FA réfractaire et stratégie de contrôle de la fréquence cardiaque à l'ère des anciens et des nouveaux modes de stimulation cardiaque

Dr Christelle HADDAD

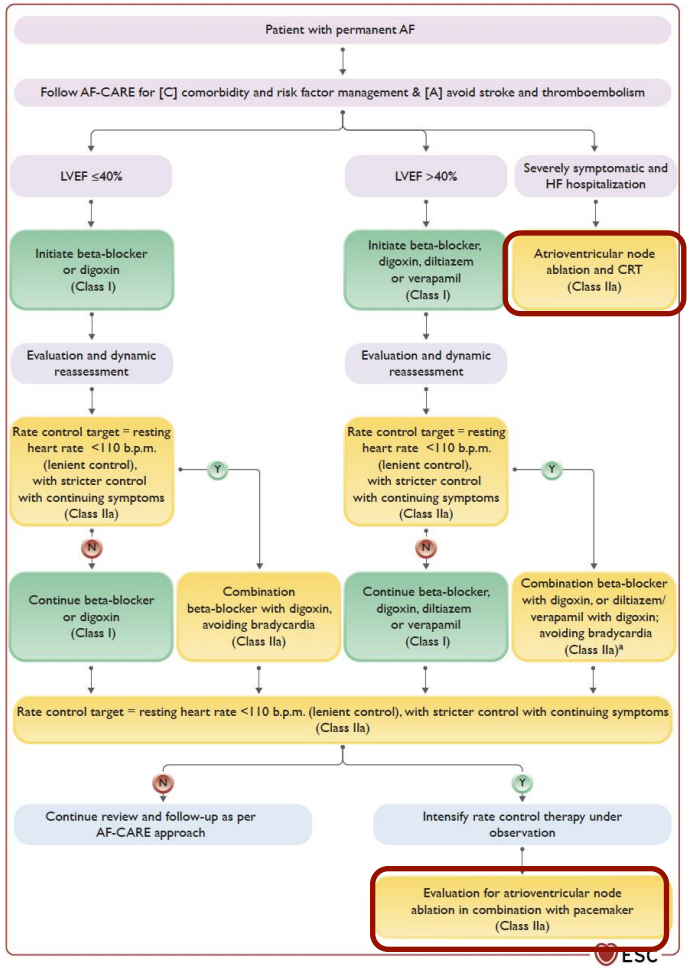
Cardiologue - Rythmologue

Lyon

Introduction

- Ablate & Pace Strategy

- Thérapie de 2ème intention - FA permanente
  - Contrôle de fréquence
  - Echec des traitements médicamenteux



ESC Guidelines 2024

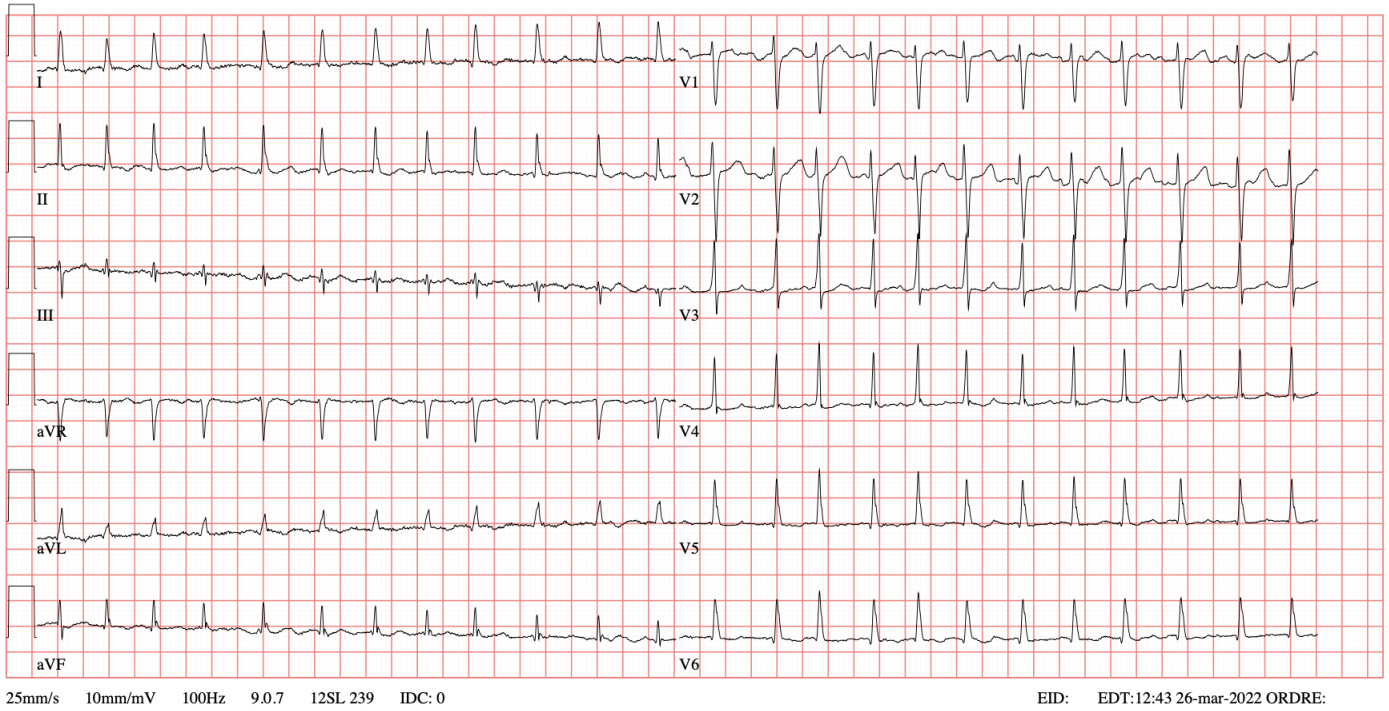
Cas clinique 1

Femme 74 ans

ATCD : HTA, diabète type II NIR, surpoids, hypothyroïdie, Plastie Mitrale, ablation FA épicardique puis endocavitaire x 2, insuffisance rénale (DFG 45 ml/mn)

FA persistante rapide 145/min
NYHA III

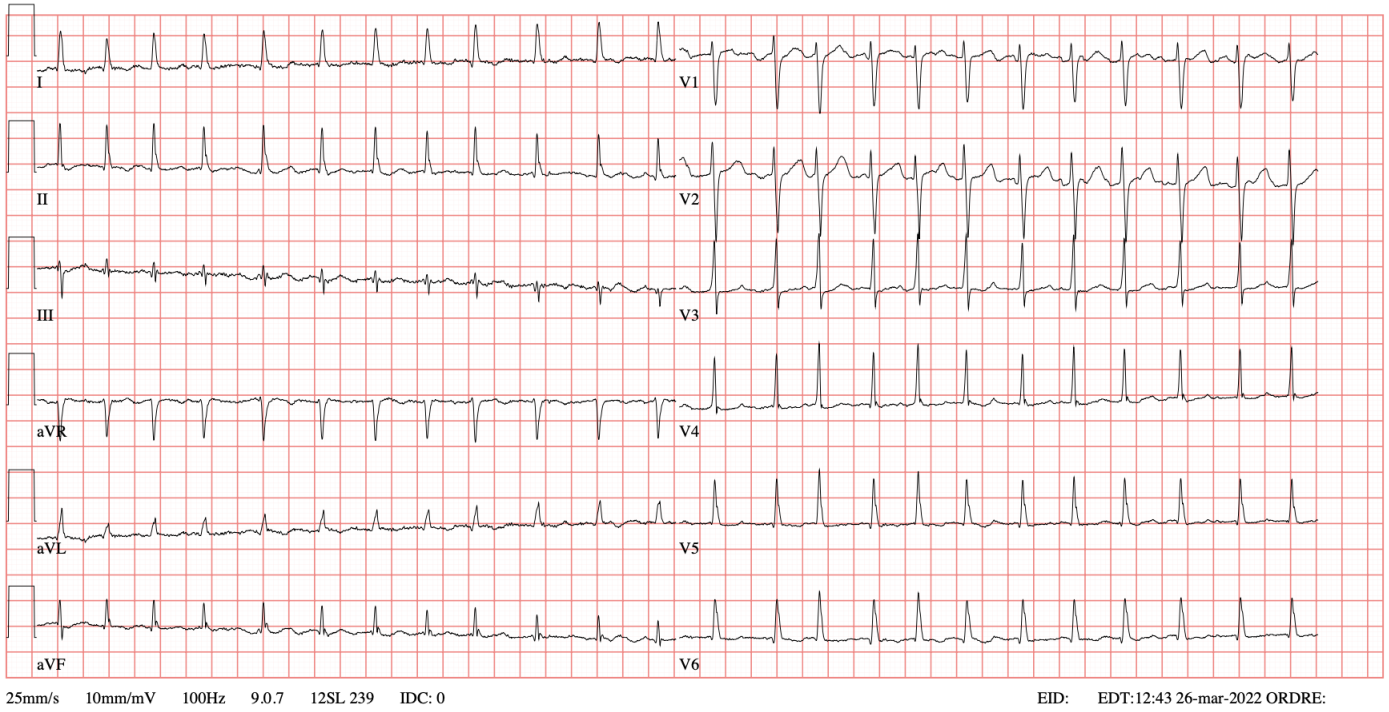
Traitement : APIXABAN, BISOPROLOL 10 (…)



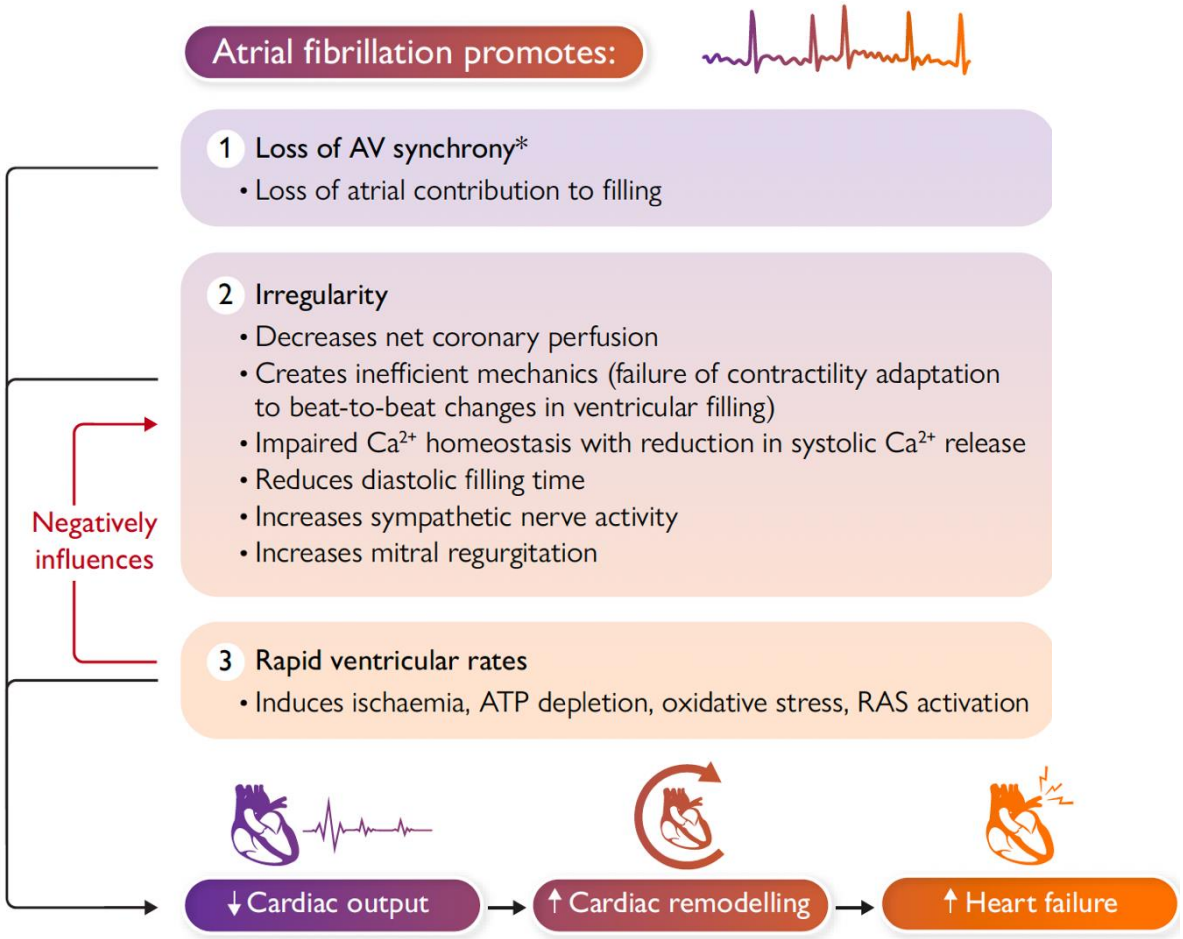
Cas clinique 1

ETT

FEVG 50%, DTDVG 57 mm, Plastie mitrale fonctionnelle,
OG 70 mL/m2,
TAPSE 16 mm, SaTric 9 m/s,
PAPs 40 +15 mmHg



Rationnel de la stratégie Pace & Ablate

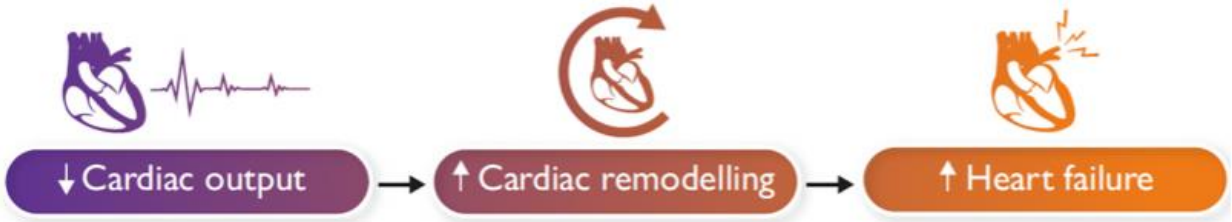


Rationnel de la stratégie Pace & Ablate

1 Loss of AV synchrony*
- Loss of atrial contribution to filling

2 Irregularity
- Decreases net coronary perfusion
- Creates inefficient mechanics (failure of contractility adaptation to beat-to-beat changes in ventricular filling)
- Impaired Ca^{2+} homeostasis with reduction in systolic Ca^{2+} release
- Reduces diastolic filling time
- Increases sympathetic nerve activity
- Increases mitral regurgitation

3 Rapid ventricular rates
- Induces ischaemia, ATP depletion, oxidative stress, RAS activation



Cas clinique 1

CIRCULATION VOL 55, NO 3, MARCH 1977

Cryosurgical Ablation of the A-V Node-His Bundle

A New Method for Producing A-V Block

LURA HARRISON, PH.D., JOHN J. GALLAGHER, M.D., JACKIE KASELL,
ROBERT H. ANDERSON, M.D., EILEEN MIKAT, M.A., DONALD B. HACKEL, M.D.,
AND ANDREW G. WALLACE, M.D.

Cas clinique 1

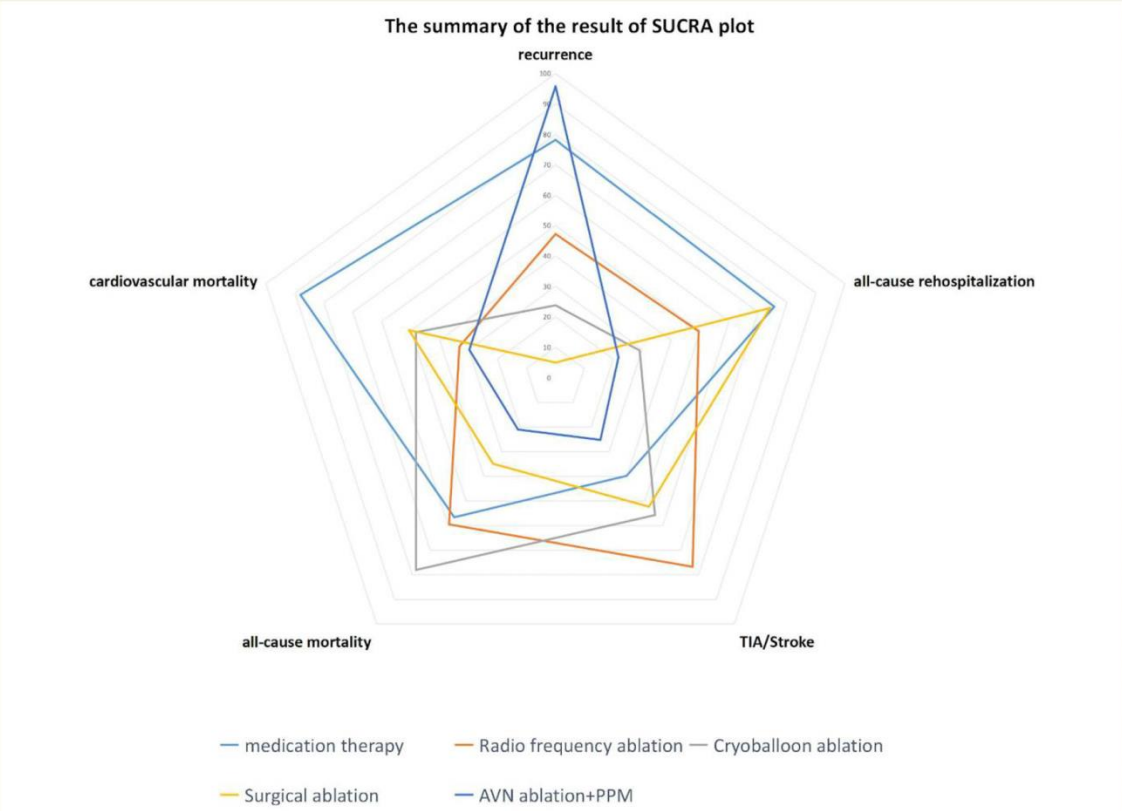
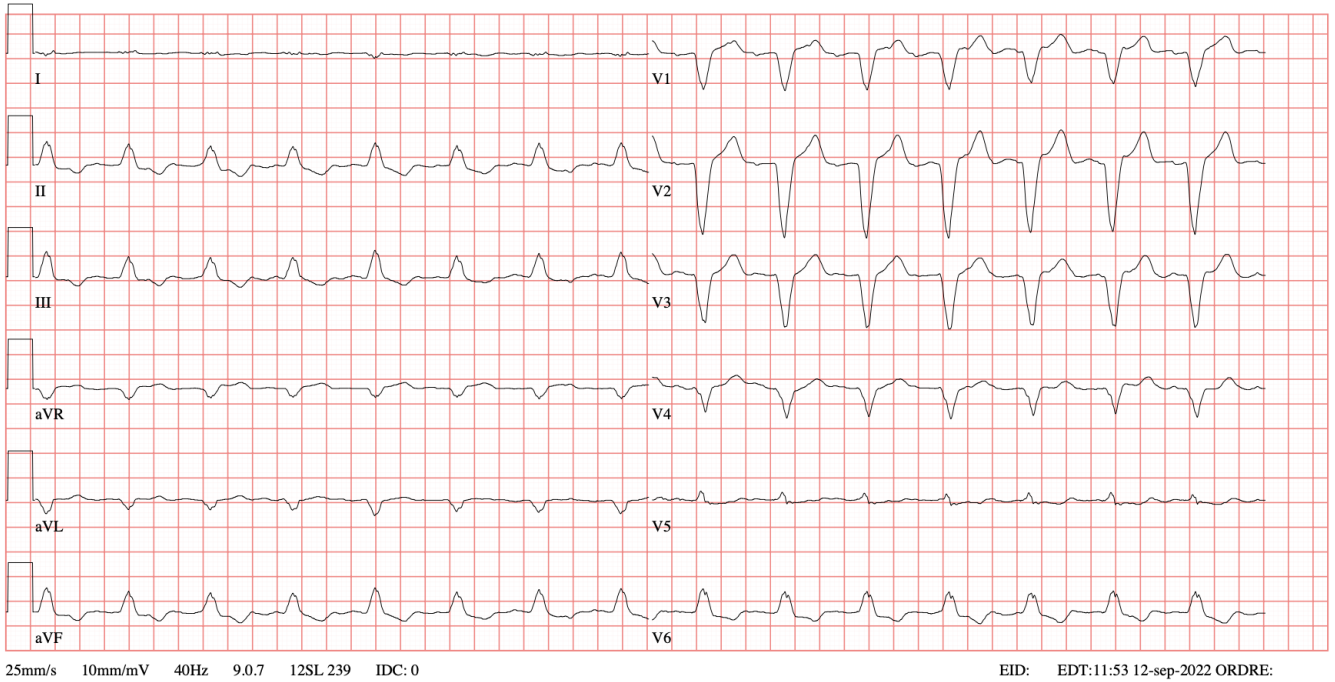


Figure 1 Radar plot indicating the overall risk of efficacy and safety endpoints from the different atrial fibrillation management strategies. It illustrates that with the exception of recurrences, pace-and-ablate strategy for atrial fibrillation has a good efficacy and safety profile. See permission letter from Professor Zeyi Cheng for *Figure 1*.[23]

Cas clinique 1

Stratégie contrôle de fréquence

Implantation d'un PM simple chambre + Modulation du noeud atrioventriculaire



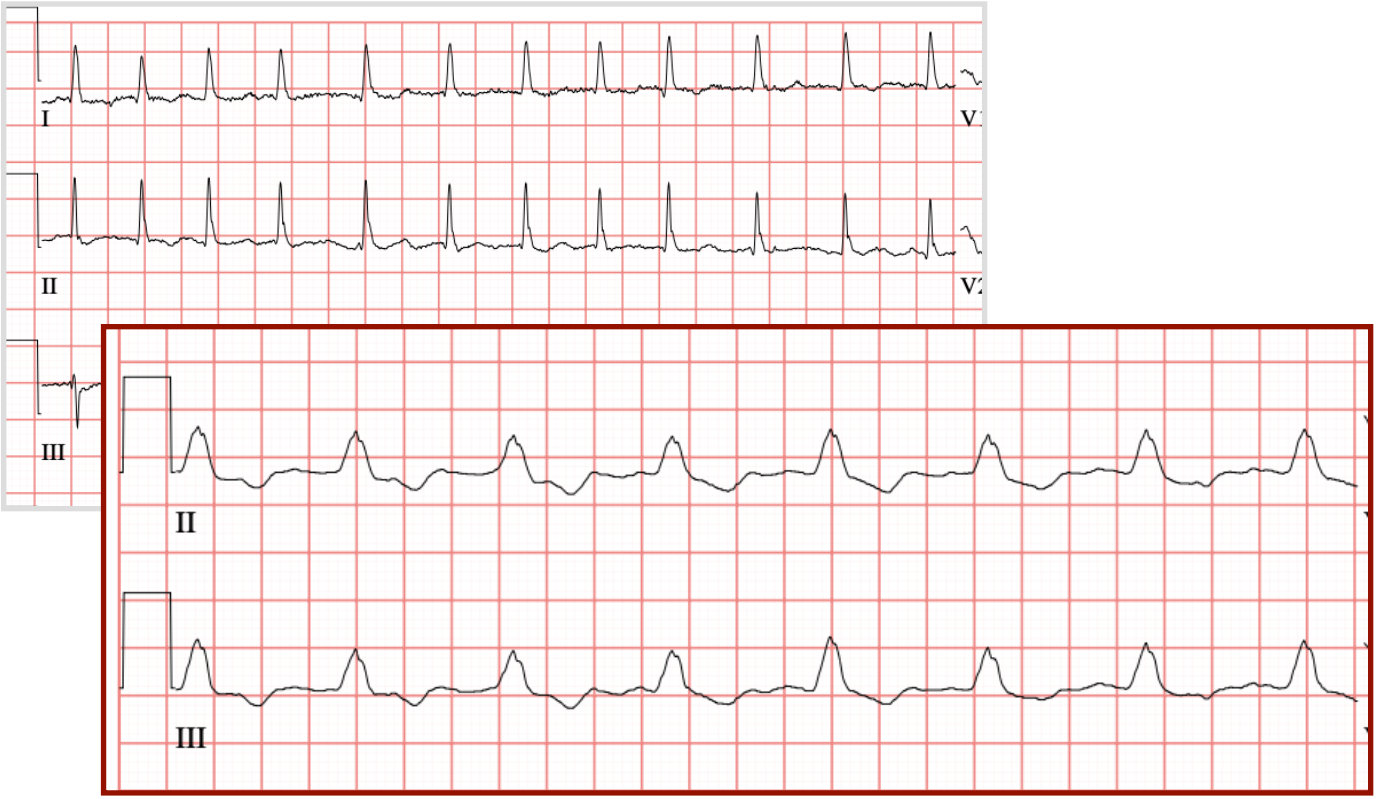
Cas clinique 1

Consultation de contrôle à 6 semaines

NYHA II Fort

Bon fonctionnement du PM - Stimulation permanente en VVIR 90/min

ETT : FEVG 45%



Cas clinique 1

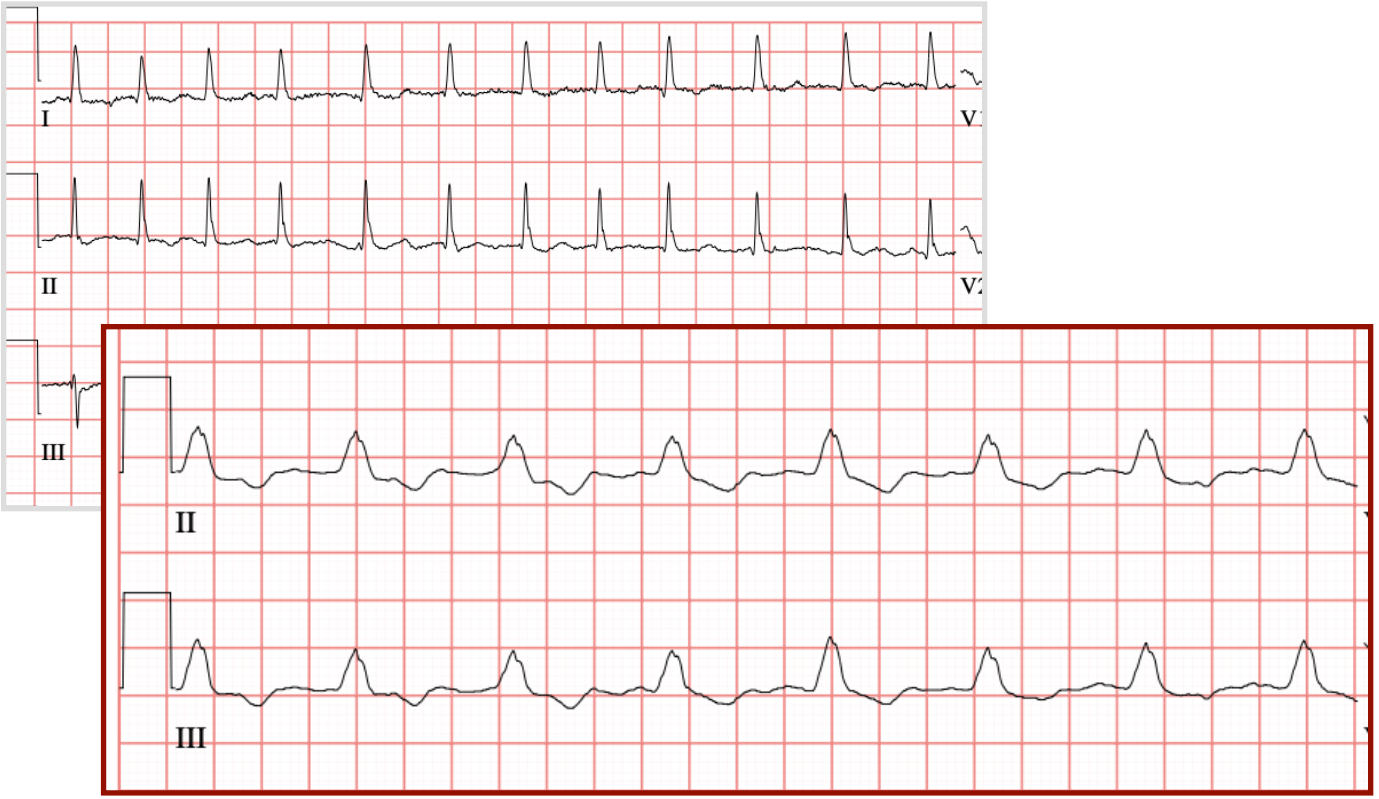
Consultation de contrôle à 6 semaines

NYHA II Fort

Bon fonctionnement du PM - Stimulation permanente en VVIR 90/min

ETT : FEVG 45%

Coro : absence de coronaropathie



Cardiopathie induite par la stimulation

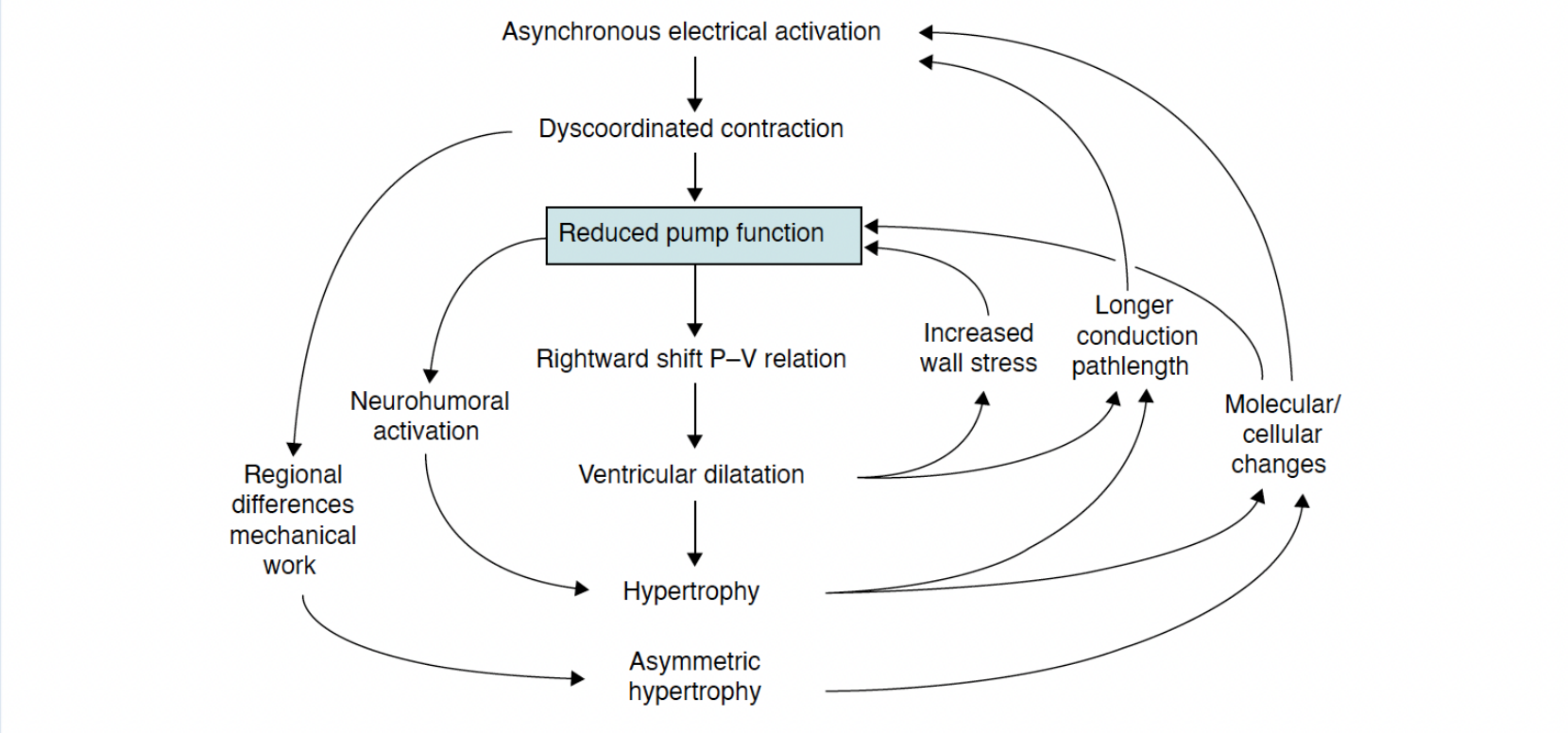


Figure 1 Relationship between asynchronous ventricular activation leading to reduced pump function. P–V, pressure volume. Reproduced, with permission, from Vernooy *et al.*[14]

Cardiopathie induite par la stimulation

- Induction d'une désynchronisation électrique
- Pas de définition claire
- Incidence :15-20% à 5 ans avec un taux de stimulation > 20%
- Impact sur le taux d'hospitalisation pour insuffisance cardiaque et la mortalité

Facteurs de risque

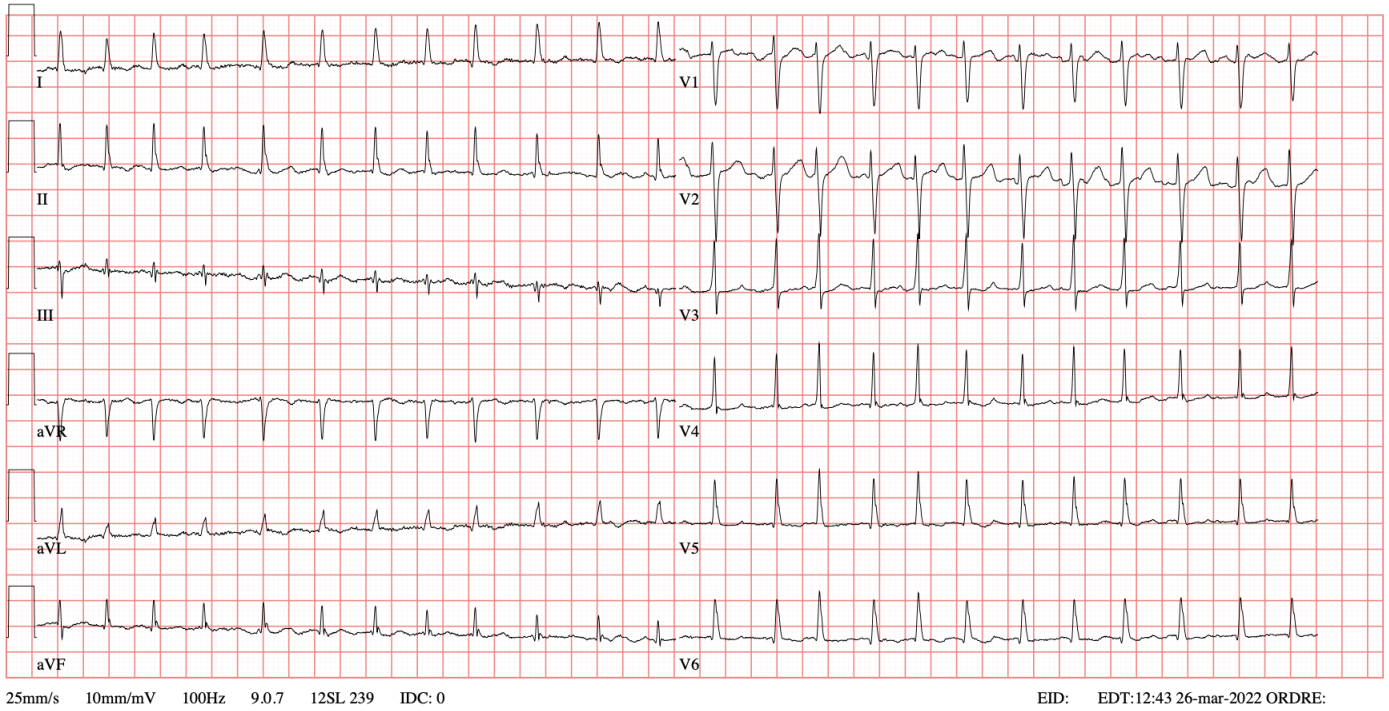
- FEVG de base
- Volume/diamètre TD VG
- Durée des QRS stimulés
- Taux de stimulation V

Cas clinique 1

Femme 74 ans

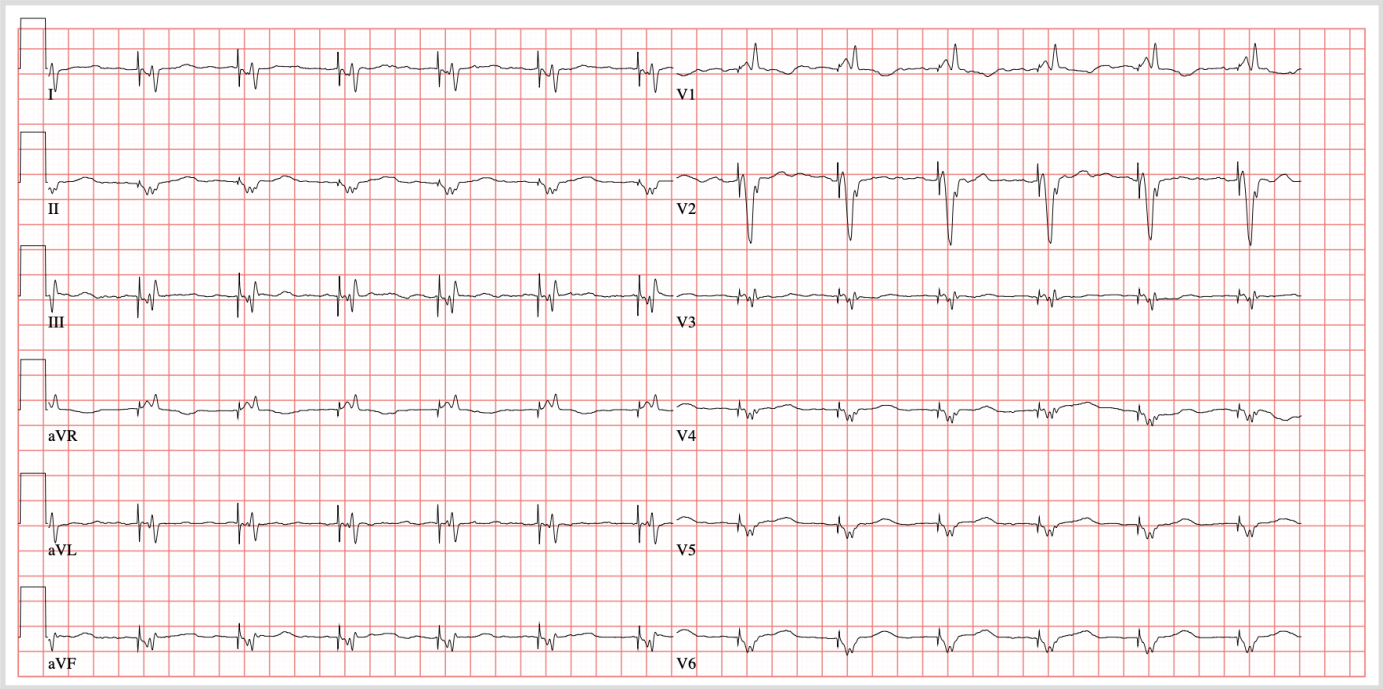
FA persistante rapide 145/min
NYHA III

ETT :
FEVG 50%, DTDVG 57 mm



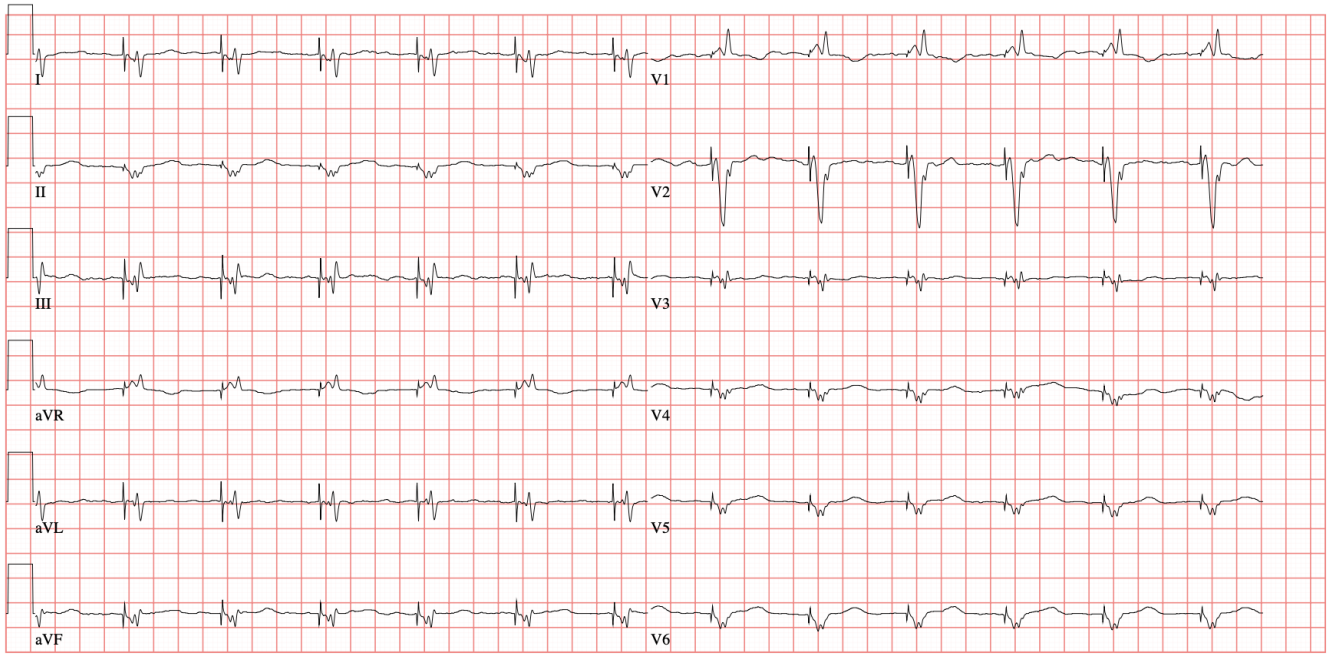
Cas clinique 1

Upgrading en PM avec stimulation biventriculaire (ajout d'une sonde de stimulation VG via le sinus coronaire)



Cas clinique 1

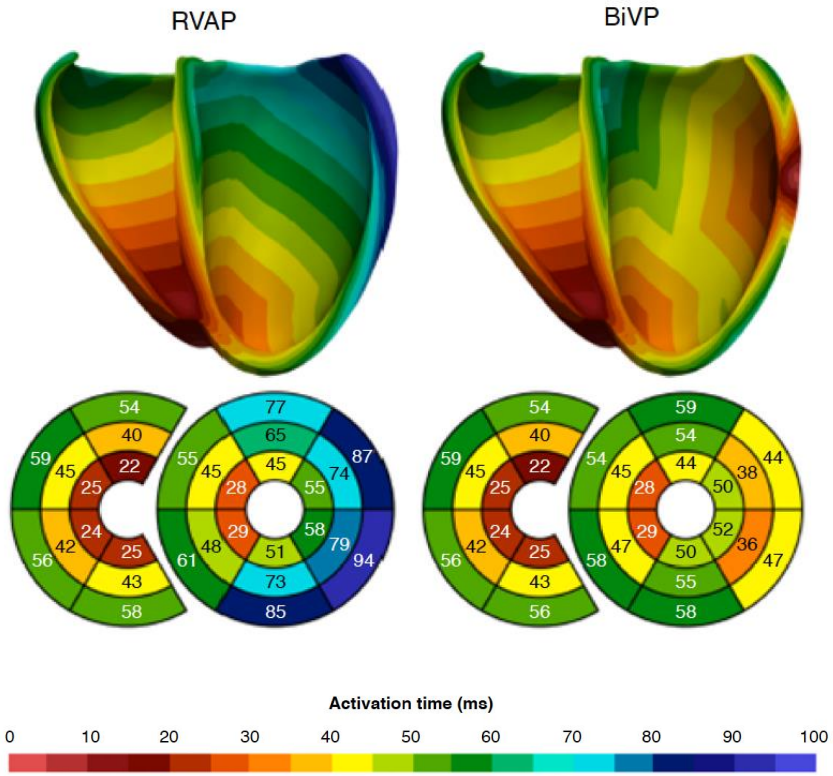
Amélioration à 3 mois (NYHA, FEVG)



Stimulation biventriculaire

Facteurs de risque

- FEVG de base
- Volume/diamètre TD VG
- Durée des QRS stimulés
- Taux de stimulation V



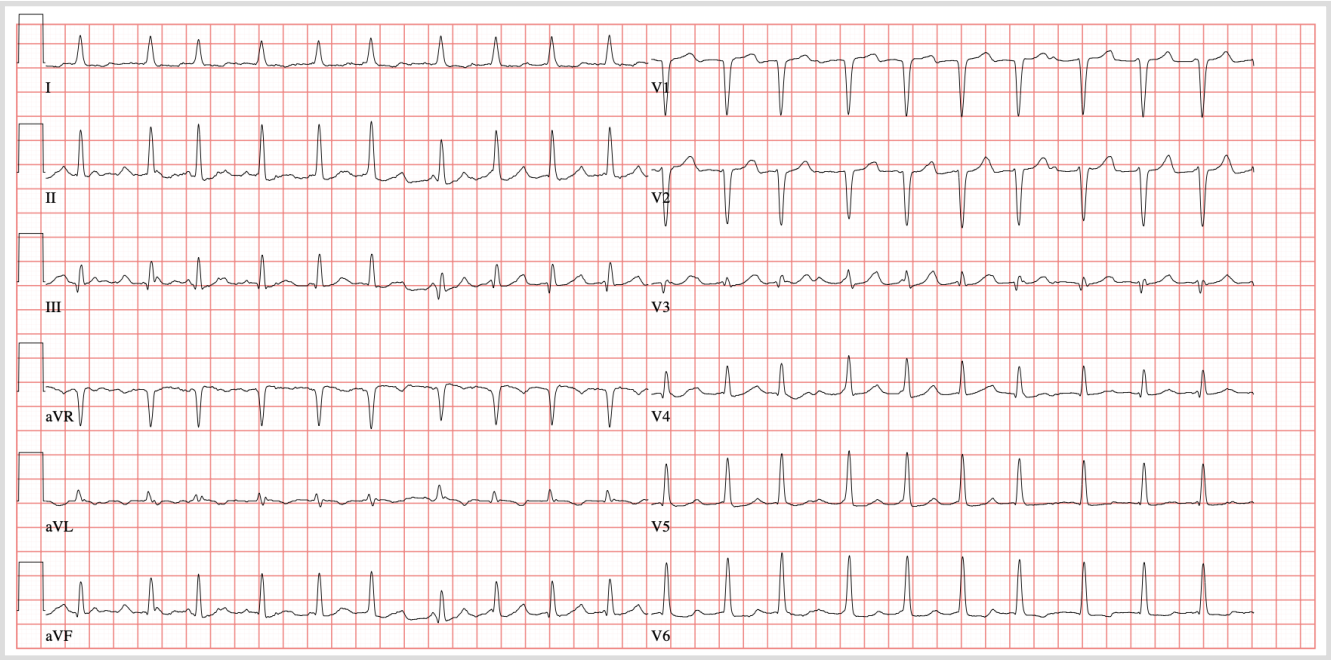
Cas clinique 2

Femme 77 ans

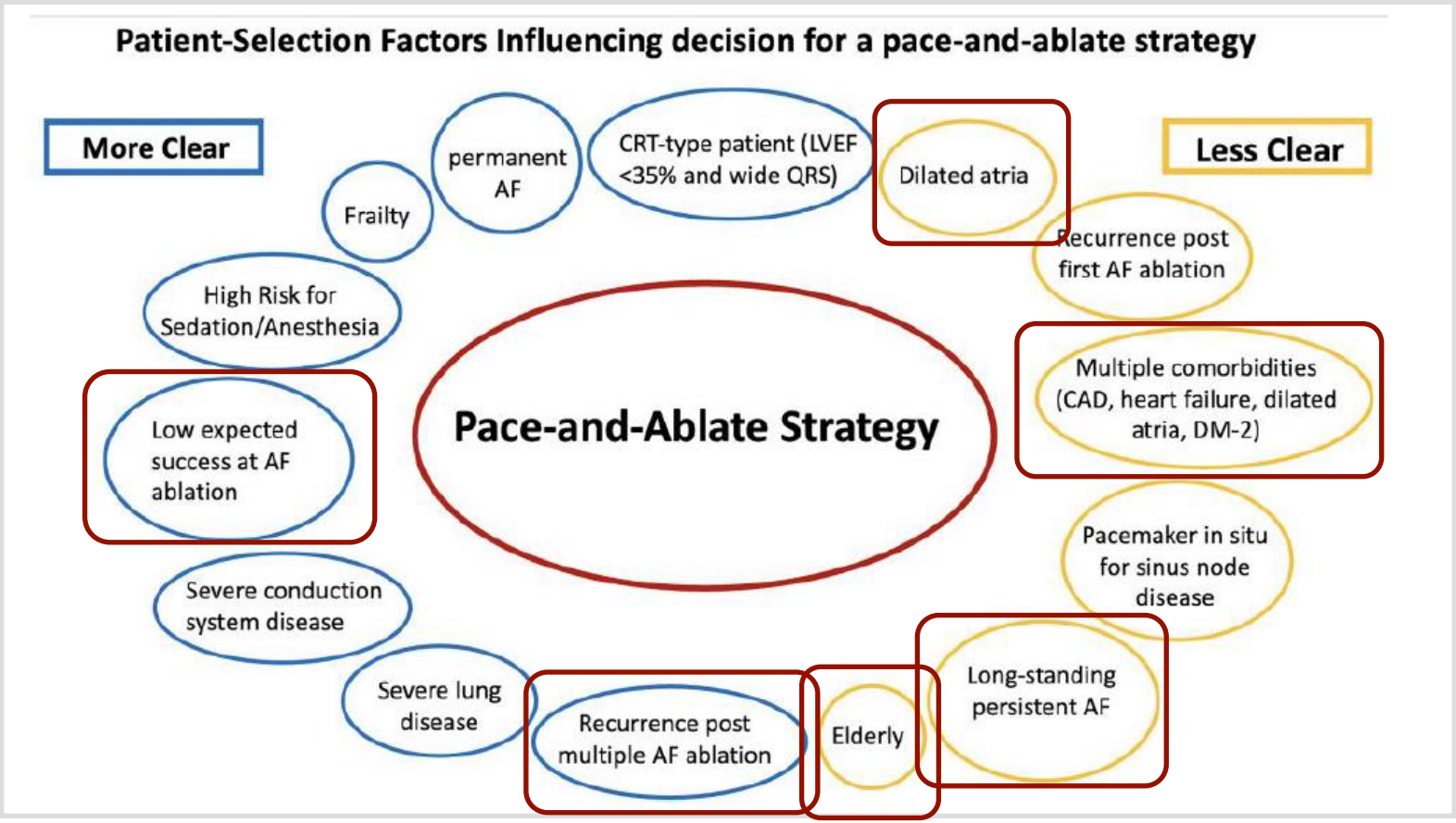
Récidive sous AMIODARONE BB - Flutter atrial atypique (2 procédures avec IVP + mur postérieur + Marshall + ICT + VCS et signes évolués de myopathie atriale)

Terrain : HTA, DT2, surpoids, asthme

Insuffisance cardiaque gauche et dysfonction VG FEVG 45%, DTDVG 56 mm, VD normokinétique,
OG dilatée 65 mL/m2



Cas clinique 2



Cas clinique 2

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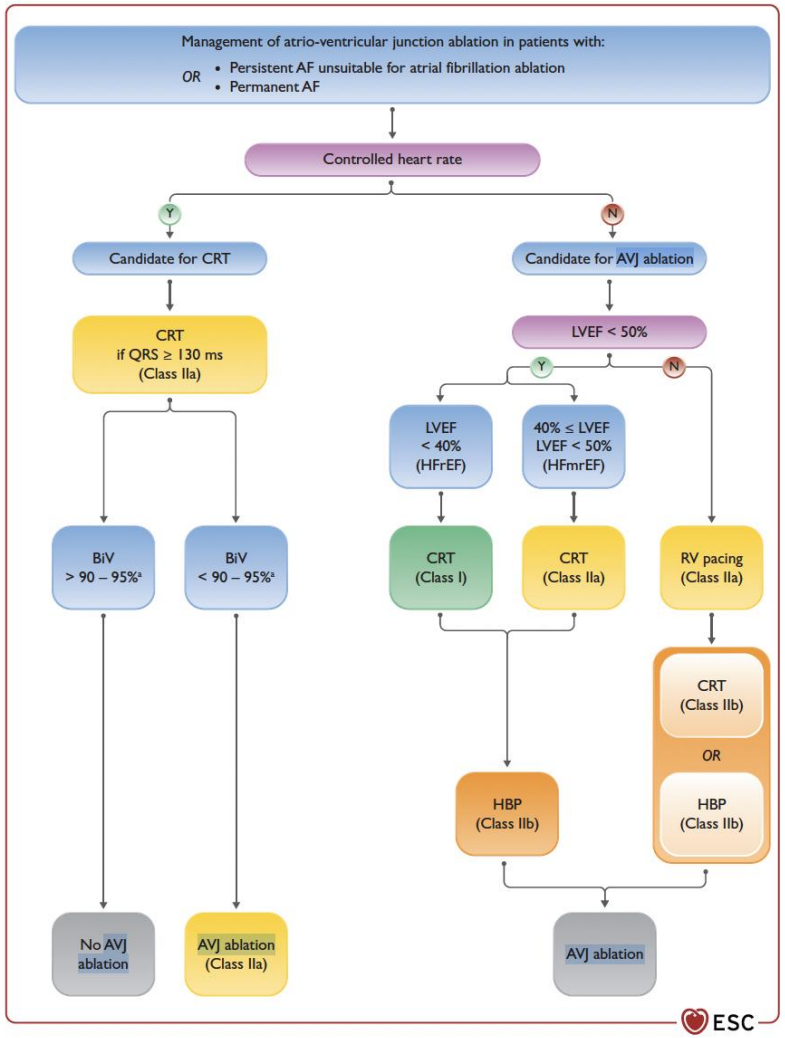
CRT ?


Management of atrio-ventricular junction ablation in patients with:
OR
• Persistent AF unsuitable for atrial fibrillation ablation
• Permanent AF
Controlled heart rate
Y
N
Candidate for CRT
Candidate for AVJ ablation
CRT
if QRS ≥ 130 ms
(Class IIa)
LVEF < 50%
Y
N
LVEF
< 40%
(HFrEF)
40% ≤ LVEF
LVEF < 50%
(HFmrEF)
BiV
> 90 – 95%[a]
BiV
< 90 – 95%[a]
CRT
(Class I)
CRT
(Class IIa)
RV pacing
(Class IIa)
CRT
(Class IIb)
OR
HBP
(Class IIb)
HBP
(Class IIb)
No AVJ
ablation
AVJ ablation
(Class IIa)
AVJ ablation
ESC

Cas clinique 2

Femme 77 ans

Récidive sous AMIODARONE BB - Flutter atrial atypique (2 procédures avec IVP + mur postérieur + Marshall + ICT + VCS et signes évolués de myopathie atriale)

Terrain : HTA, DT2, surpoids, asthme

Insuffisance cardiaque gauche et dysfonction VG FEVG 45%, DTDVG 56 mm, VD normokinétique, OG dilatée 65 mL/m2

CRT ?

CRT ?

FA Rapide réfractaire au traitement médicamenteux

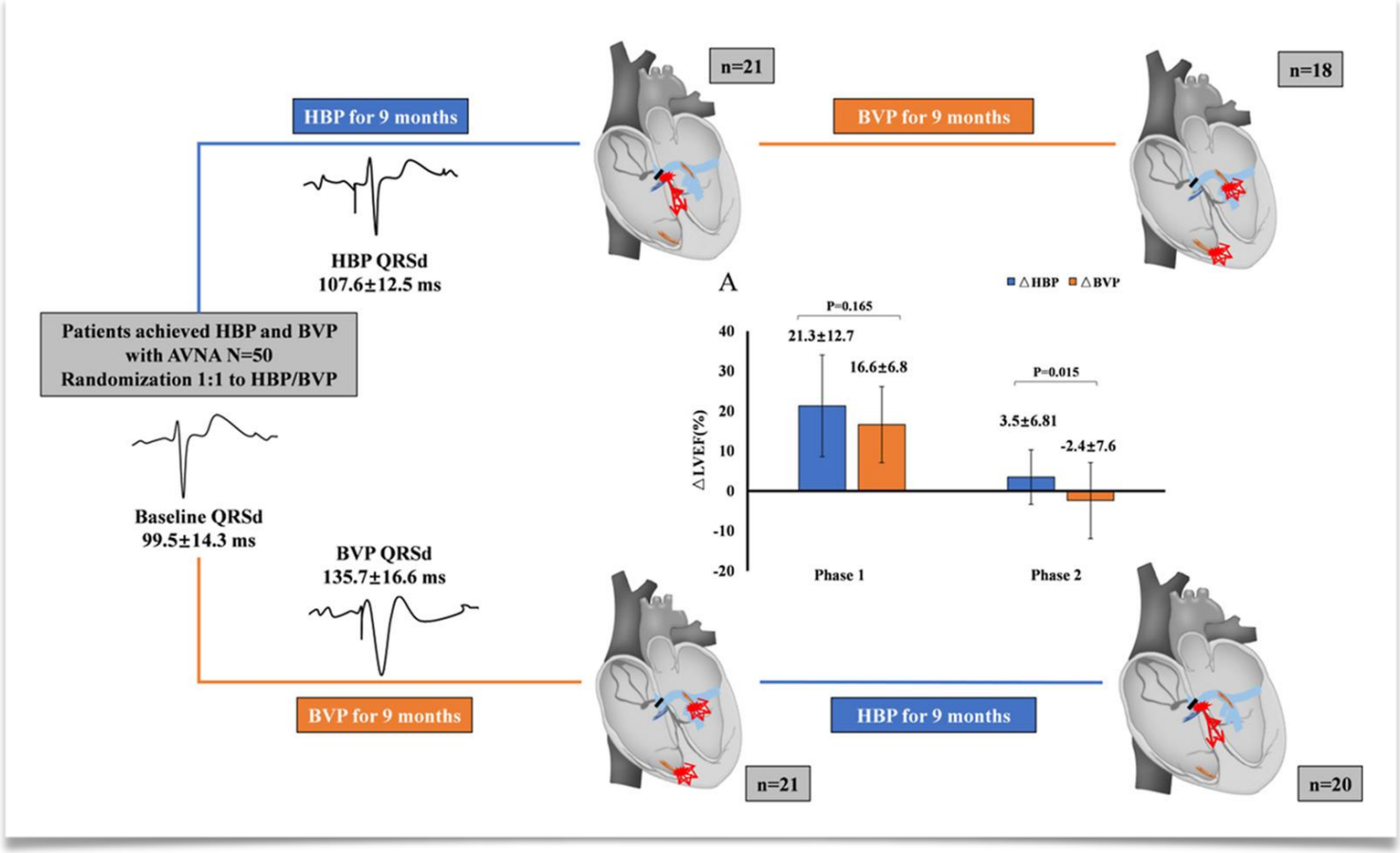
QRS fins

Contrôle de fréquence / CRT

Dysfonction VG + QRS fins

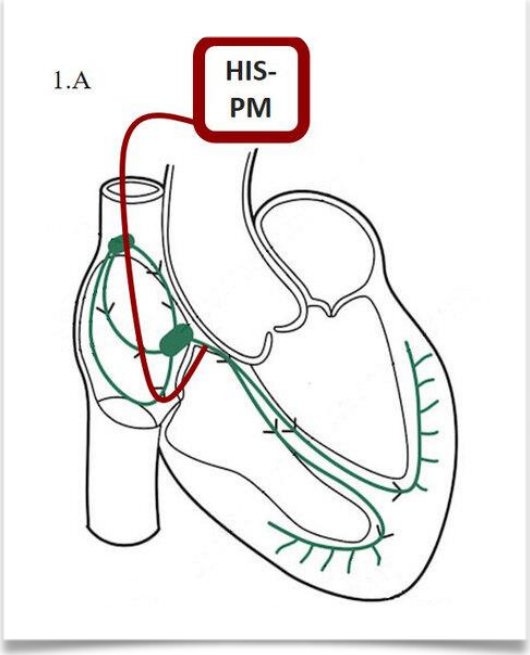
Effet délétère de la stimulation biventriculaire ?

Stimulation du système conduction ?

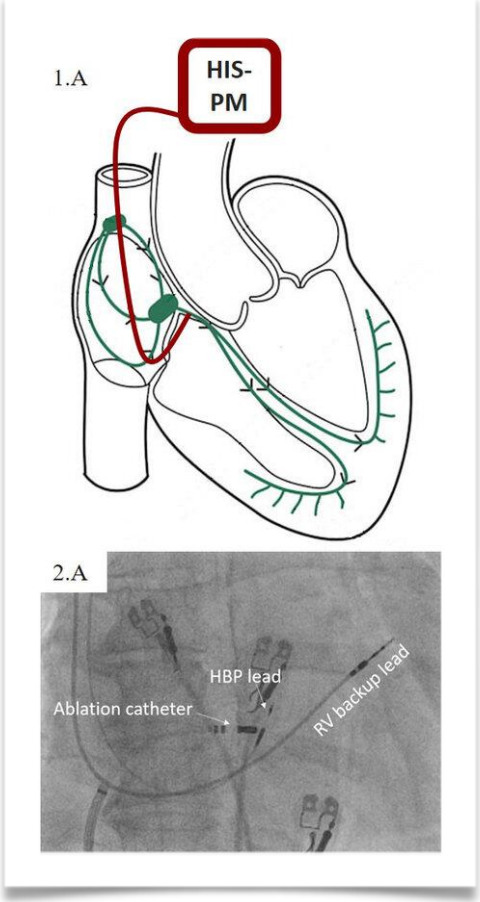


ALTERNATIVE AF Trial, HR, 2022

Stimulation hissienne ?



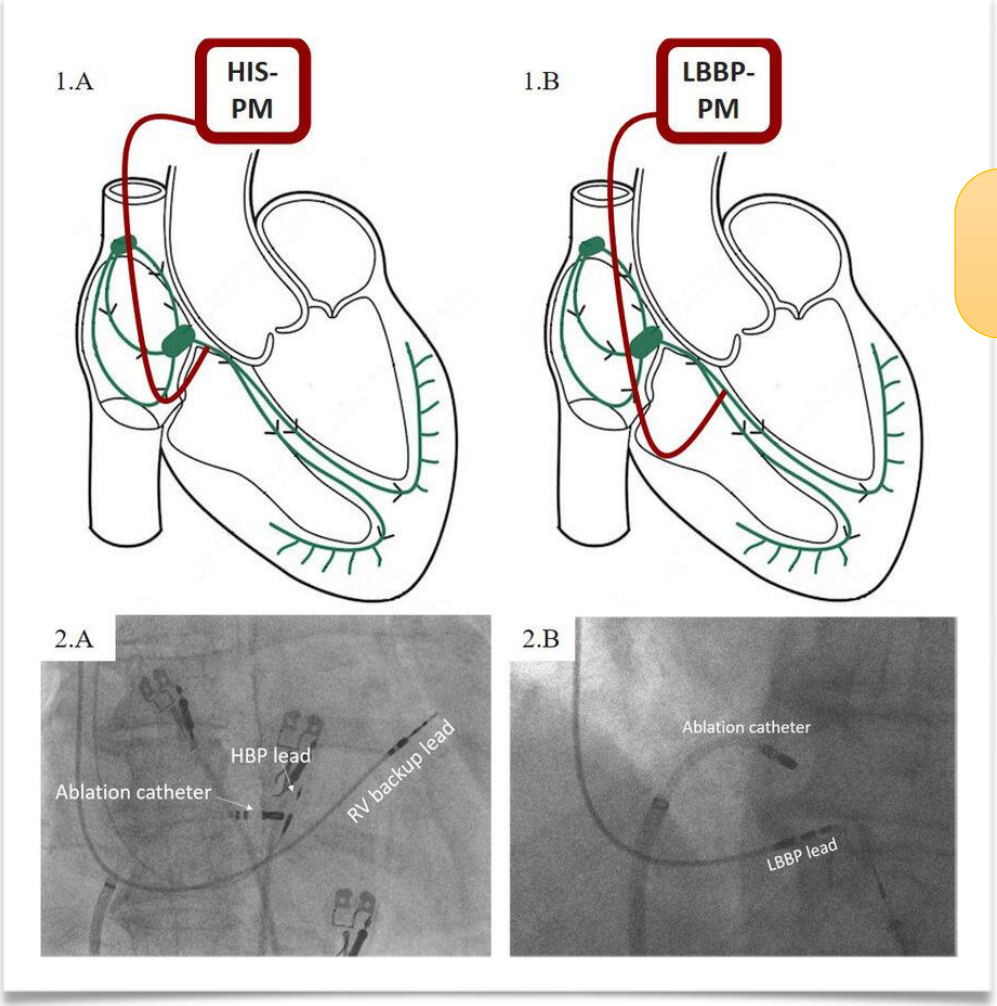
Stimulation du système conduction ?



- Technique d'implantation
- Synchronisation activation biventriculaire
- FEVG
- Seuil de stimulation
- Détection (onde P visible, faible amplitude onde R)
- Risque d'élévation du seuil après Ablation NAV
- Risque de récurrence de la conduction AV ?
- Complications liées à la sonde
- Longévité
- Sonde back up ?

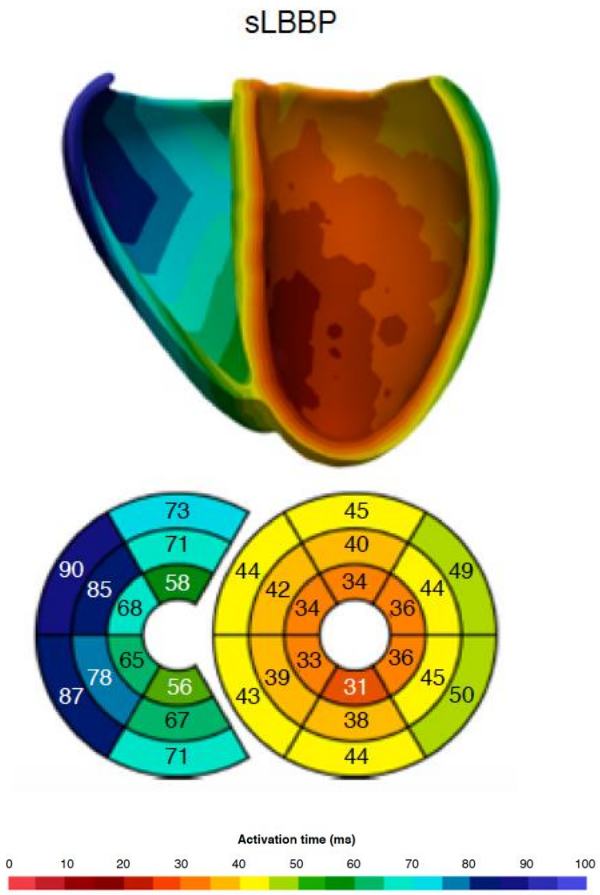
>10% patients : hausse du seuil de stimulation > 1V à 6 mois

Stimulation du système conduction ?

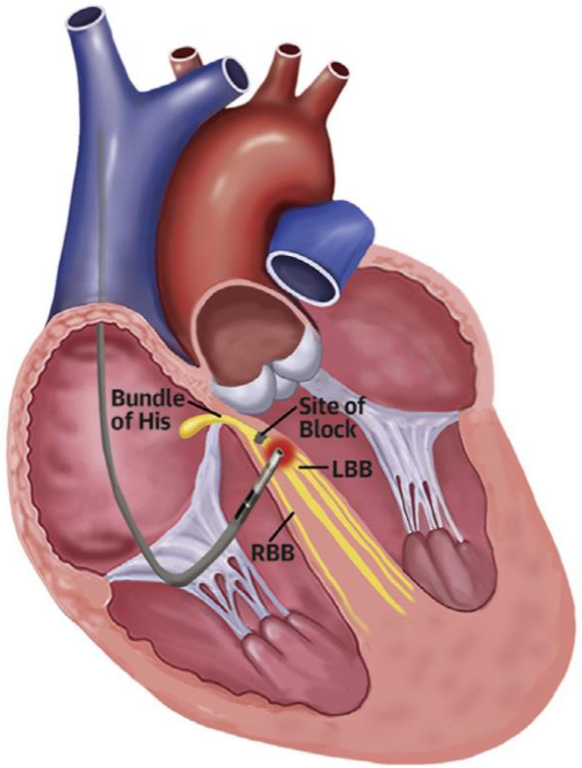


Stimulation branche gauche ?

Stimulation du système de conduction - LBBAP



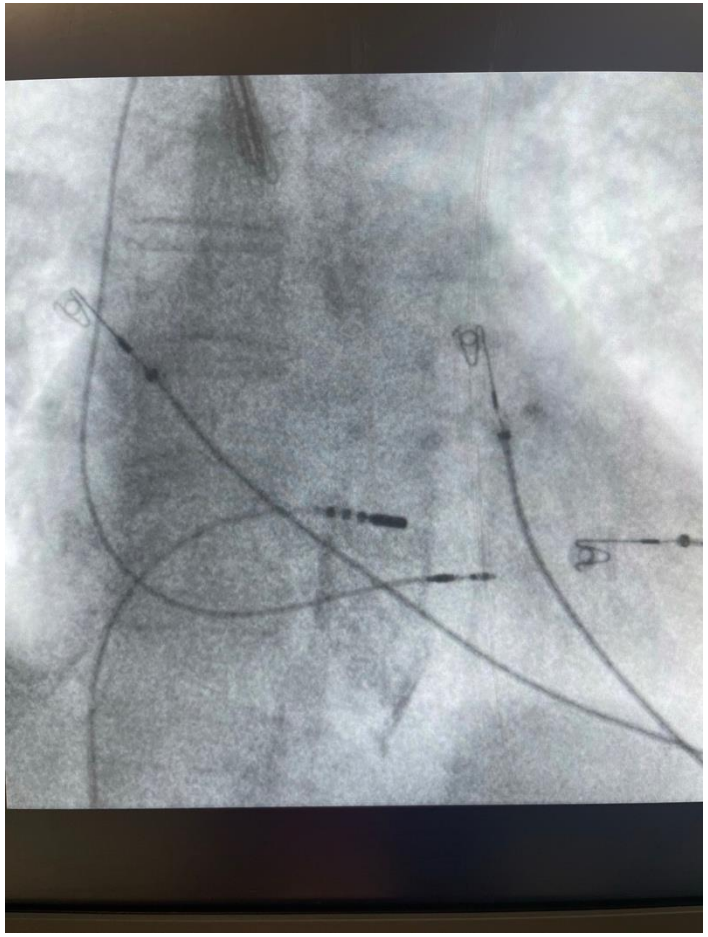
Similar improvement in LVEF, NYHA, and QoL parameters when compared with BiVP but superior to RVP + AV node ablation



Huang, W. et al. J Am Coll Cardiol EP. 2020;6(7):849-58.

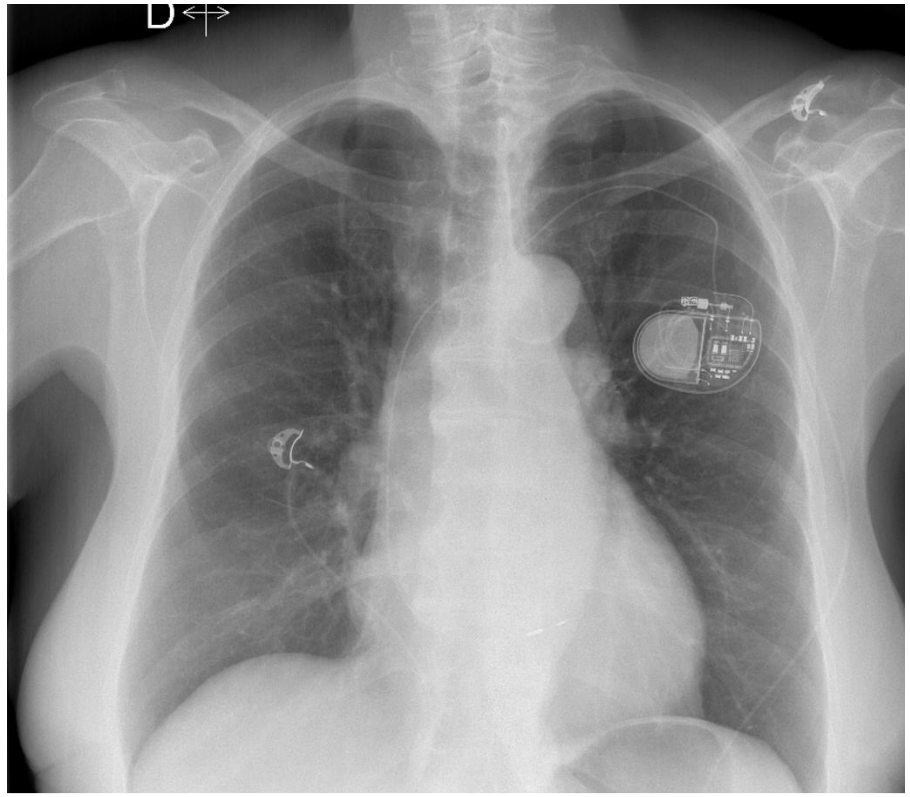
LBBAP

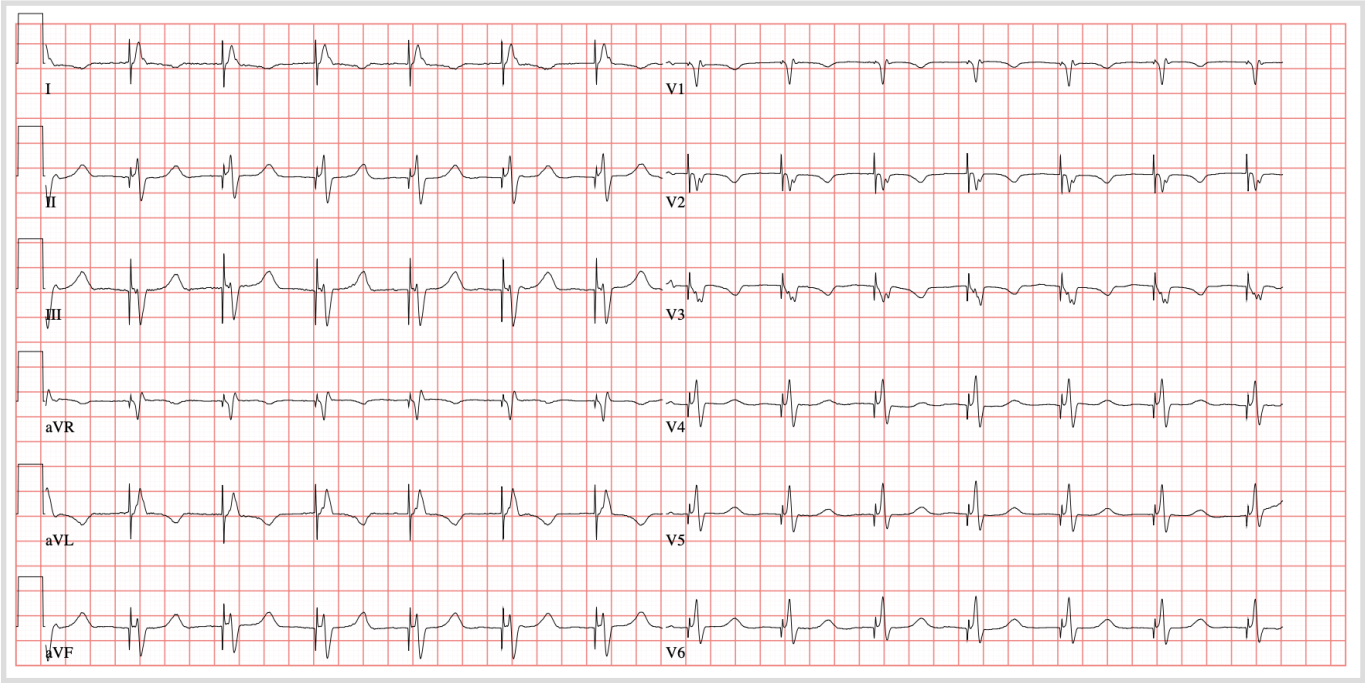
- Technique d'implantation
- Synchronisation activation VG
- FEVG
- Seuil de stimulation = stable
- ~~Risque d'élévation du seuil après Ablation NAV ?~~
- ~~Risque de récurrence de la conduction AV ?~~
- Complications liées à la sonde
- Longévité = bonne
- Absence de sonde back up



Cas clinique 2

LBBAP (Left Bundle Area Pacing)
+ AV node ablation



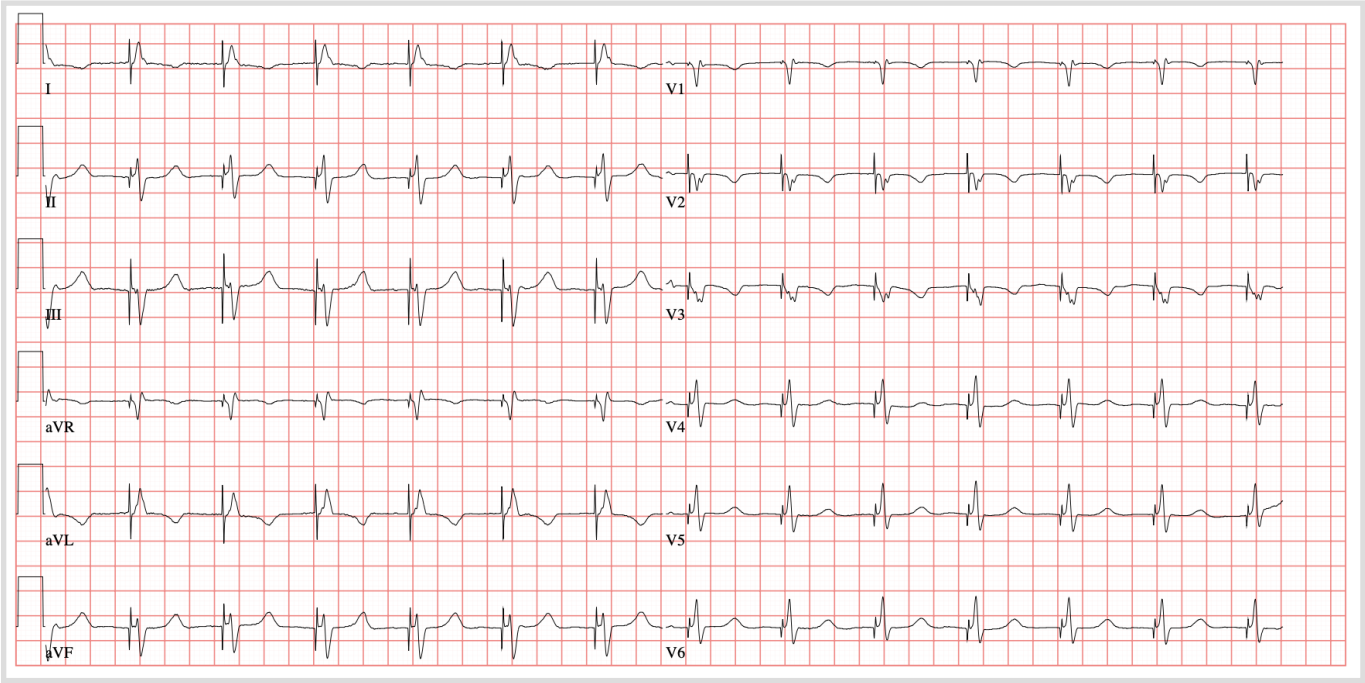


Cas clinique 2

Contrôle à 3 mois

Amélioration clinique et échographique

Paramètres stimulo-détection inchangés



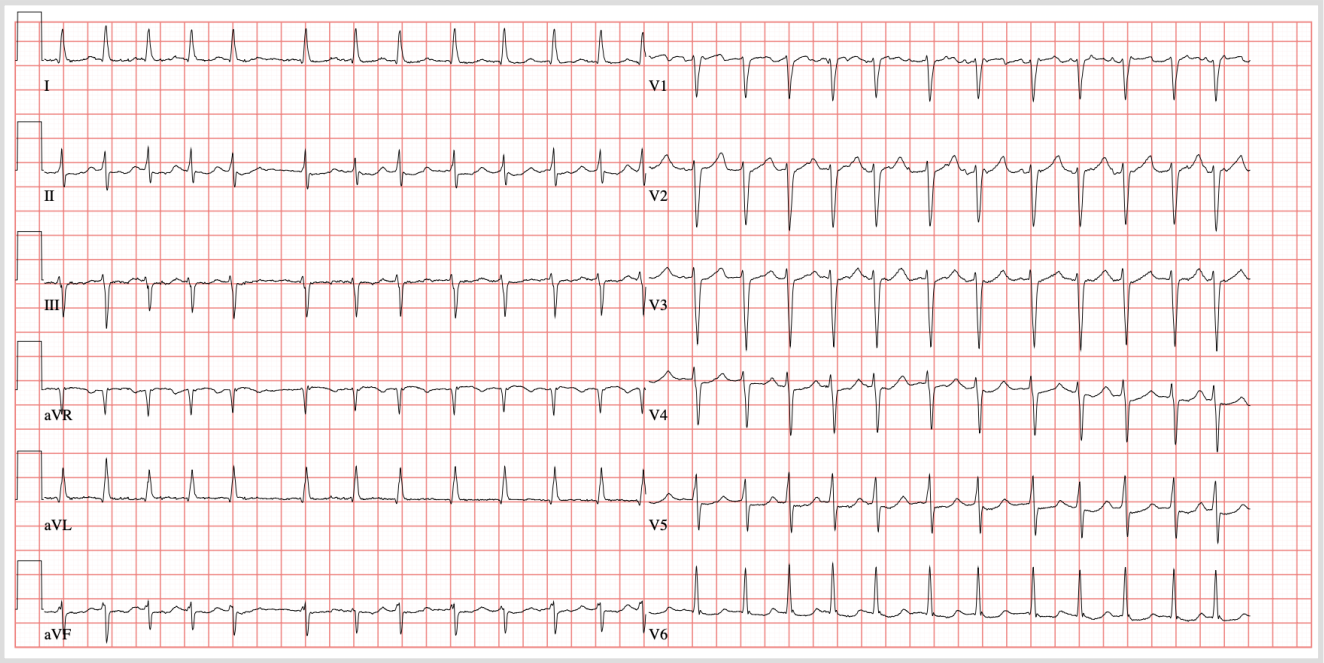
Cas clinique 3

Homme 85 ans

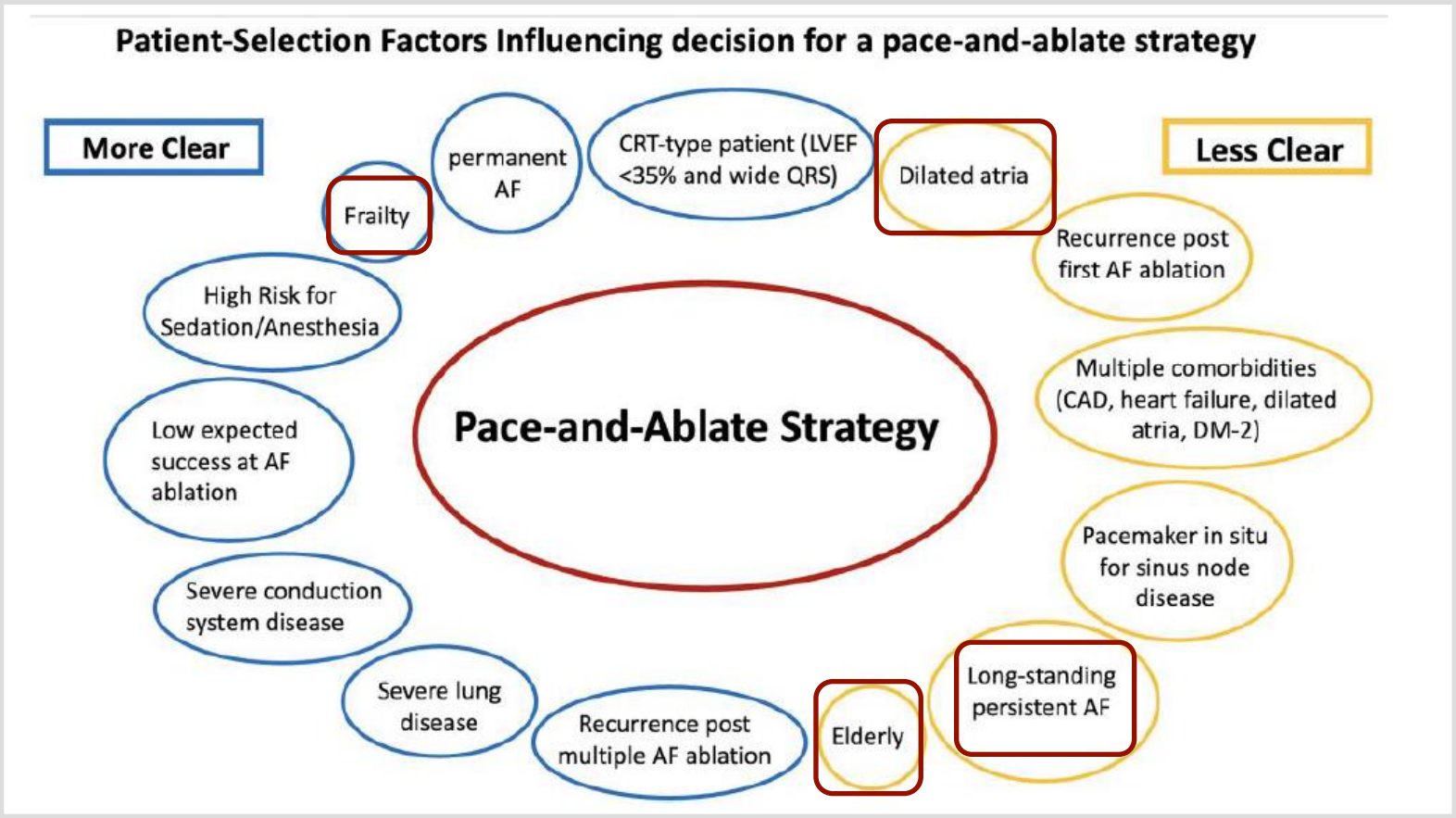
HTA

FA rapide 130/min sous dose max Bbloquants

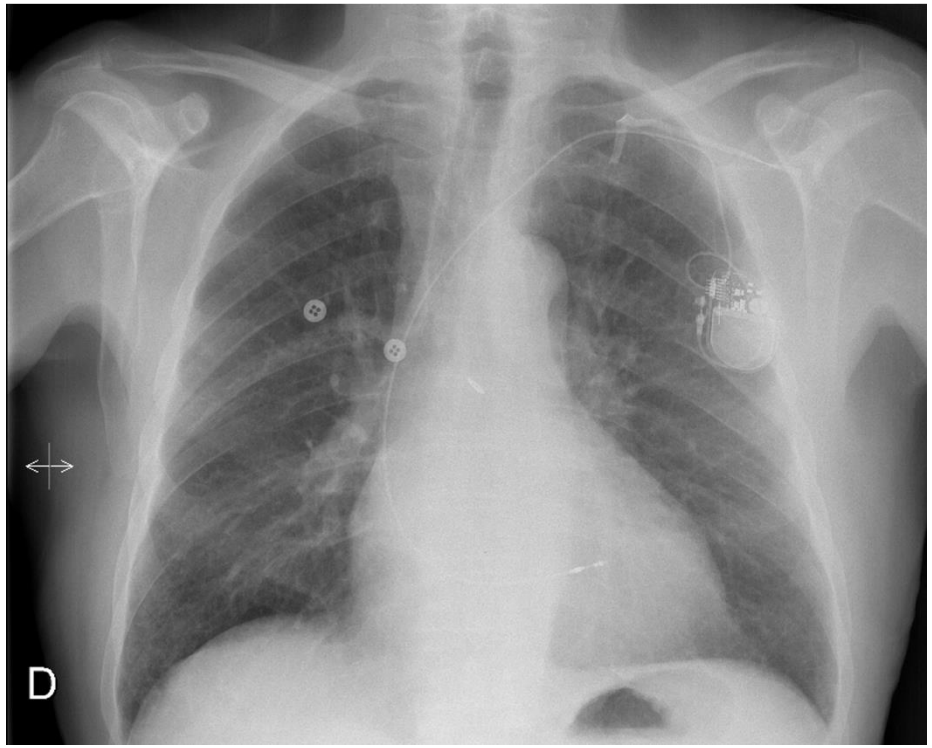
FEVG sidérée (FEVG 25-35%), DTDVG 54 mm
Débit cardiaque conservé
Pas de valvulopathie significative
Pas d'argument pour une élévation des pressions de remplissage du VG (E/e' lat 4,98)
OG dilatée (45 mL/m2)
VD non dilaté hypokinétique (S' 7,9 cm/s)
Pas d'HTAP (28,77 mmHg) VCI fine

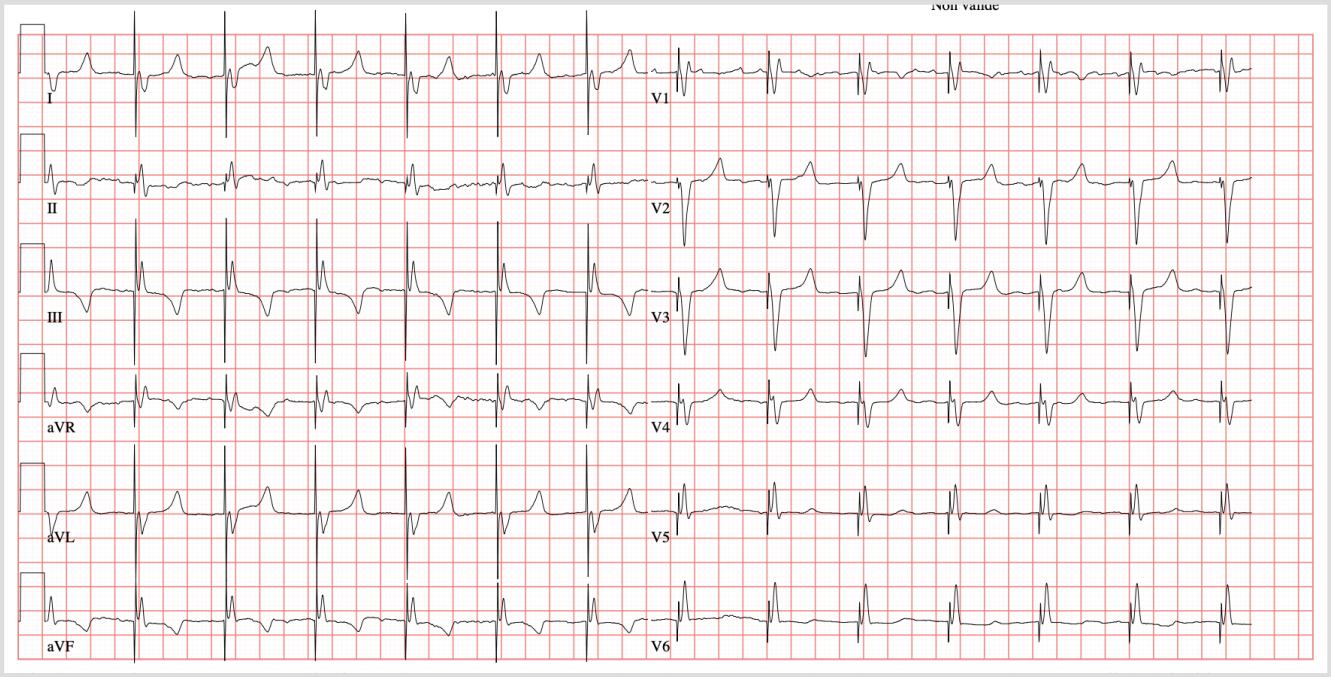


Cas clinique 3

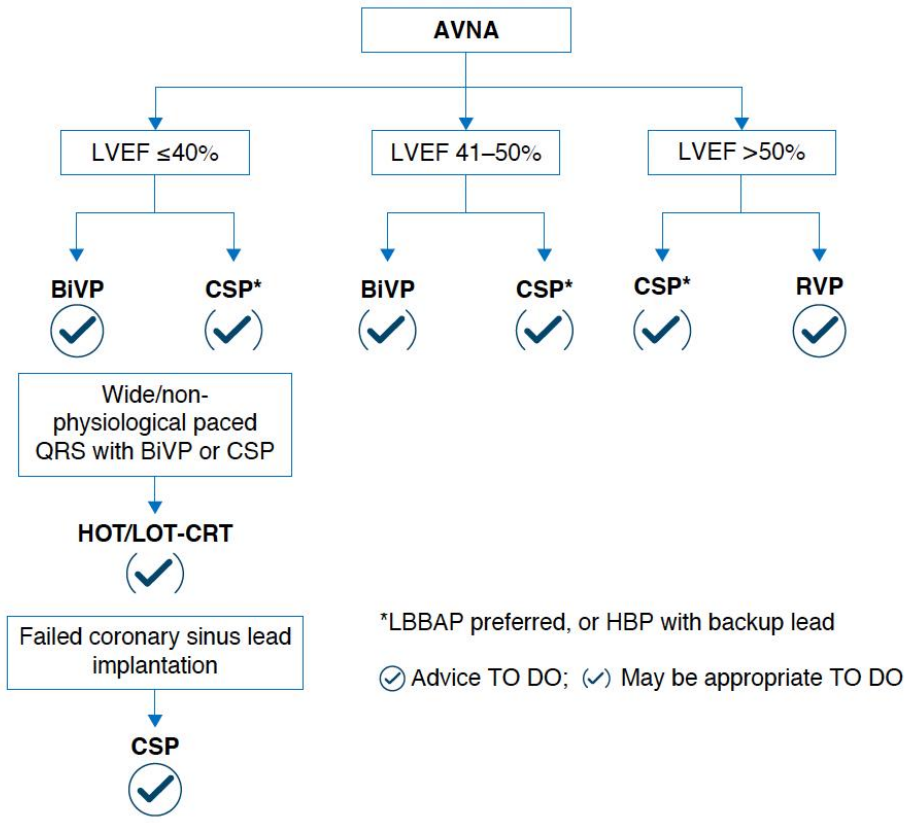


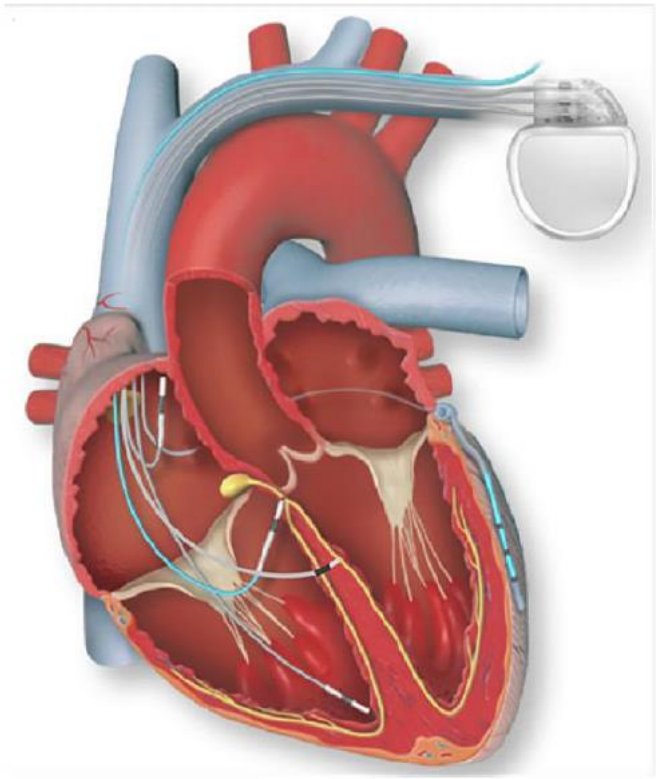
Cas clinique 3



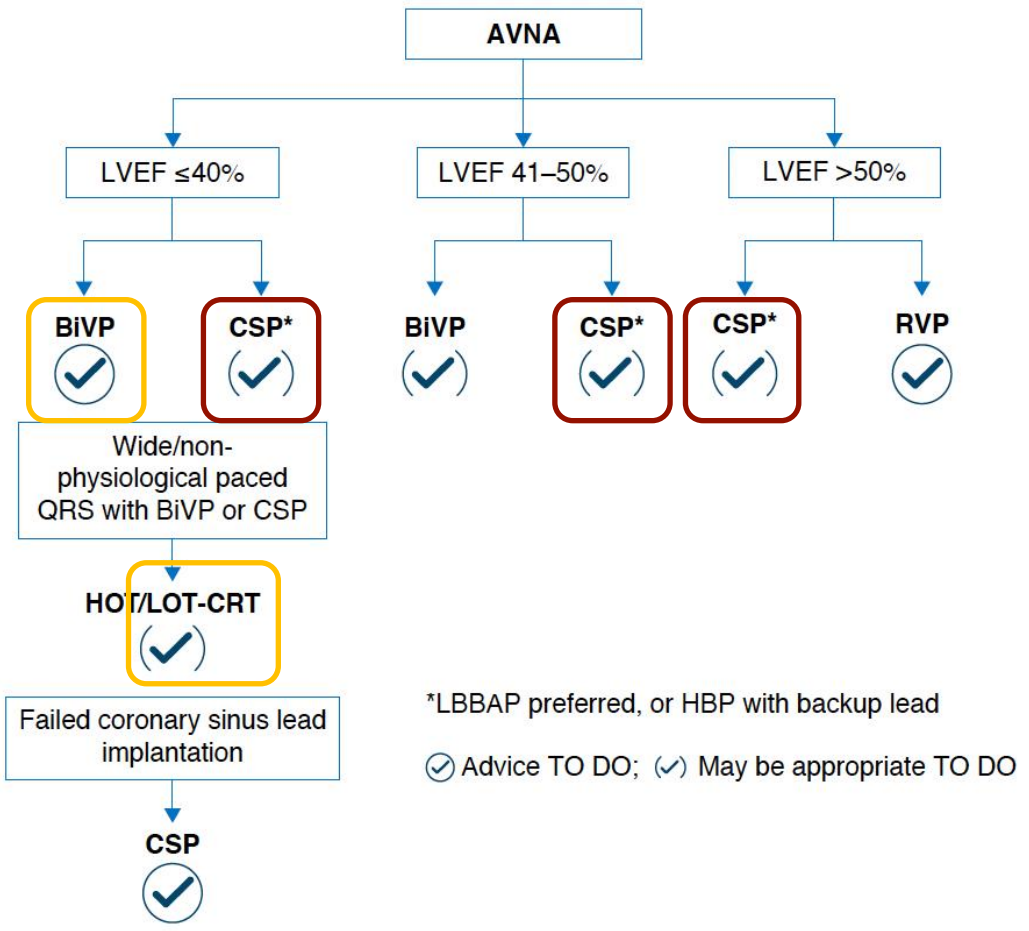


Choix du type de stimulation



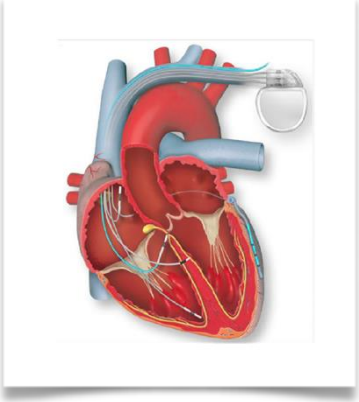


Choix du type de stimulation

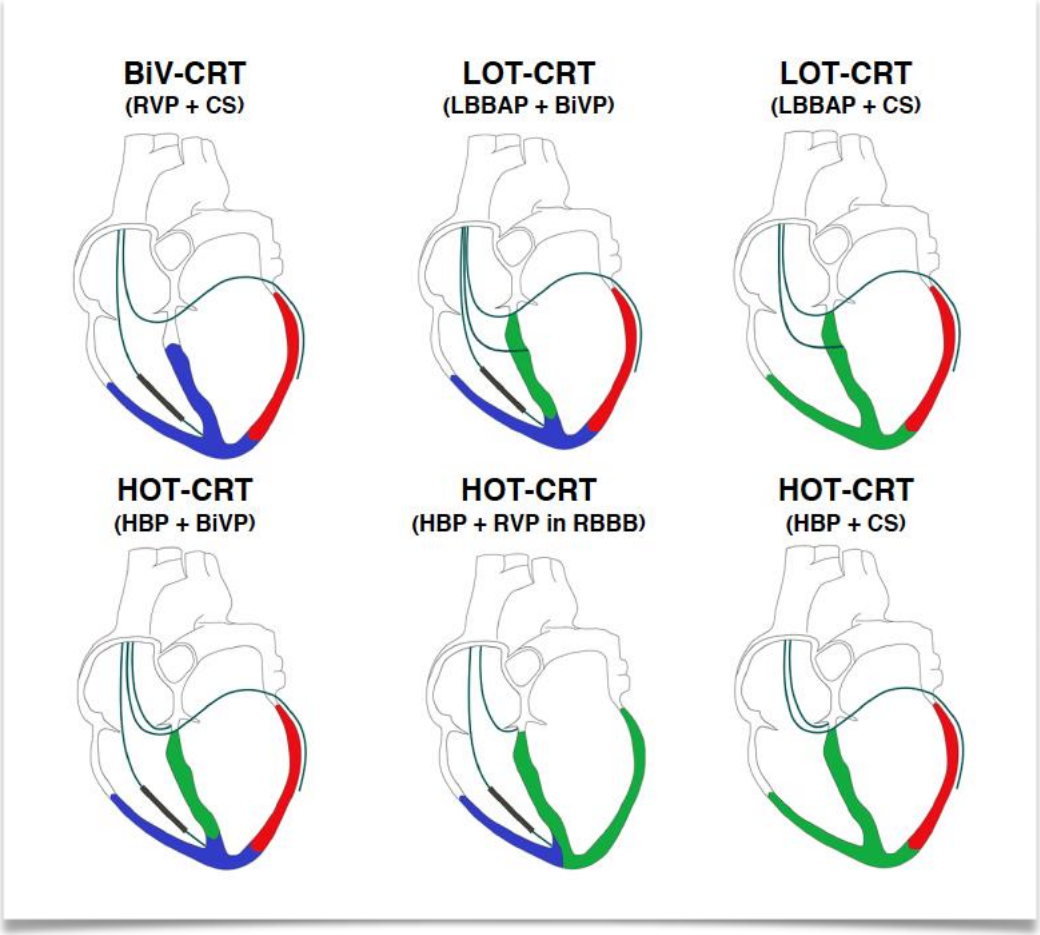


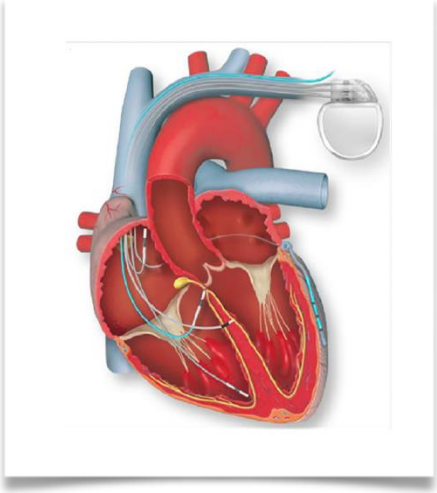
Première intention (QRS fins + ou BBG)

Deuxième intention (échec CSP ou bloc indifférencié)



LOT-CRT ?





- BiV-CRT, biventricular pacing cardiac resynchronization therapy;
- CS, coronary sinus pacing;
- HBP, His bundle pacing;
- HOT-CRT, His bundle pacing-optimized cardiac resynchronization therapy;
- LOT-CRT, left bundle branch-optimized cardiac resynchronization therapy;
- RBBB, right bundle branch block; RVP, right ventricular pacing.

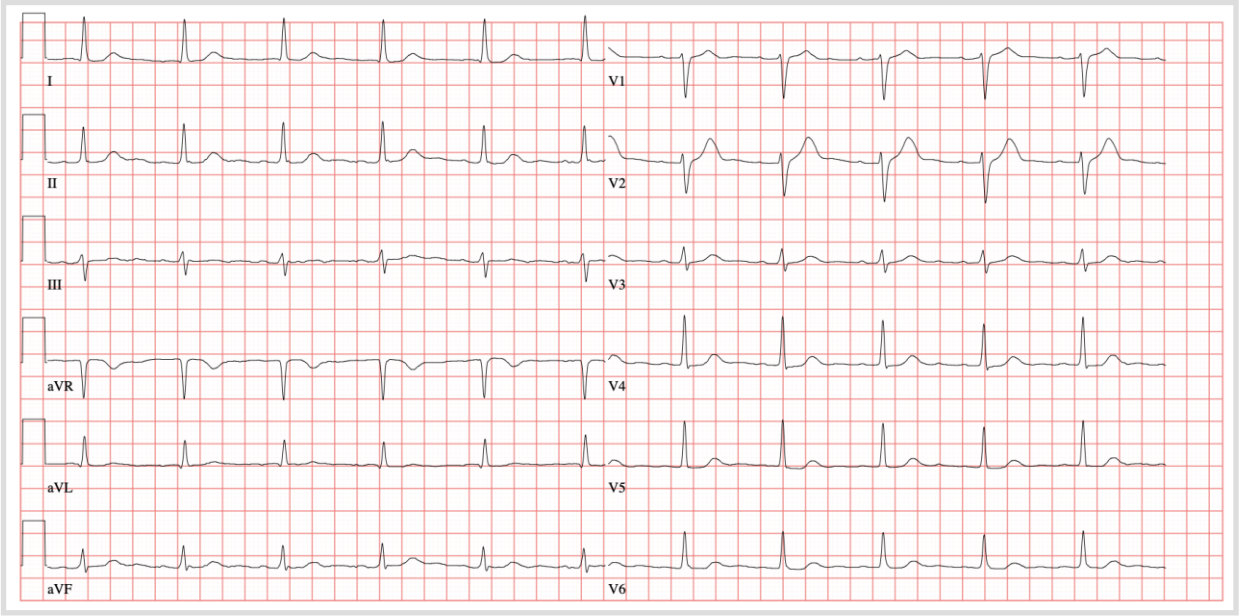
Cas clinique 4

Femme 85 ans

Maladie rythmique de l'oreillette

ATCD Cryo FA il y a 10 ans, HTA, hyperthyroïdie à la CORDARONE, DDB, Cancer sein G (tumorectomie + radiothérapie thoracique 1995)

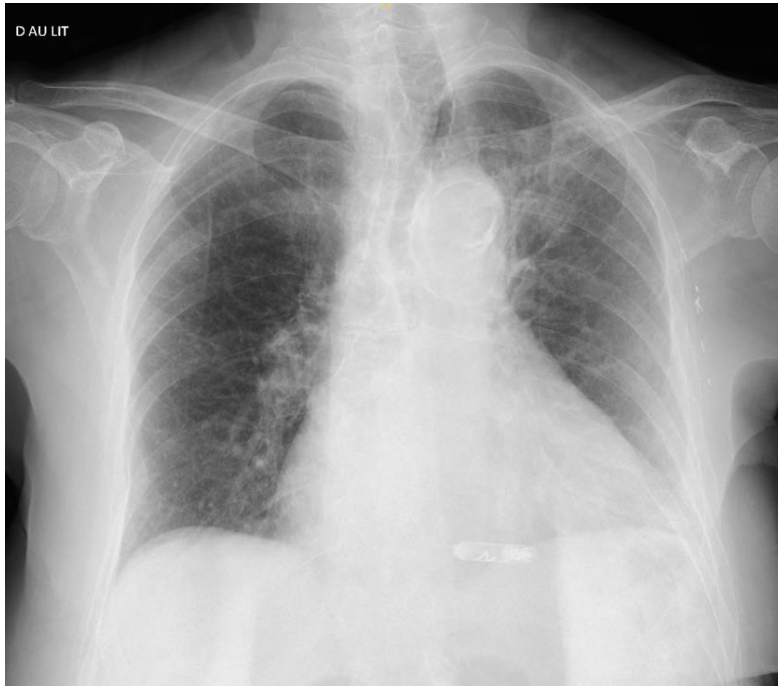
Traitement : IEC, BB, AOD, -Ca



Cas clinique 4

Femme 85 ans

Maladie rythmique de l'oreillette



Implantation d'un stimulateur cardiaque sans sonde

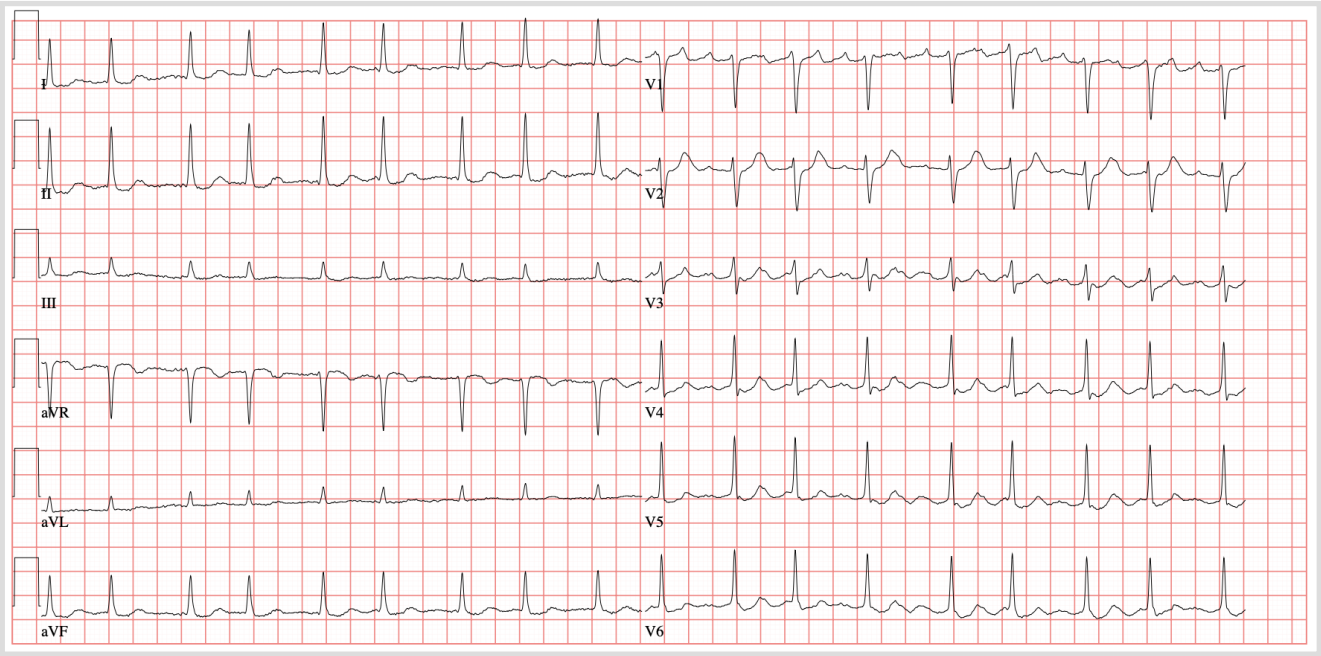
Cas clinique 4

Quelques années plus tard,

Flutter atrial et FA à conduction ventriculaire rapide mal tolérée

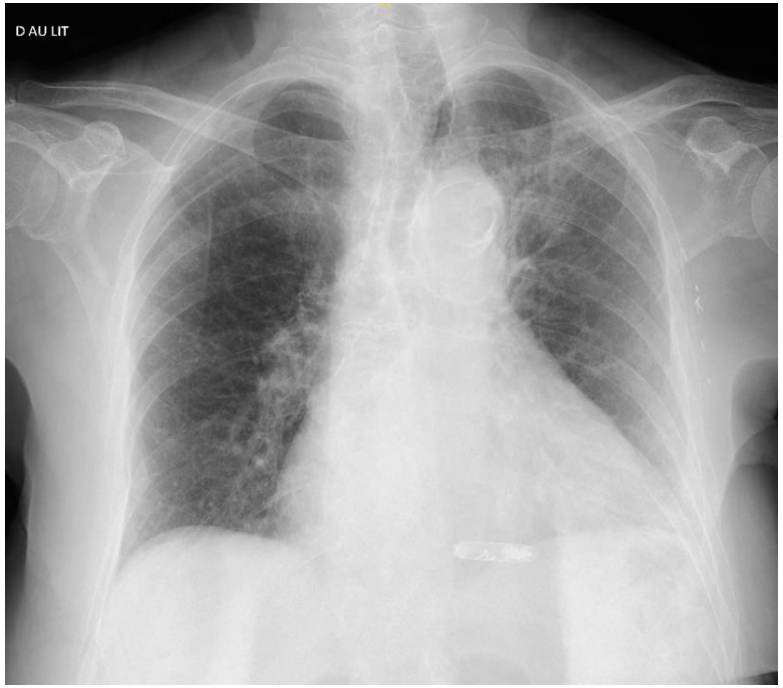
Mauvaise tolérance des Bbloquants, des inhibiteurs calciques

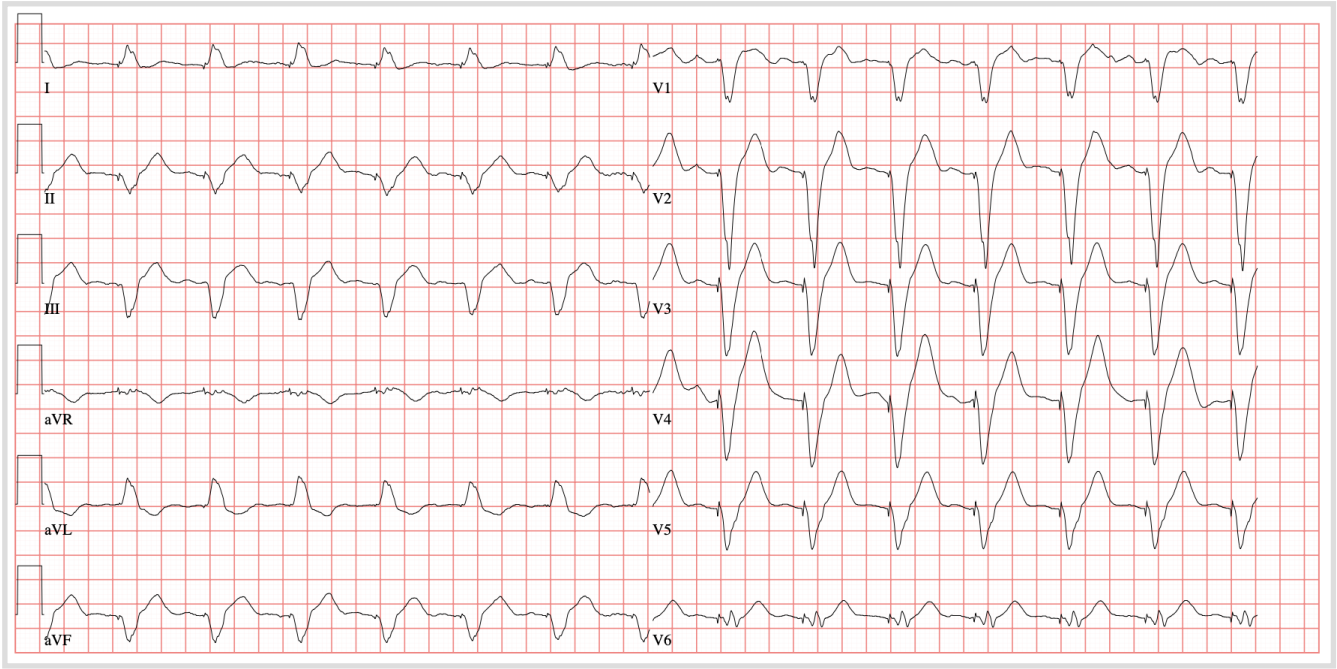
FEVG 65%



Modulation du NAV ?

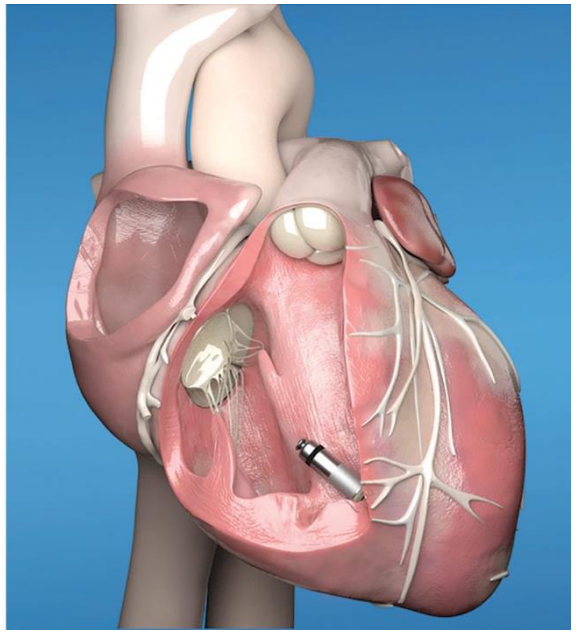
Cas clinique 4



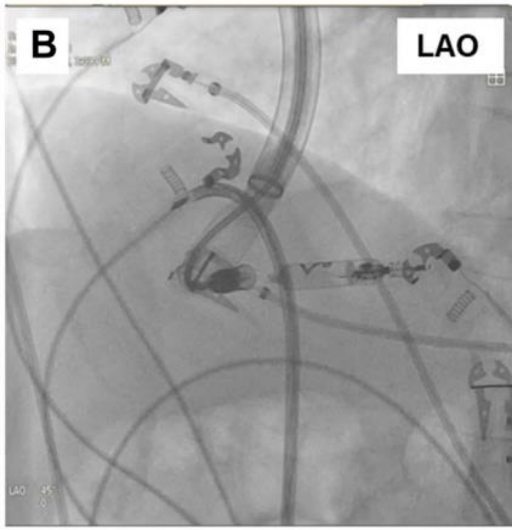


Place des stimulateurs sans sonde ?

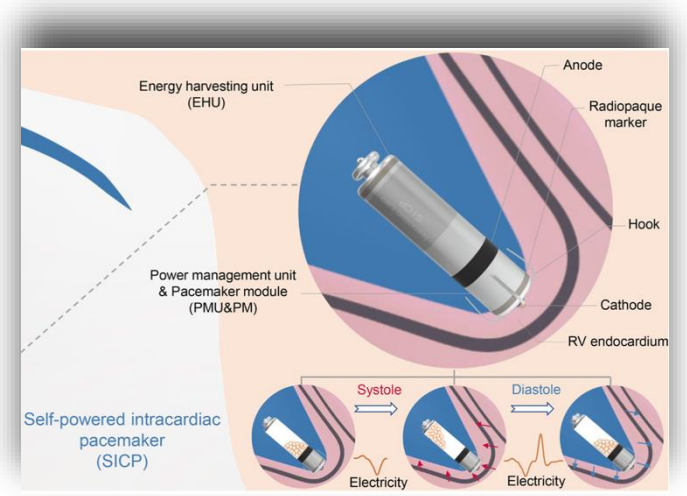
- Stimulation VD endocardique simple chambre
- Désynchronisation électrique induite
- Population réservée (risque infectieux, voie d'abord)
- Surveillance hémodynamique



Conclusion - Futur



Stimulation physiologique sans sonde



Stimulateur auto-rechargeable

Maintien du rythme sinusal

Merci de votre attention

Centre Universitaire de Rythmologie de Lyon

HCL HOSPICES CIVILS DE LYON

Collège National des Cardiologues des Hôpitaux

www.pratico-rythmo.com

Avec le parrainage de la SFC

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