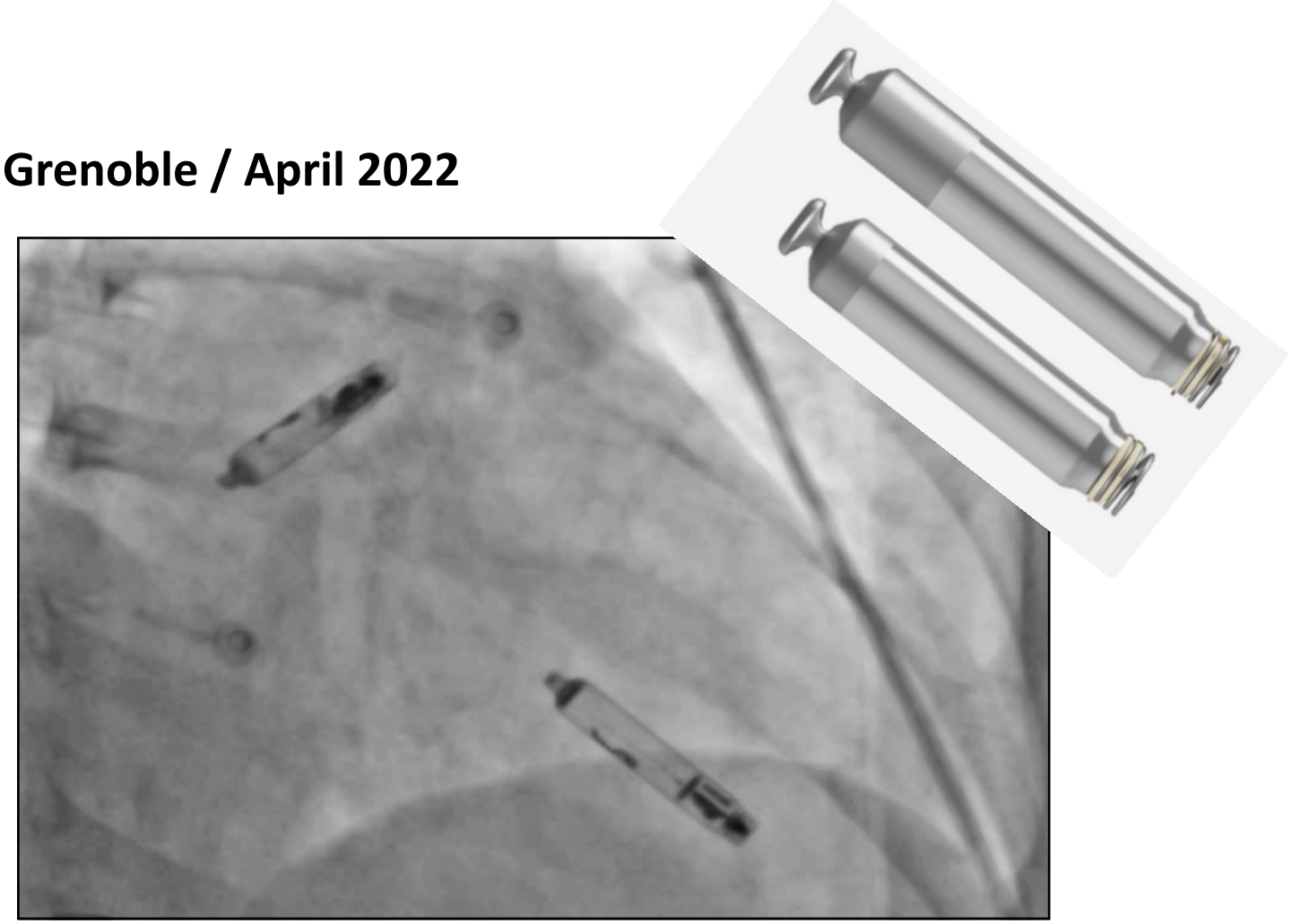
A Dual-Chamber Leadless Pacemaker

Reinoud E. Knops, M.D., Ph.D., Vivek Y. Reddy, M.D., James E. Ip, M.D., Rahul Doshi, M.D., Derek V. Exner, M.D., M.P.H., Pascal Defaye, M.D., Robert Canby, M.D., Maria Grazia Bongiorni, M.D., Morio Shoda, M.D., Gerhard Hindricks, M.D., Petr Neužil, M.D., Mayer Rashtian, M.D., Karel T.N. Breeman, M.D., Jordan R. Nevo, M.S., Leonard Ganz, M.D., Chris Hubbard, M.B.A., and Daniel J. Cantillon, M.D., for the Aveir DR i2i Study Investigators*



New Engl J of Med May 2023

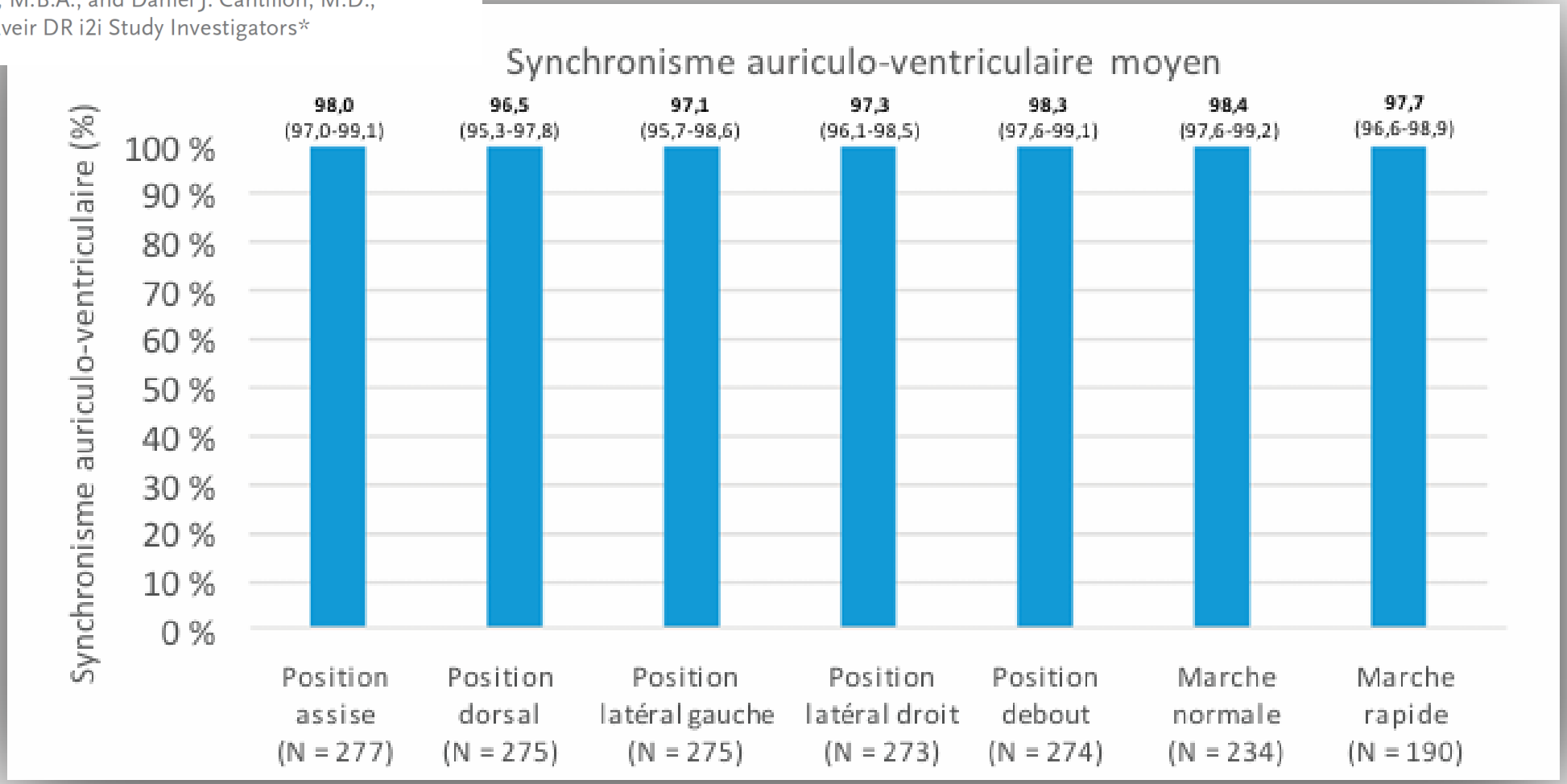
Grenoble / April 2022



Succès d'implantation 98,3%
Complications 3 mois 9,7% (id PM DDD)

A Dual-Chamber Leadless Pacemaker

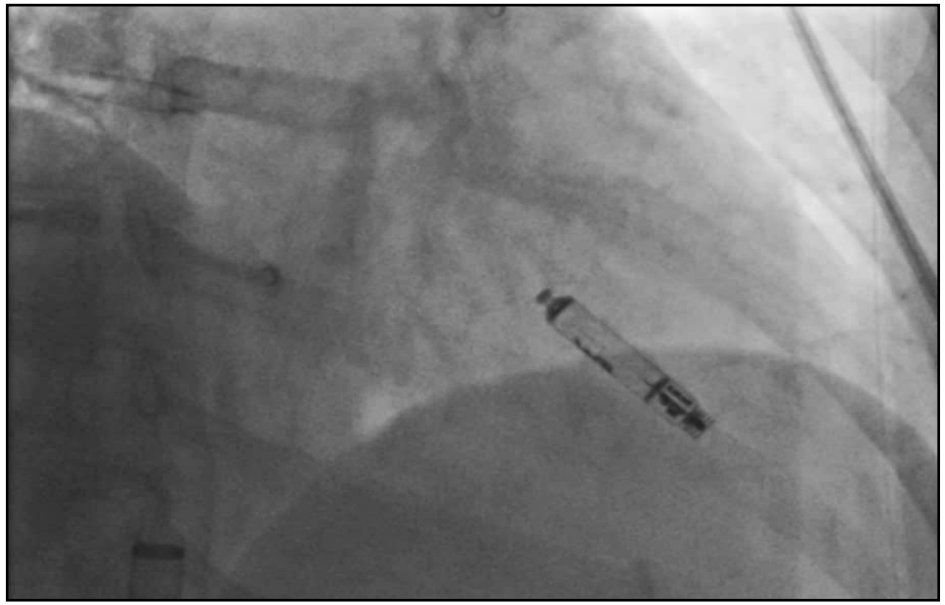
Reinoud E. Knops, M.D., Ph.D., Vivek Y. Reddy, M.D., James E. Ip, M.D., Rahul Doshi, M.D., Derek V. Exner, M.D., M.P.H., Pascal Defaye, M.D., Robert Canby, M.D., Maria Grazia Bongiorni, M.D., Morio Shoda, M.D., Gerhard Hindricks, M.D., Petr Neužil, M.D., Mayer Rashtian, M.D., Karel T.N. Breeman, M.D., Jordan R. Nevo, M.S., Leonard Ganz, M.D., Chris Hubbard, M.B.A., and Daniel J. Cantillon, M.D., for the Aveir DR i2i Study Investigators*

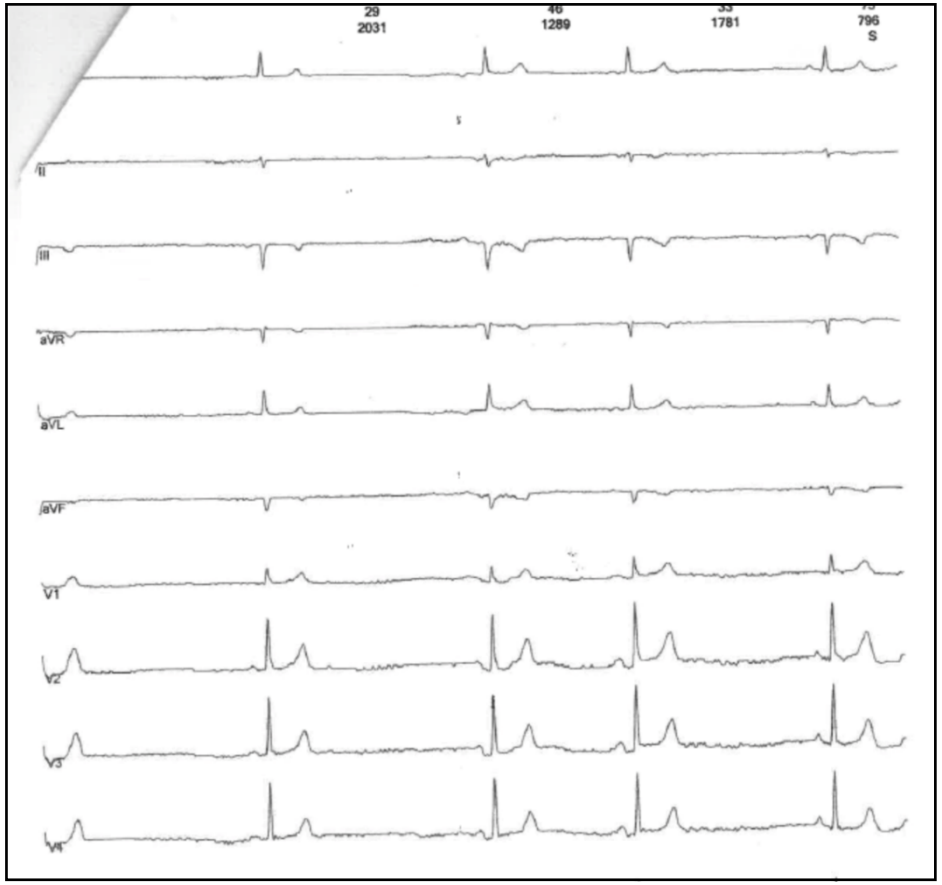


New Engl J of Med May 2023

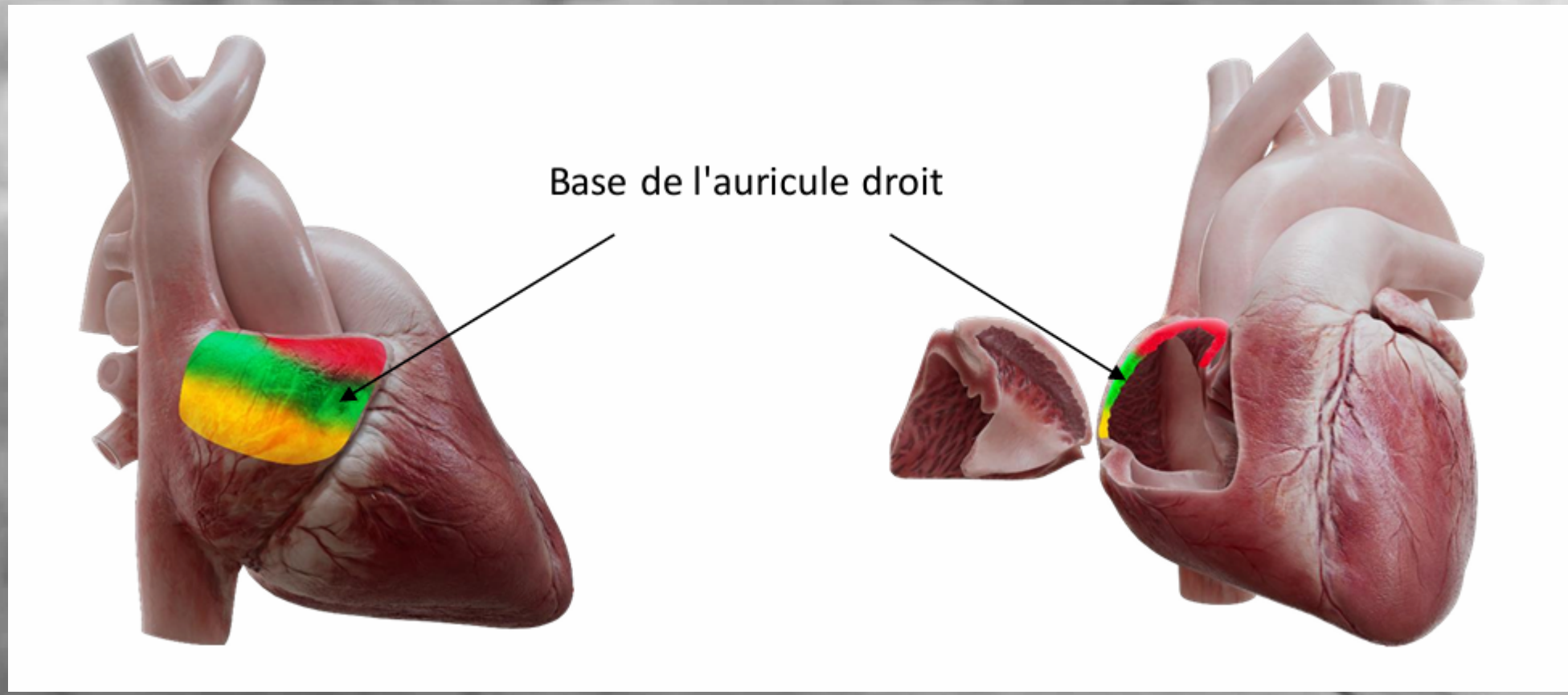
Mrs R… G

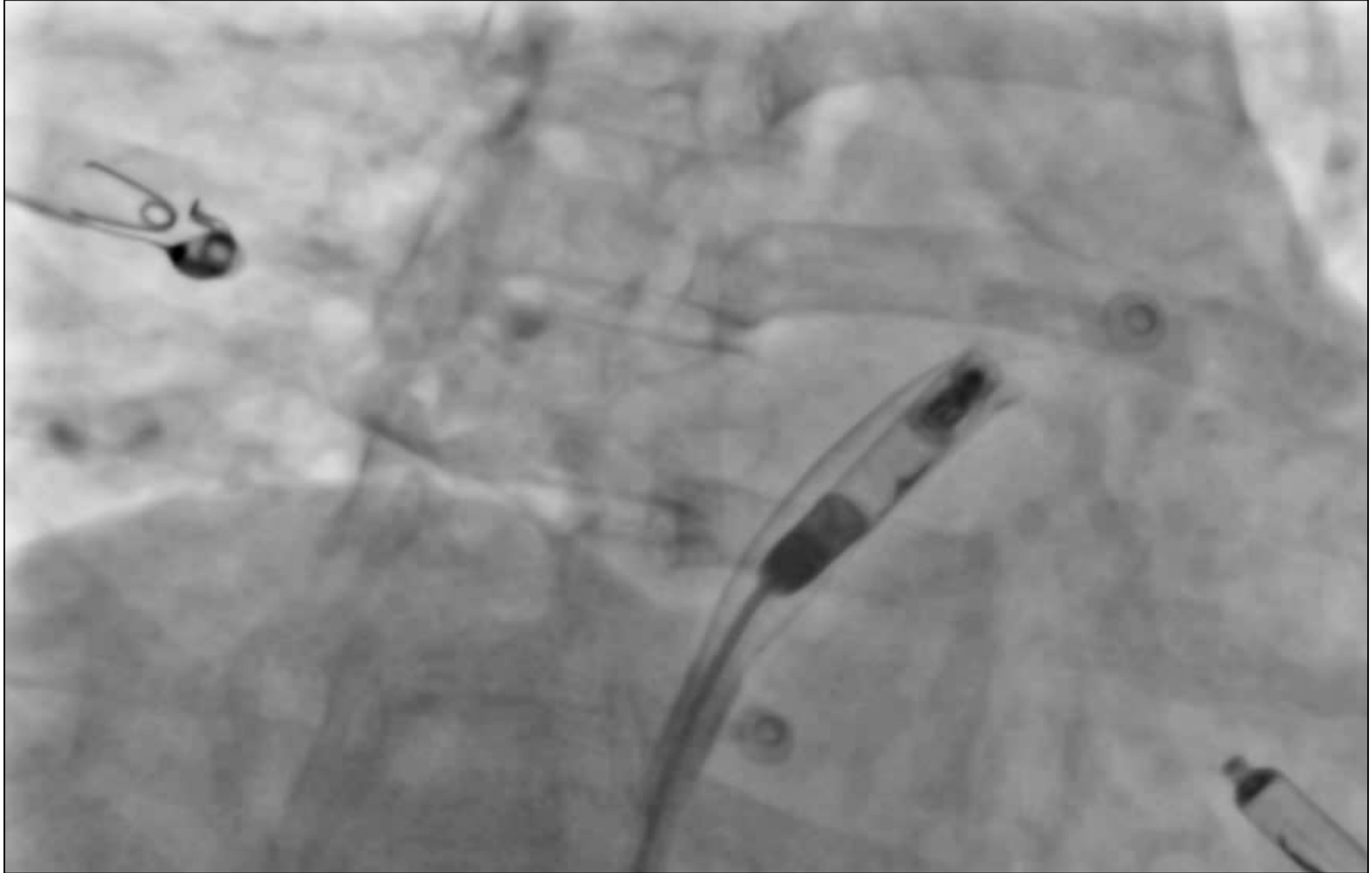
- *Sinus node dysfunction*
- *Dizziness with lipothymia*
- *Paroxysmal AF*
- *Female, 74 Years Old*
- *Height : 156 cm.*
- *Weight : 72 Kg.*

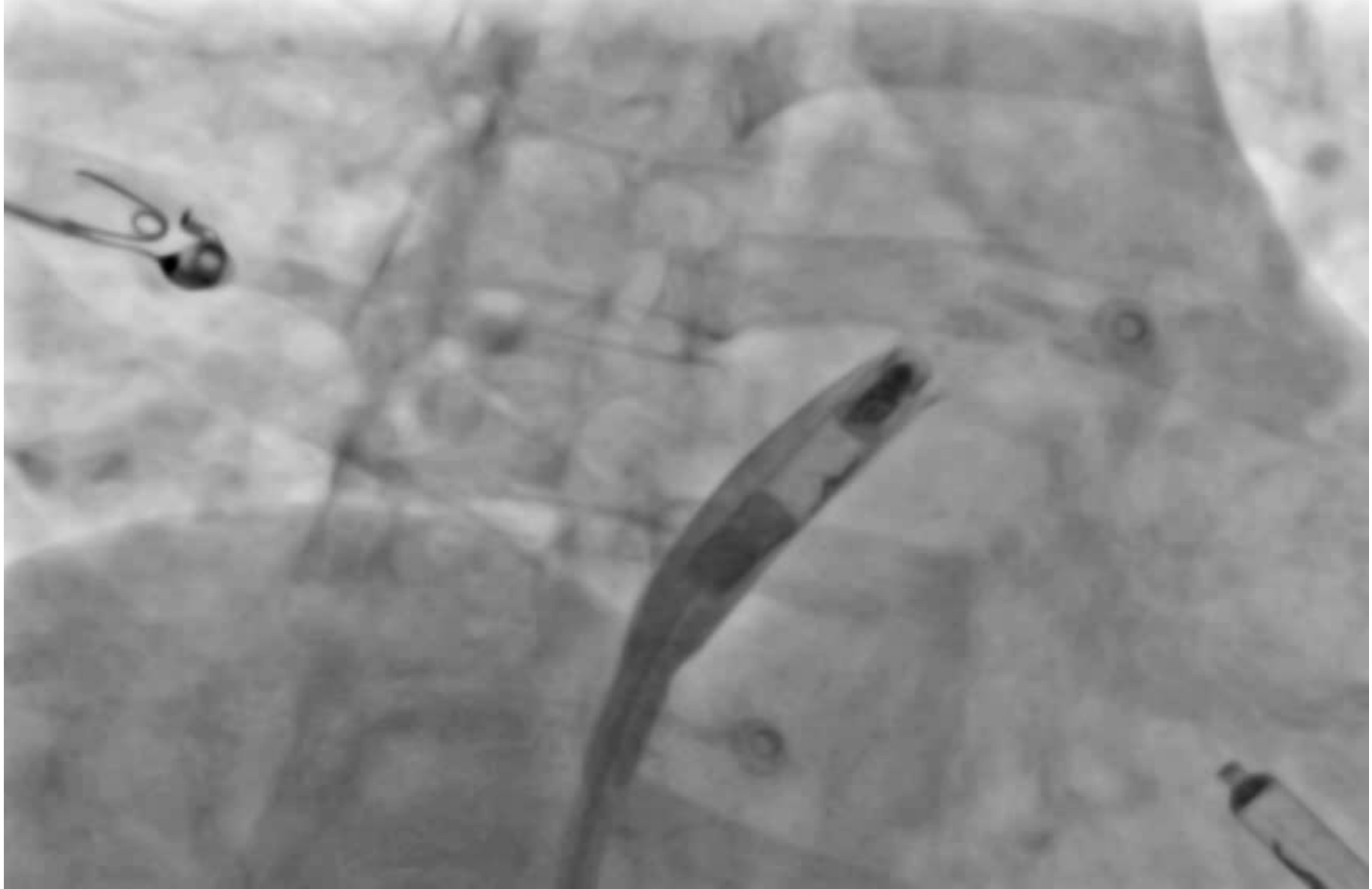


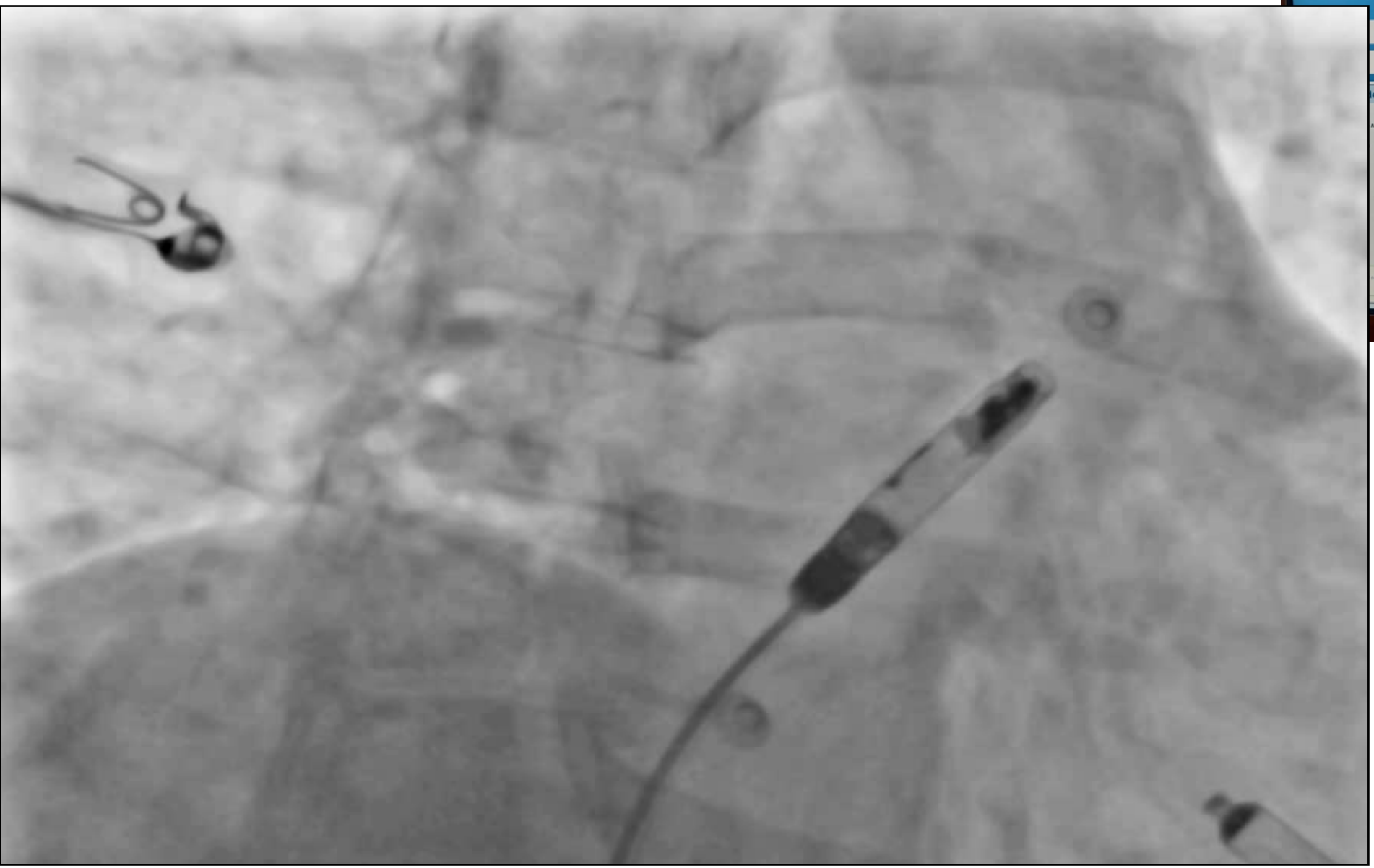


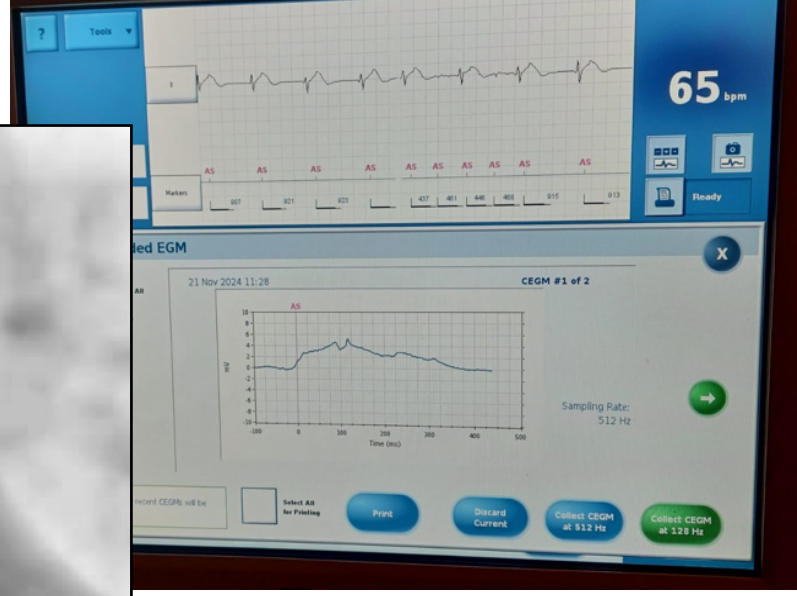
DDD Pacemaker indication
Implant of AVEIR DR , March 8 2022
Centre Hospitalier Universitaire Grenoble Alpes

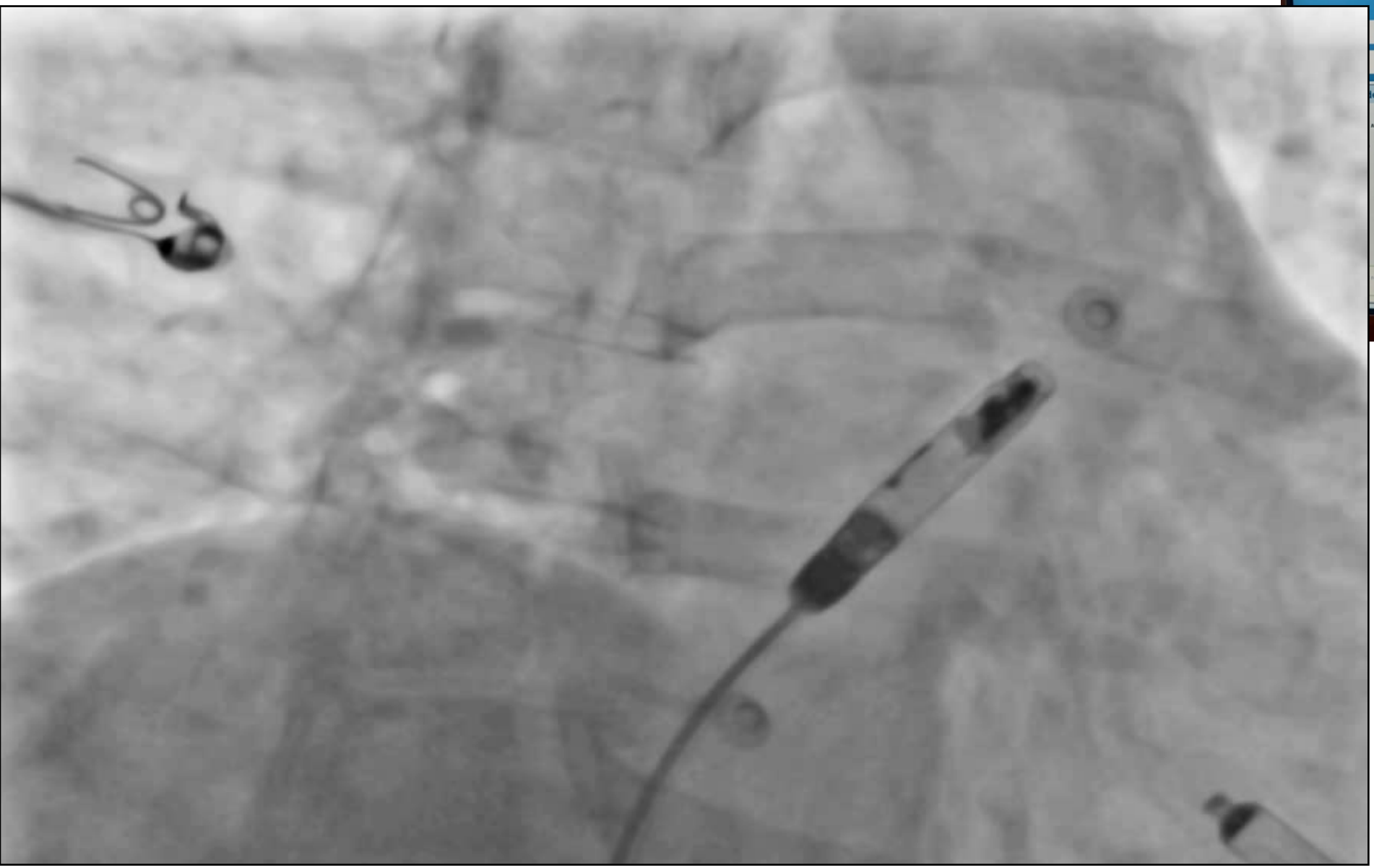

Base de l'auricule droit

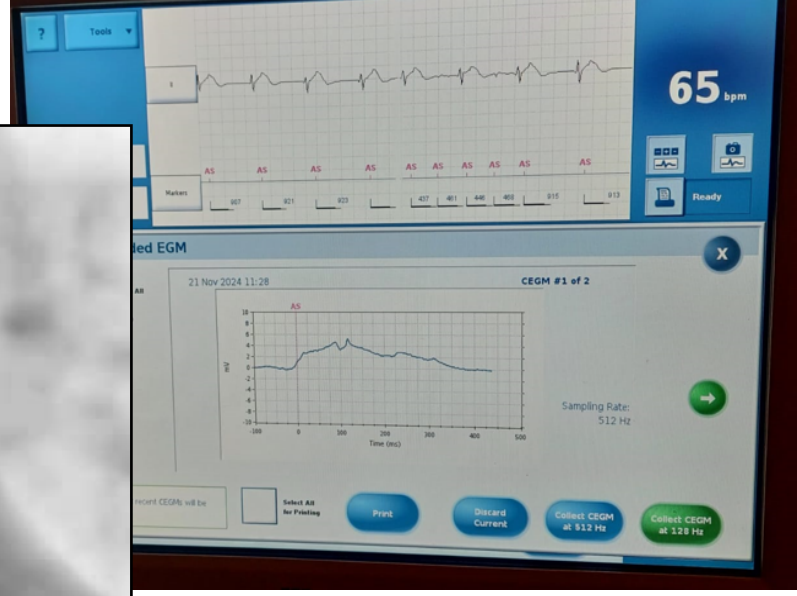


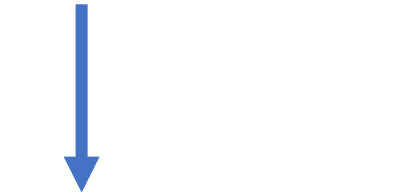


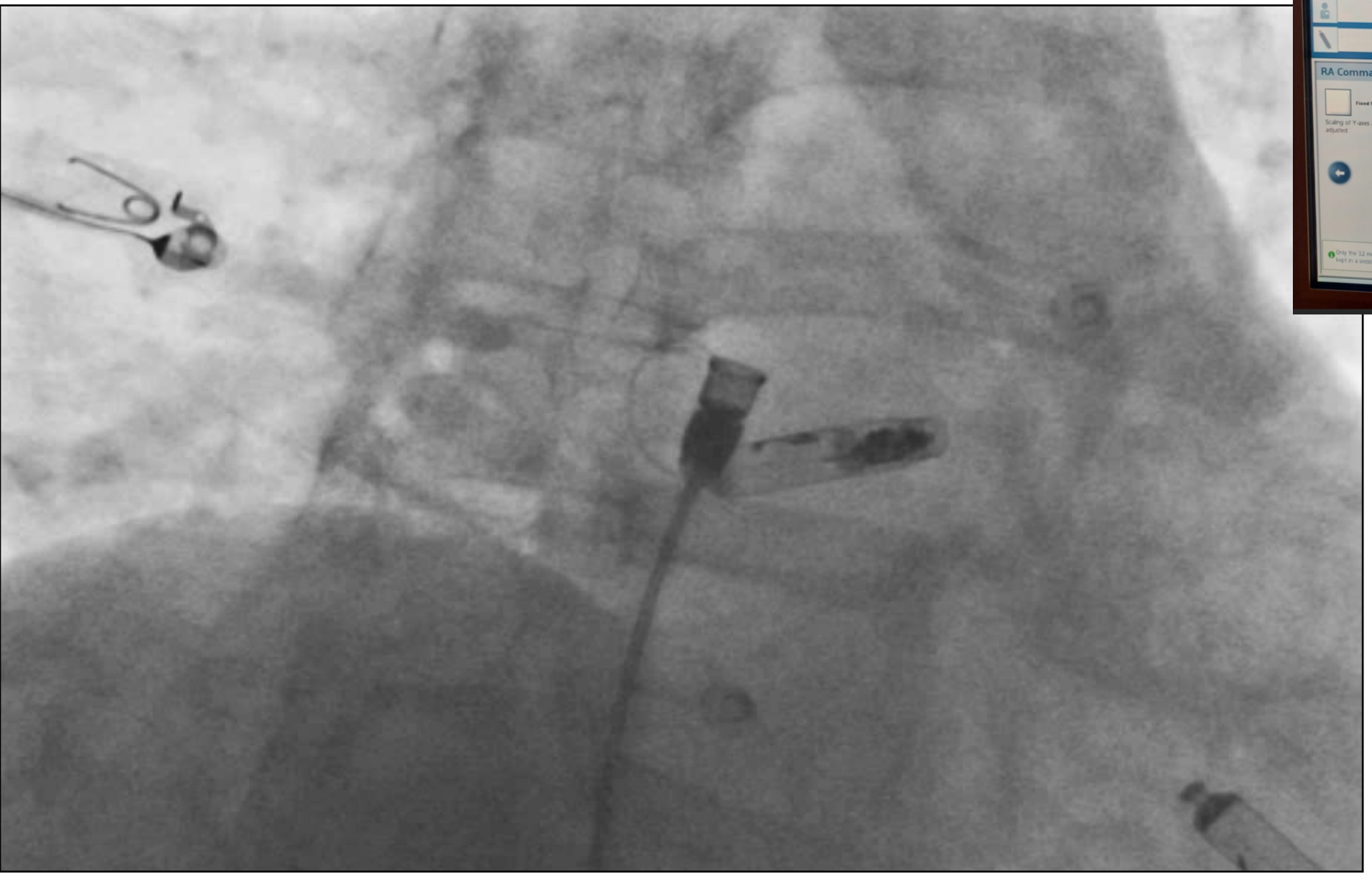


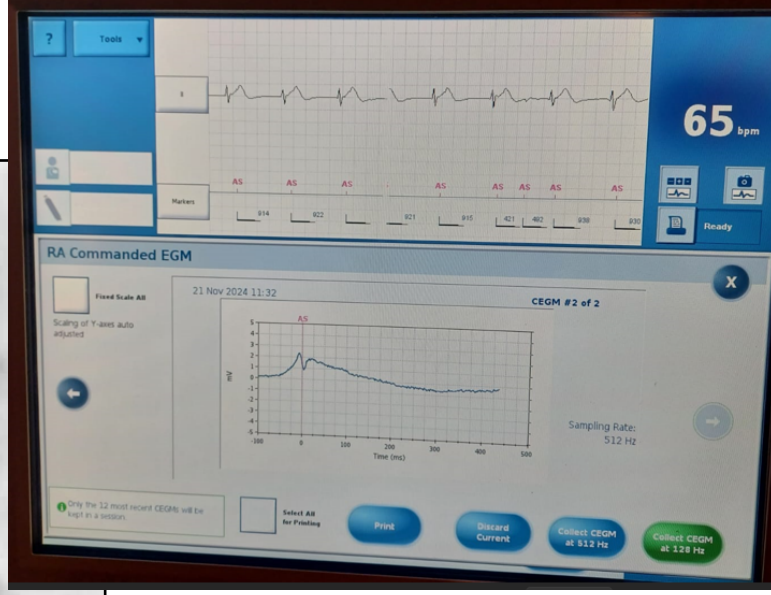

Tools
65 bpm
Ready
ed EGM
21 Nov 2024 11:28
CEGM #1 of 2
AS
Sampling Rate:
512 Hz
Select All for Printing
Print
Discard Current
Collect CEGM at 512 Hz
Collect CEGM at 128 Hz



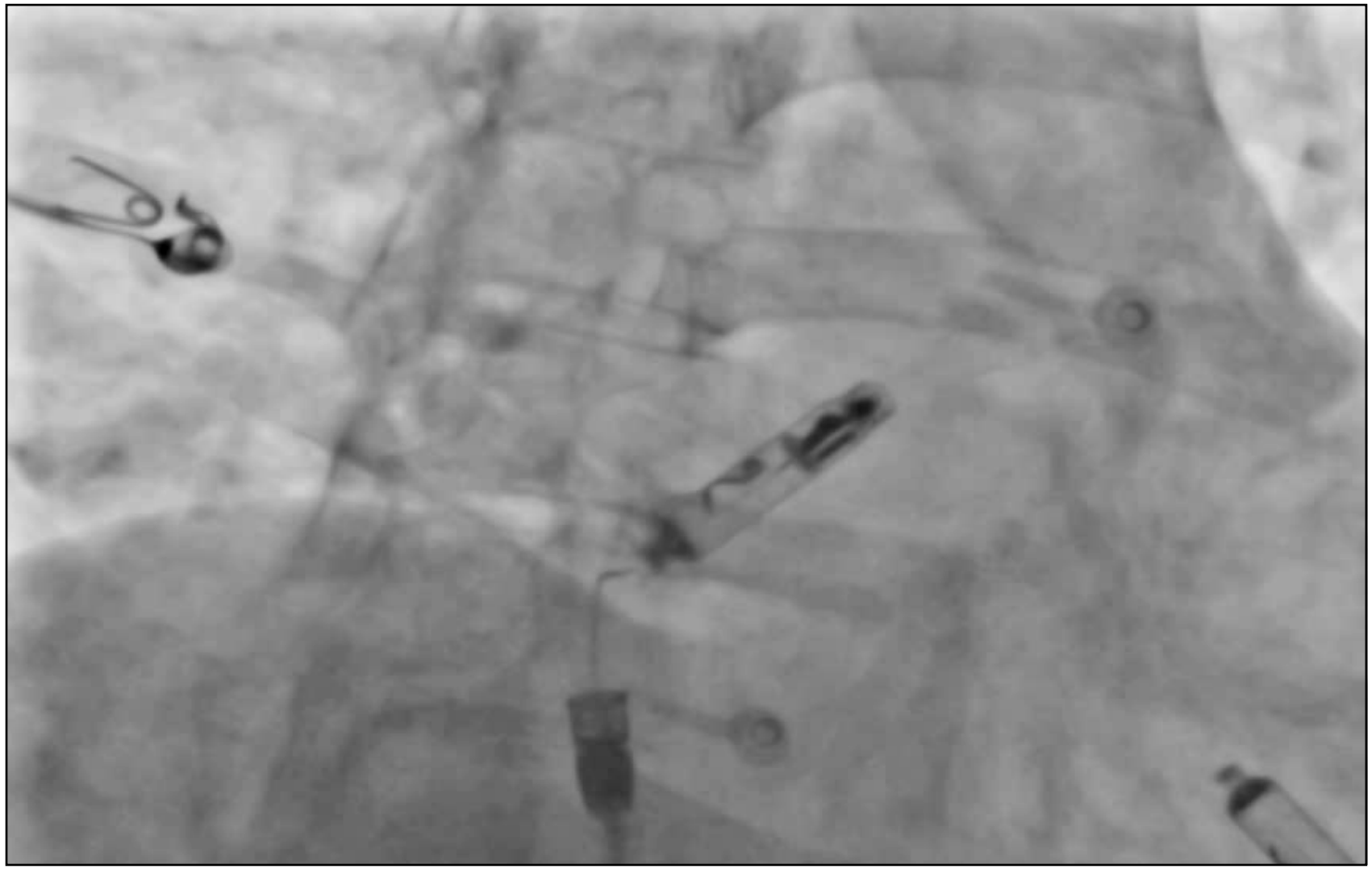

65 bpm
Ready
ed EGM
21 Nov 2024 11:28
CEGM #1 of 2
AS
Sampling Rate:
512 Hz
Print
Discard Current
Collect CEGM at 512 Hz
Collect CEGM at 128 Hz

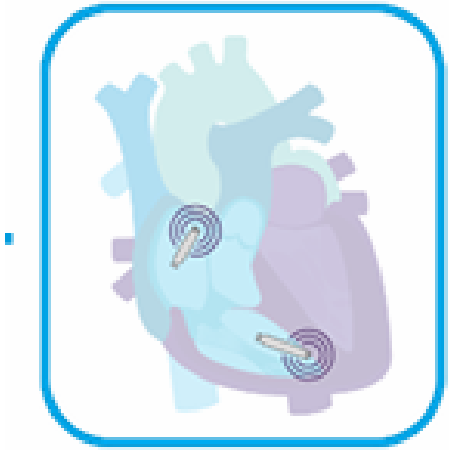




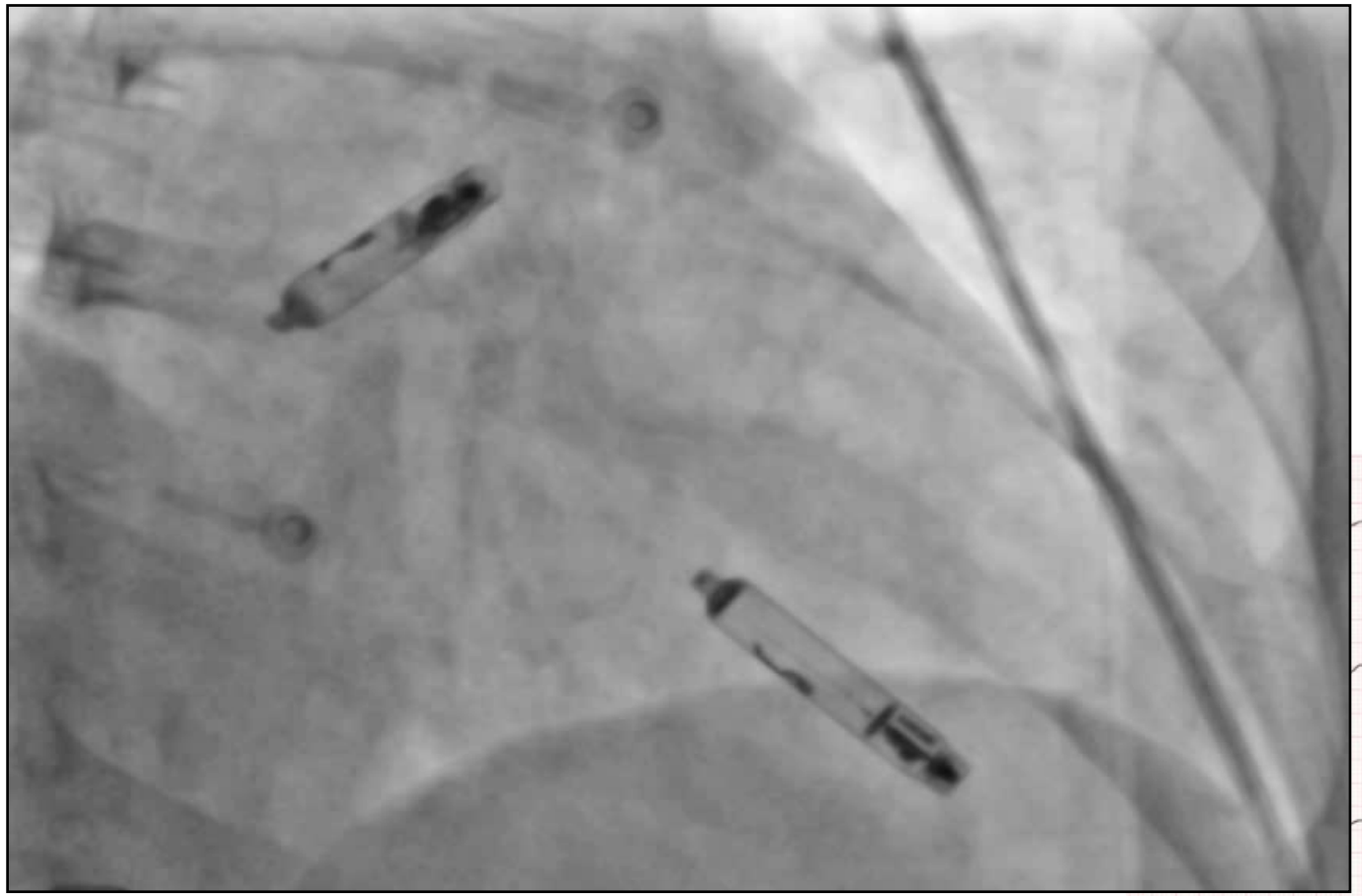

65 bpm
Ready
RA Commanded EGM
21 Nov 2024 11:32
CEGM #2 of 2
Sampling Rate:
512 Hz
Print
Discard Current
Collect CEGM at 512 Hz
Collect CEGM at 128 Hz

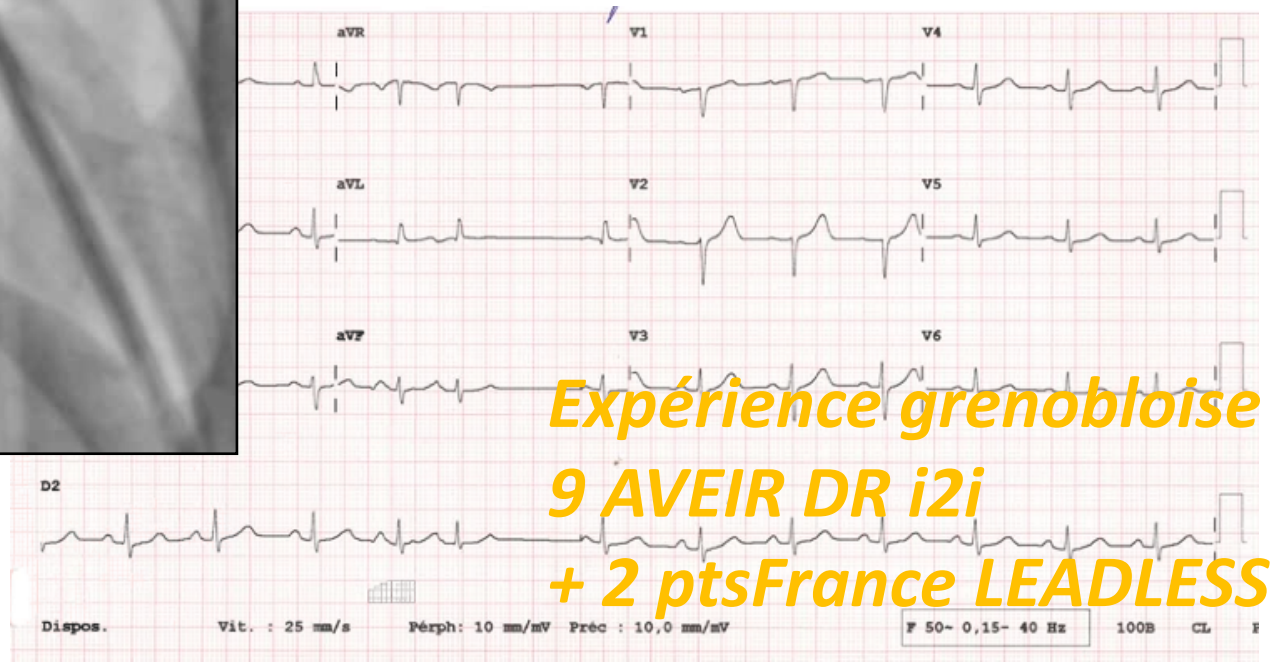
tests





Appareiement
Reglage i2I
Reglage DDD





Expérience grenobloise

9 AVEIR DR i2i

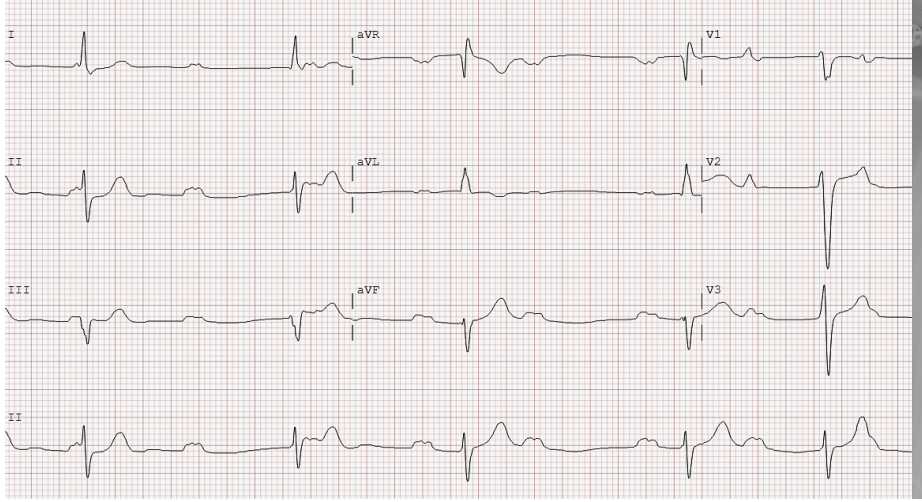
+ 2 ptsFrance LEADLESS

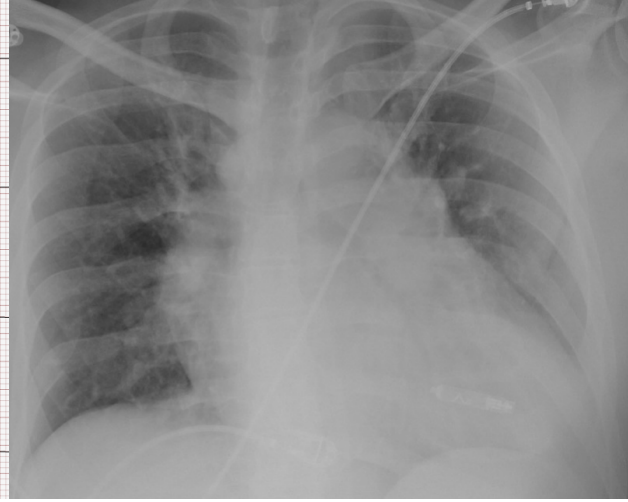
Exemple 2 : UPGRADE

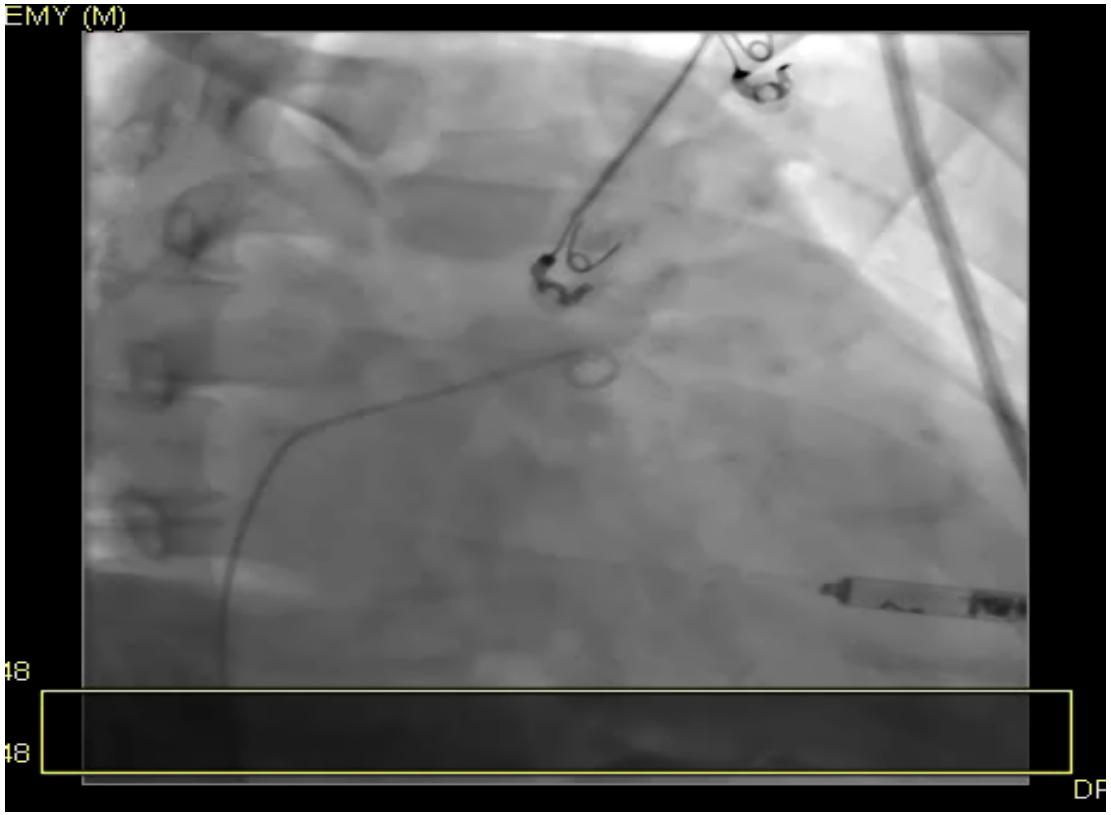
Mr S, 35 ans

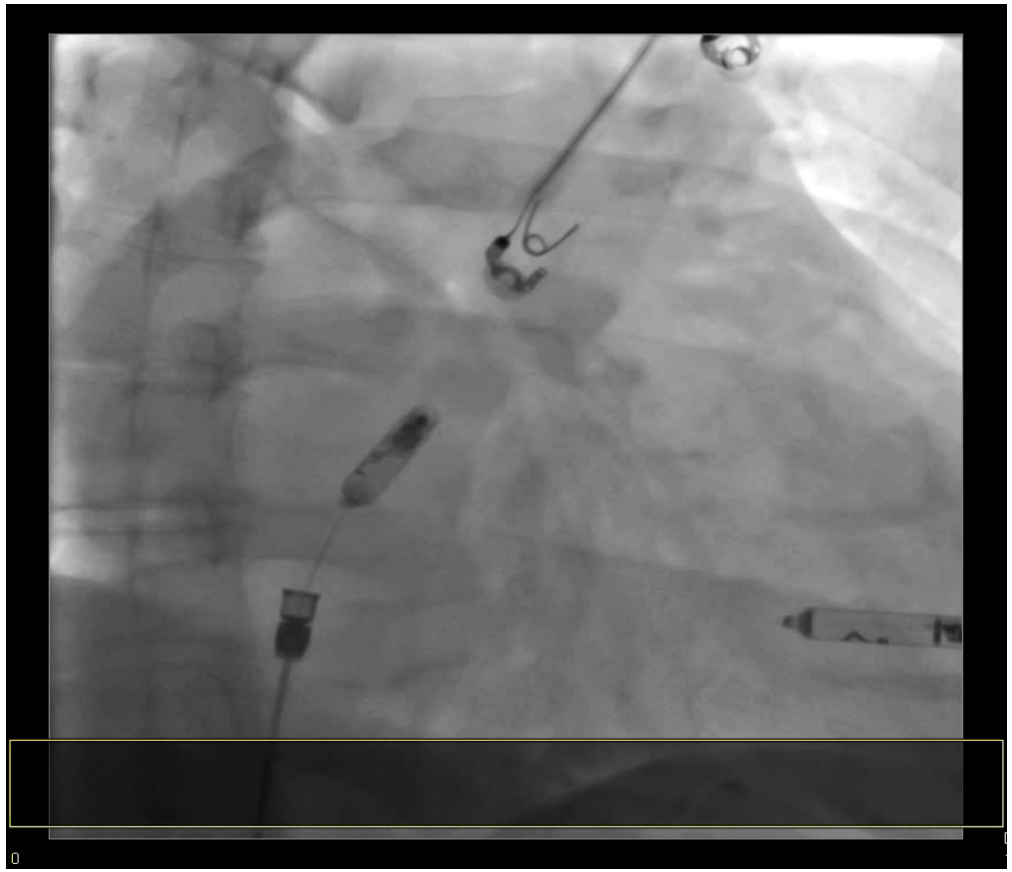
BAV2M2 FC 35 bpm

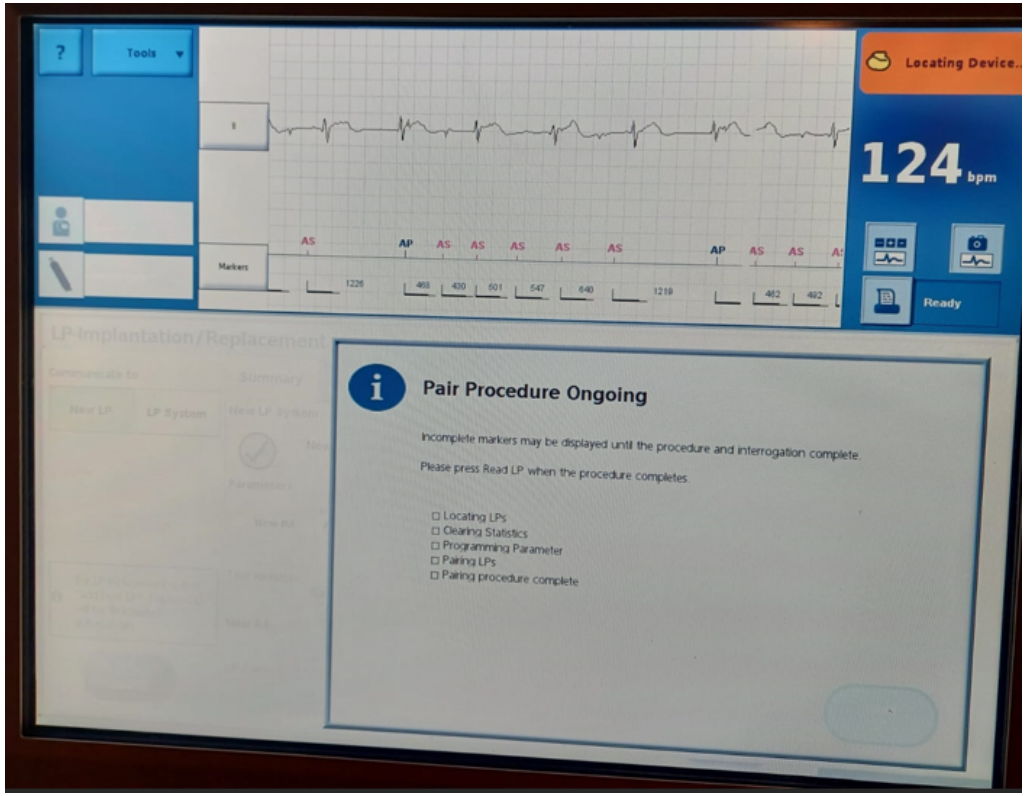
Leadless AVEIR VR en juin 2023

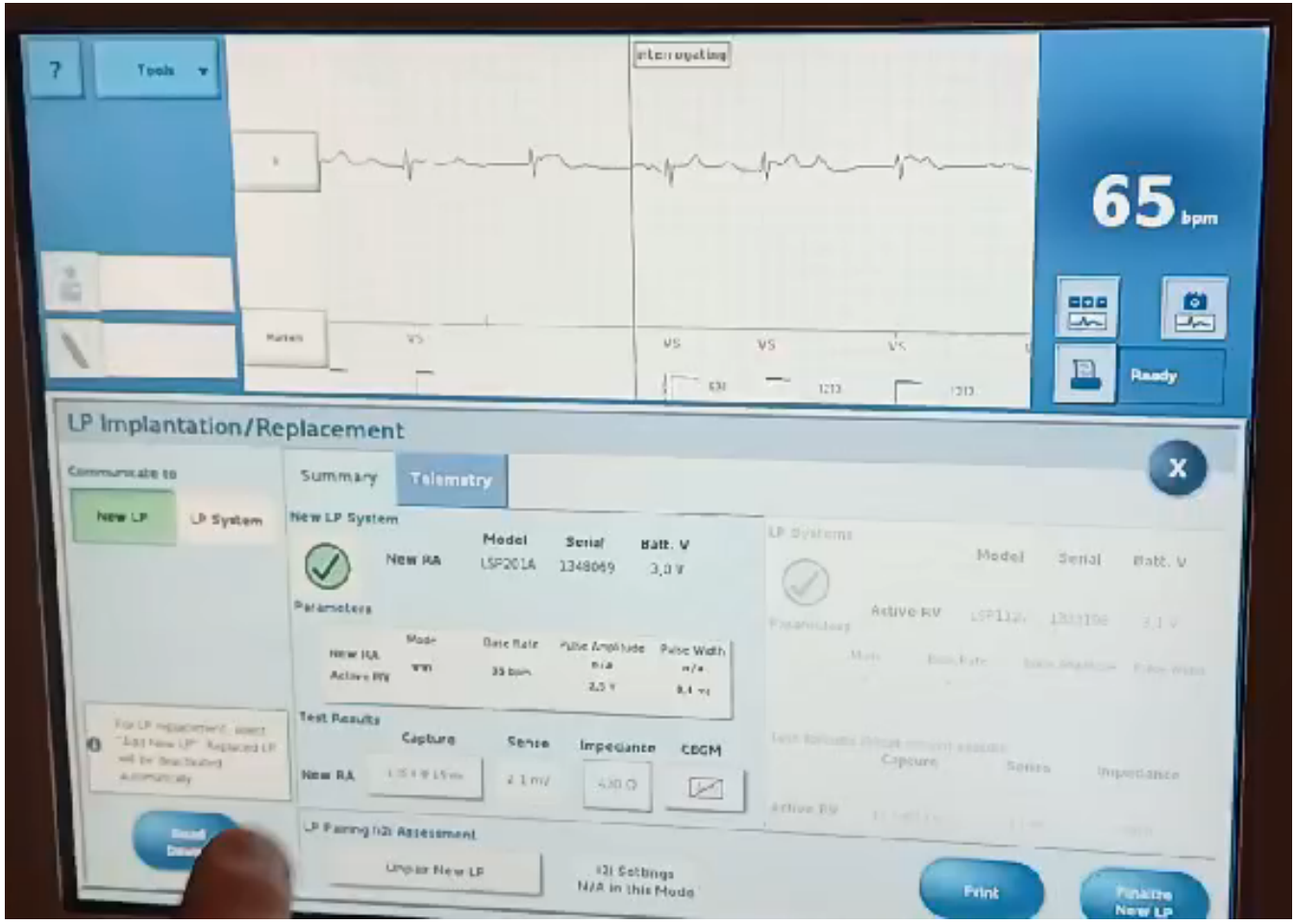


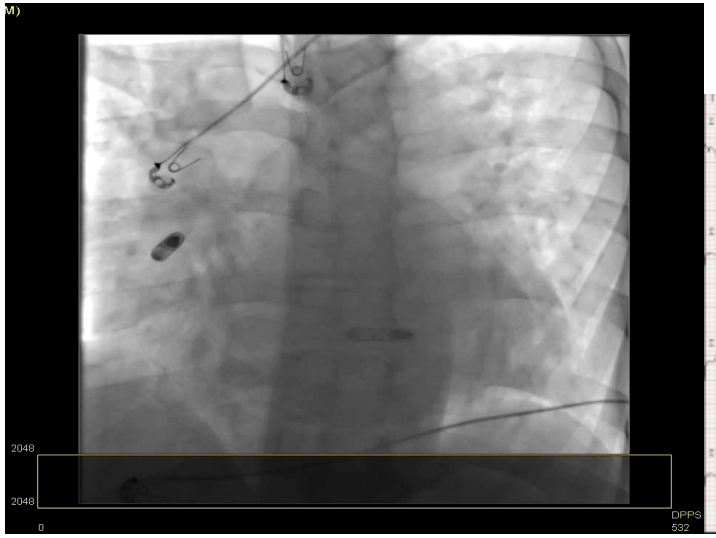


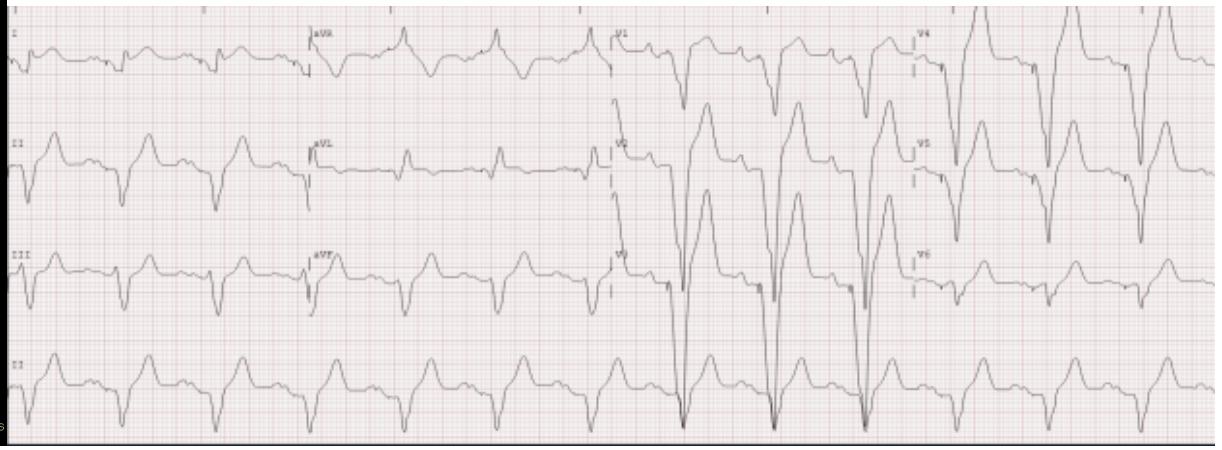





Tools
Locating Device..
124 bpm
Ready
Pair Procedure Ongoing
Incomplete markers may be displayed until the procedure and interrogation complete.
Please press Read LP when the procedure completes.
Locating LPs
Clearing Statistics
Programming Parameter
Pairing LPs
Pairing procedure complete

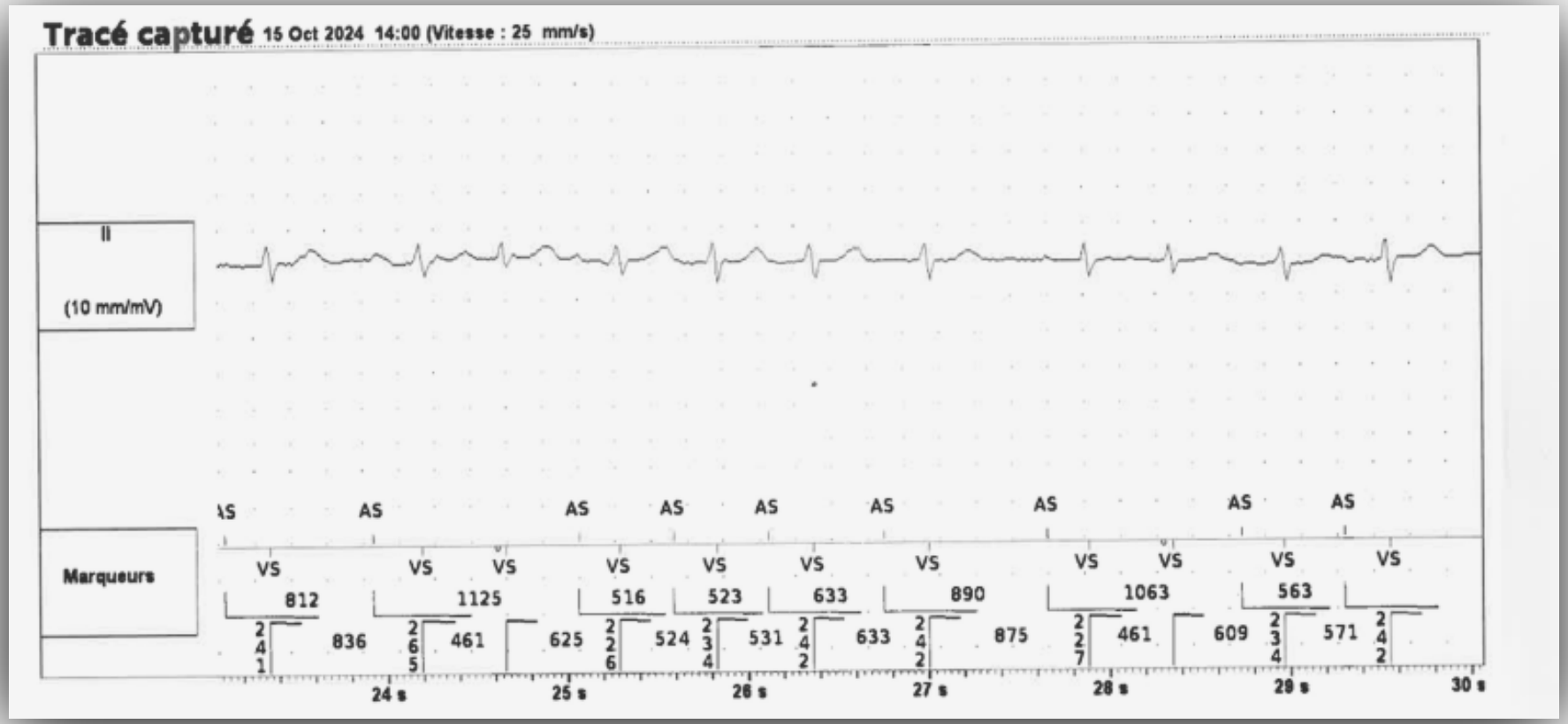

Tools
65 bpm
Ready
LP Implantation/Replacement
Summary
Telemetry
New LP
LP System
New LP System
New RA
Model
Serial
Batt. V
LSP201A
1348069
3.0 V
Parameters
Test Results
Capture
Sense
Impedance
CBGM
Print

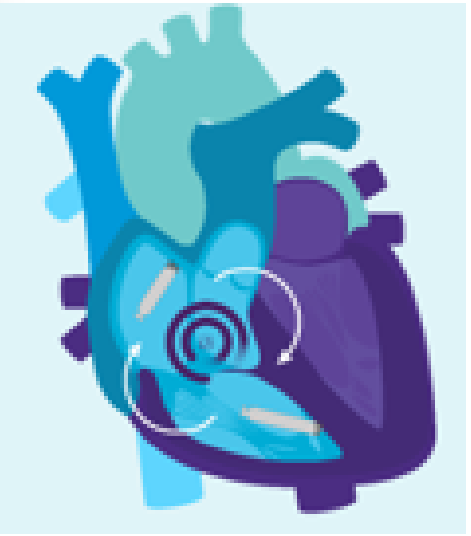

2048
2048
DPPS
532



Gestion à moyen terme : quels problèmes?

Apprendre à raisonner différemment ….

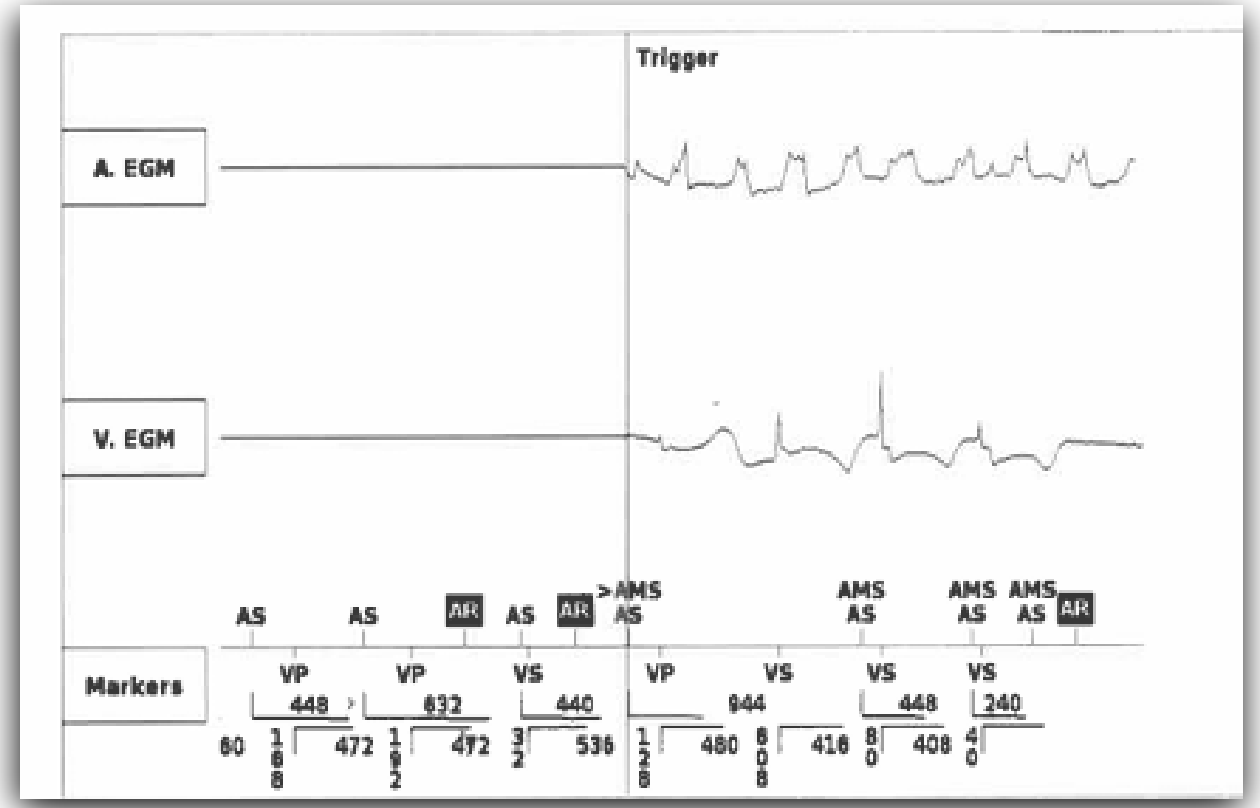




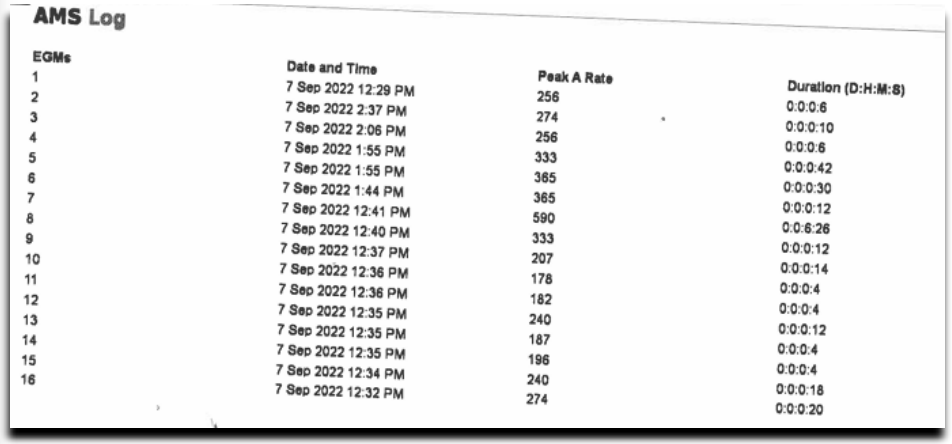
ESV ou perte de communication ??

Gestion à moyen terme : quels problèmes?

Madame R Gianna, première patiente implantée d'un DR
Palpitations intermittentes



! Algorithmie disponible
- CAM et diagnostic associés
- Préférence Ventriculaire intrinsèque
- Hystérésis
- Stim A sur TRE
- Asservissement (température)



AMS Log

EGMs	Date and Time	Peak A Rate	Duration (D:H:M:S)
1	7 Sep 2022 12:29 PM	256	0:0:0:6
2	7 Sep 2022 2:37 PM	274	0:0:0:10
3	7 Sep 2022 2:06 PM	256	0:0:0:6
4	7 Sep 2022 1:55 PM	333	0:0:0:42
5	7 Sep 2022 1:55 PM	365	0:0:0:30
6	7 Sep 2022 1:44 PM	365	0:0:0:12
7	7 Sep 2022 12:41 PM	590	0:0:6:26
8	7 Sep 2022 12:40 PM	333	0:0:0:12
9	7 Sep 2022 12:37 PM	207	0:0:0:14
10	7 Sep 2022 12:36 PM	178	0:0:0:4
11	7 Sep 2022 12:36 PM	182	0:0:0:4
12	7 Sep 2022 12:35 PM	240	0:0:0:12
13	7 Sep 2022 12:35 PM	187	0:0:0:4
14	7 Sep 2022 12:35 PM	196	0:0:0:4
15	7 Sep 2022 12:34 PM	240	0:0:0:18
16	7 Sep 2022 12:32 PM	274	0:0:0:20

….la communication en pratique… faut il s attendre à des difficultés?

Gestion à moyen terme : quels problèmes?

Interrogation patient étude AVEIR DR

Patient

Patient Name: EU1617-406 Birth Date: n/a

Chamber	Device	Device Model:	Device s/n:	Device Implant
RA	Aveir™ LP	LSP201A	1305486	7 Apr 2022
RV	Aveir™ LP	LSP202V	1305397	7 Apr 2022

Battery Information

Longevity: 5.8 yrs

RA

Voltage	3.0 V
Battery Current	2.5 uA
Remaining Capacity to RRT	99 %

Longevity estimate is based on patient history.

Longevity: 11.5 yrs

RV

Voltage	3.1 V
Battery Current	2.2 uA
Remaining Capacity to RRT	99 %

Longevity estimate is based on patient history.

….Expérience en récupérabilité Aveir AR limitée (hors phase précoce)

AVEIR AR (en double chambre)

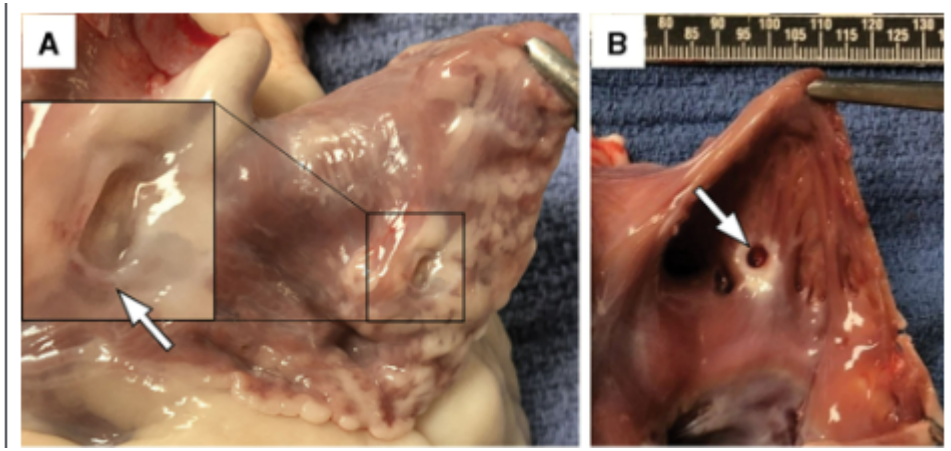
Fréquence de stimulation	Amplitude de stimulation	% de stimulation	LONGÉVITÉ (ANNÉES) Impédance 300 Ω	400 Ω
50 bpm	1,25 V	100 %	6,2	7,1
		50 %	7,1	8,1
		0 %	8,3	9,3
50 bpm	2,5 V	100 %	3,9	4,7
		50 %	5,3	6,2
		0 %	8,3	9,3
60 bpm	1,25 V	100 %	5,3	6,1
	2,5 V	100 %	3,3	3,9
	5,0 V	100 %	1,1	1,4

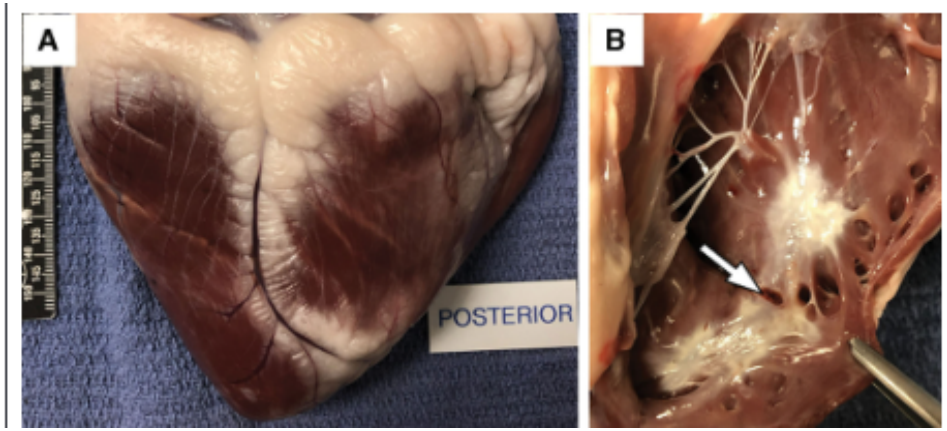
315 Ω Impédance moyenne du dispositif auriculaire à 3 mois de suivi IDE[2]

Circulation: Arrhythmia and Electrophysiology
Volume 16, Issue 10, October 2023; Page e012232
https://doi.org/10.1161/CIRCEP.123.012232

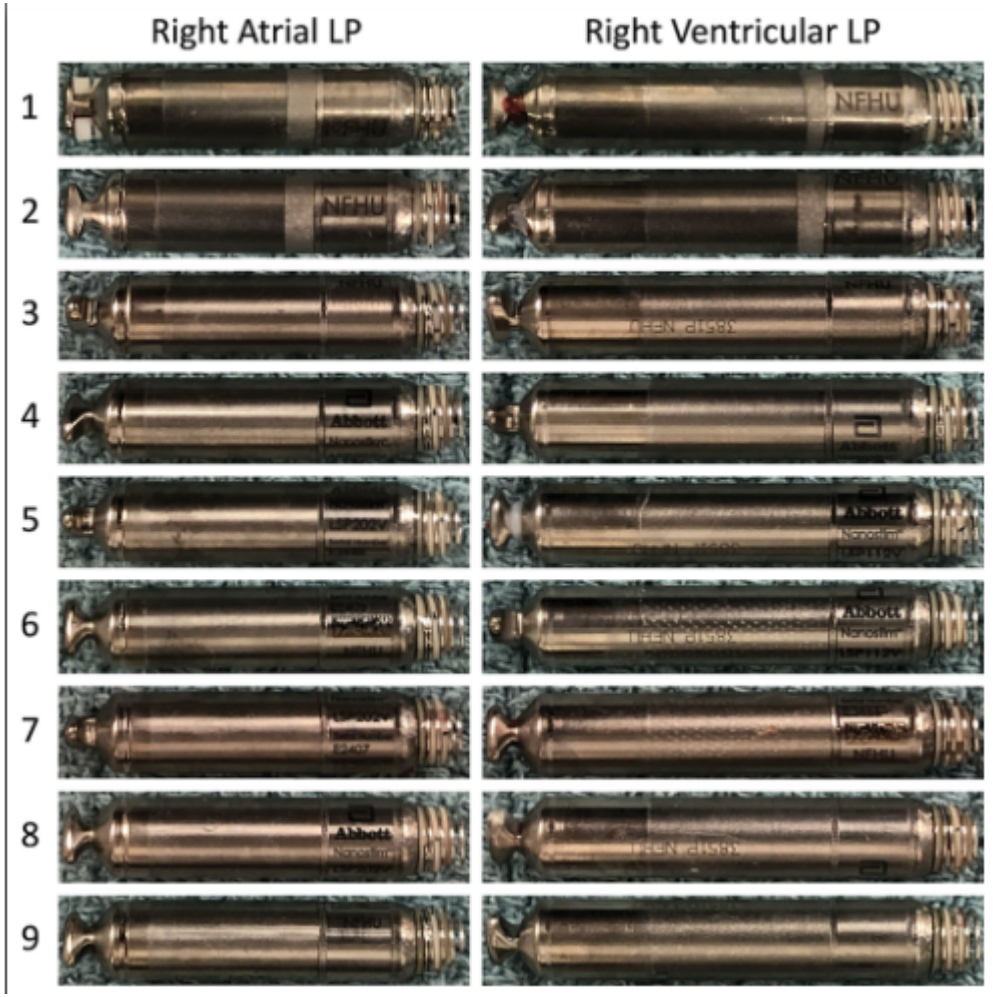
ORIGINAL ARTICLE

Retrieval of Chronically Implanted Dual-chamber Leadless Pacemakers in an Ovine Model





9 healthy ovine subjects. After ≈2 years



AVEIR : pour quel patient ??

Hors CRT et stimulation de branche gauche … indications théoriques très larges
Limitation des conditions de remboursement/ diffusion propre aux leadless

AVEIR : pour quel patient ??

Hors CRT et stimulation de branche gauche … indications théoriques très larges
Limitation des conditions de remboursement/ diffusion propre aux leadless

- ***AVEIR VR vs autre leadless*** :

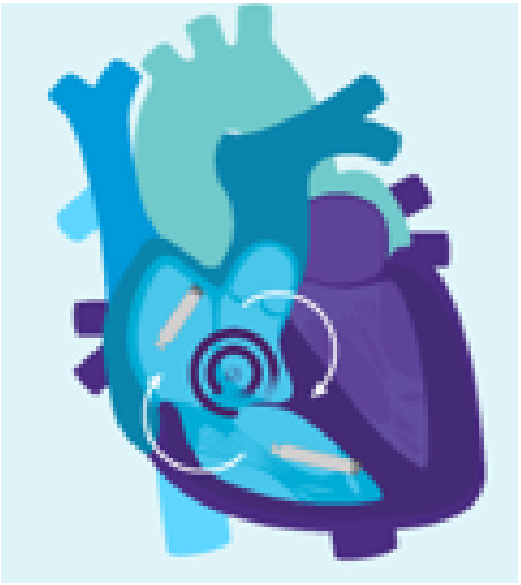
- Si espérance de vie très bonne
- Si rythme sinusal et risque de besoin d'atrialisation (BAV, maladie oreillette)

- ***AVEIR AR :***

place dysfonction sinusale du sujet jeune??

- ***AVEIR DR :***

- En upgrade si syndrome du pacemaker
- D'emblée chez le jeune??



Génération Aveir… que retenir??

- **AVEIR VR…**

Dispositif leadless à vis « abouti »
Inconvénients : plus complexe pour l'implantation et le suivi?
Avantages +++ : Longévité/Recuperabilité/ Modulable

- **AVEIR DR :**

Premier leadless Atrial
Un nouveau paradigme dans le monde de la stimulation (i2i ….)
Inconvénients : faible recul «vie réelle »
Avantages : stim A/ synchro AV / Recuperabilité/ modulable