INSUFFISANCES TRICUSPIDES

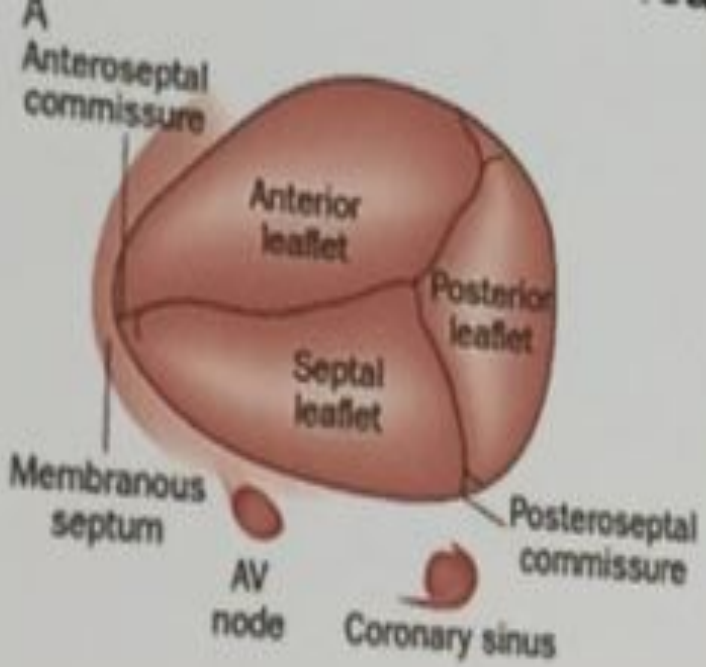
Amicale cardiologie, décembre 2015

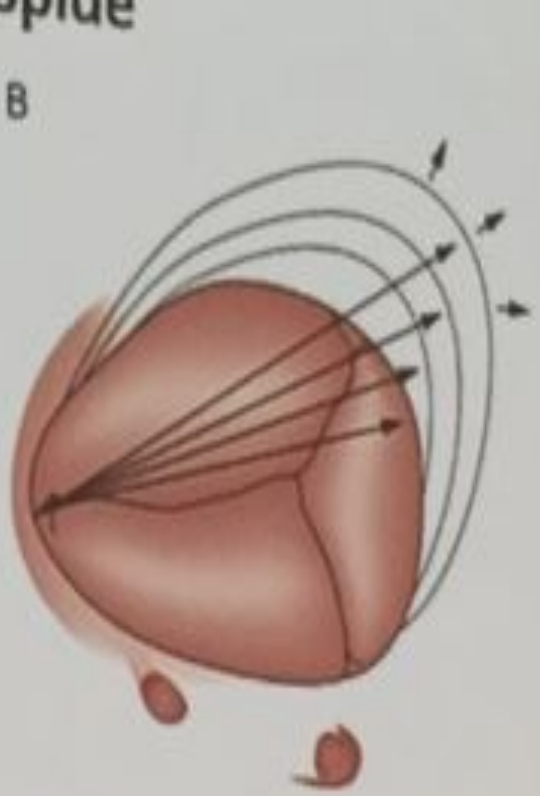
INSUFFISANCES TRICUSPIDES

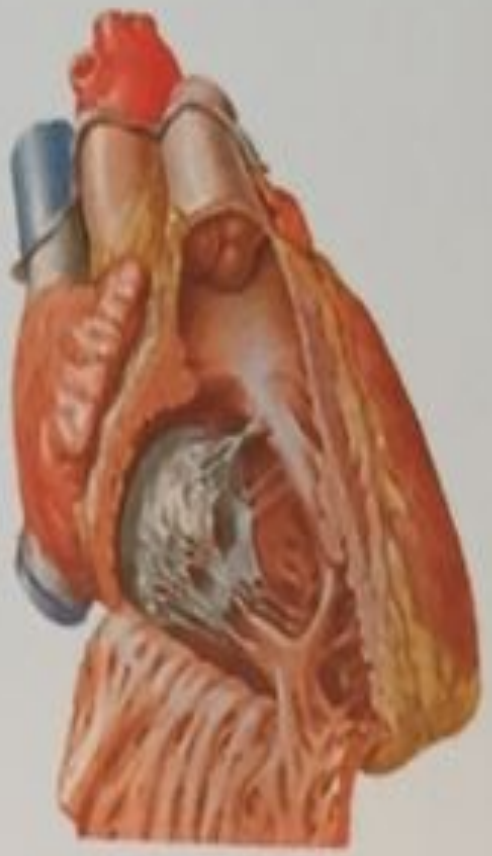
- Institut Arnault Tzanck : Chirurgiens, anesthésistes, réanimateurs, cardiologues

- Paris Echo 2015
- CNFC

ANATOMIE

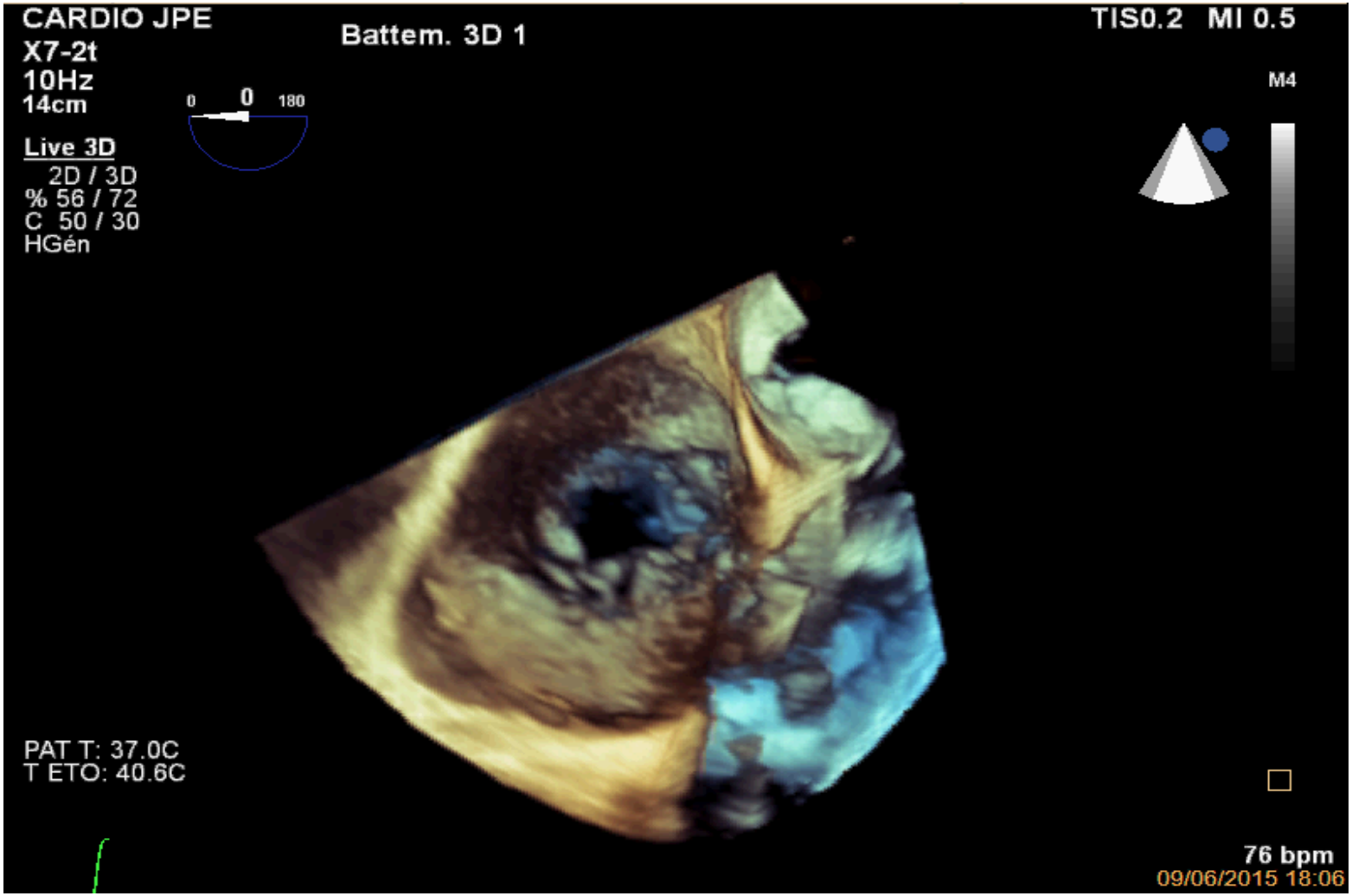






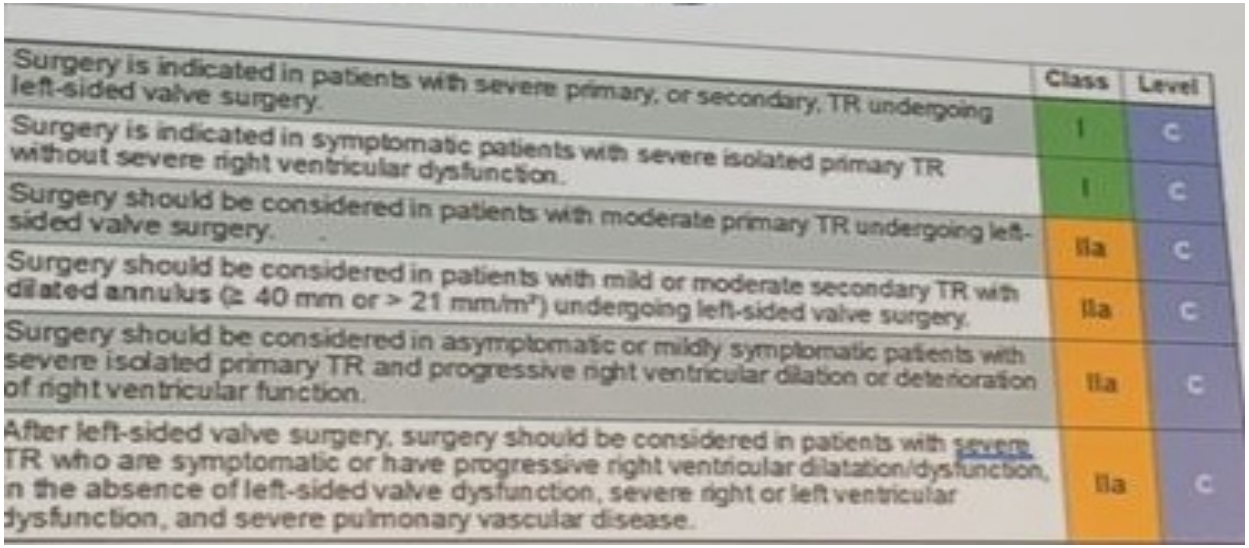
- **3 feuillets** : antérieur, postérieur et septal
- **3 commissures**
- **3 muscles papillaires**
- **Un anneau ovale** de diamètre moyen = **21mm/m²**
- Une portion annulaire **septale fixe**
- Une étroite **proximité de de l'anneau avec les voie de conduction**

ANATOMIE


CARDIO JPE
X7-2t
10Hz
14cm
Live 3D
2D / 3D
% 56 / 72
C 50 / 30
HGén
Battem. 3D 1
TIS0.2 MI 0.5
M4
PAT T: 37.0C
T ETO: 40.6C
76 bpm
09/06/2015 18:06

INSUFFISANCES TRICUSPIDES

- Les recommandations chirurgicales imposent:
  - » De préciser le ***mécanisme de l'IT***
  - » De quantifier la ***sévérité de l'IT***
  - » D'évaluer la ***fonction VD***



	Class	Level
Surgery is indicated in patients with severe primary, or secondary, TR undergoing left-sided valve surgery.	I	C
Surgery is indicated in symptomatic patients with severe isolated primary TR without severe right ventricular dysfunction.	I	C
Surgery should be considered in patients with moderate primary TR undergoing left-sided valve surgery.	IIa	C
Surgery should be considered in patients with mild or moderate secondary TR with dilated annulus (≥ 40 mm or > 21 mm/m²) undergoing left-sided valve surgery.	IIa	C
Surgery should be considered in asymptomatic or mildly symptomatic patients with severe isolated primary TR and progressive right ventricular dilation or deterioration of right ventricular function.	IIa	C
After left-sided valve surgery, surgery should be considered in patients with severe TR who are symptomatic or have progressive right ventricular dilatation/dysfunction, in the absence of left-sided valve dysfunction, severe right or left ventricular dysfunction, and severe pulmonary vascular disease.	IIa	C

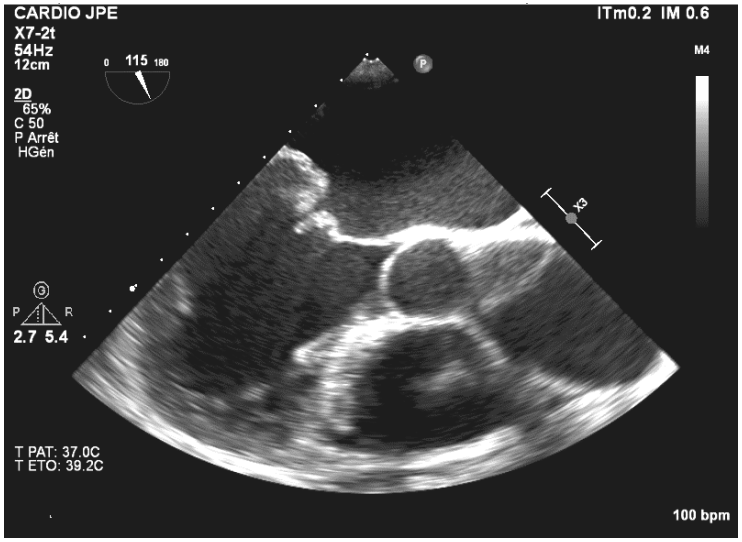
INSUFFISANCES TRICUSPIDIENNES
MECANISMES

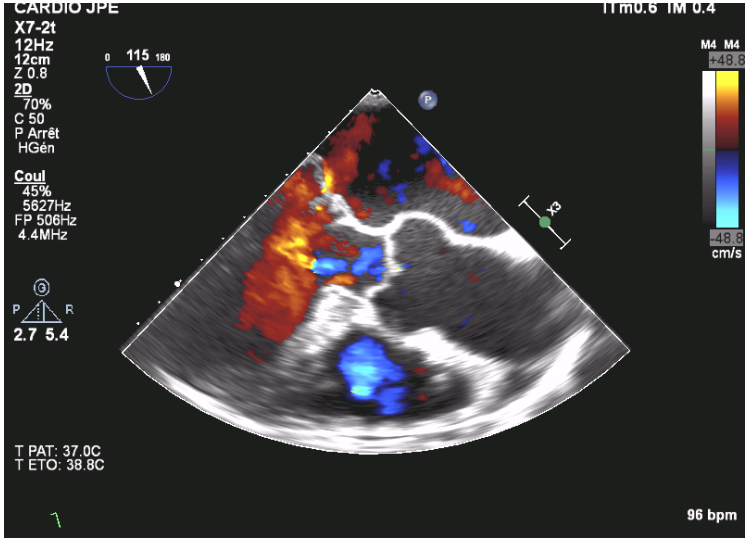
- IT Fonctionnelle (secondaire) 75%
- IT Organique (primitive) 25%

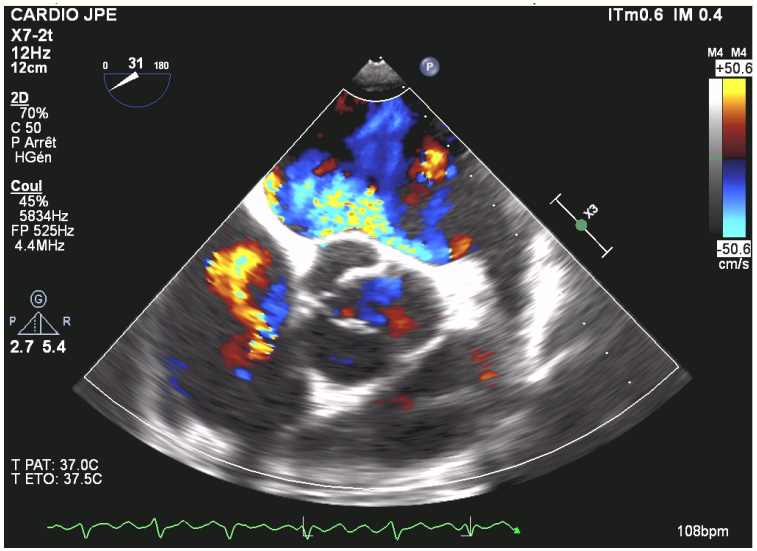
IT Fonctionnelle (secondaire)

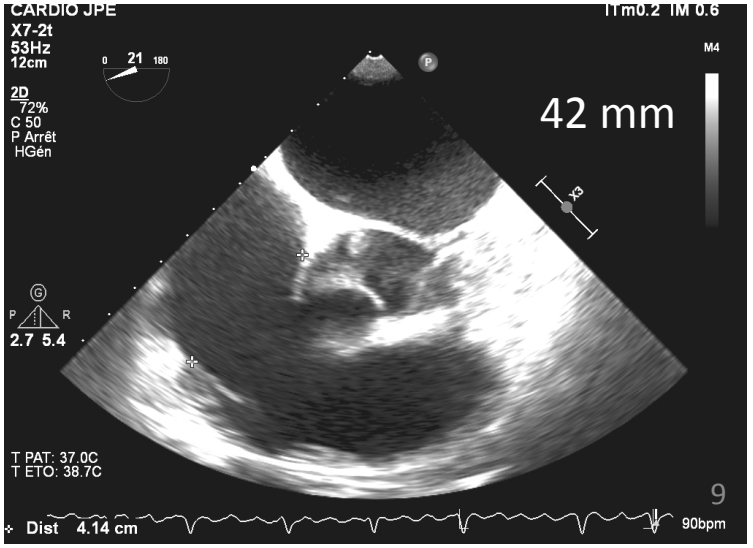
- Pas de lésions des feuillets valvulaires
- Liés à une pathologie du cœur gauche
-  POG - HTP - Dilation VD - **IT**

IT Fonctionnelle (secondaire)









Diamètre de l'anneau tricuspidien > 40 mm

→ Le dire au chirurgien

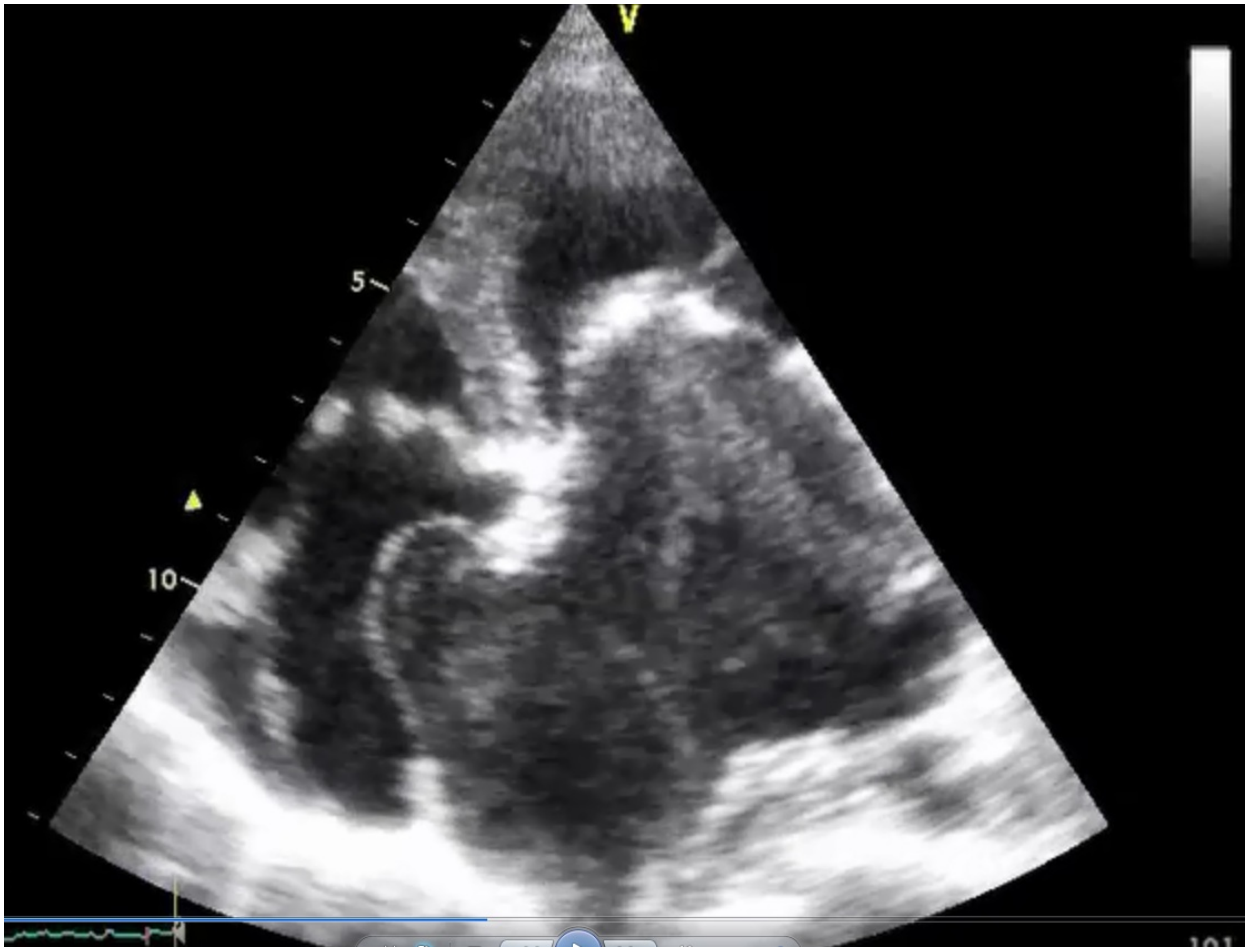
IT Organique Primitive

(lésions des feuillets)

- Post RAA (Restrictive)
- Endocardite (Perforation, destruction)
- Traumatique (Sonde PMK, DAI) +25%
- Congénitale (Ebstein)
- Carcinoïde (Restrictive)
- Dégénérative (Prolapsus)
- Médicamenteuse (Restrictive)
- Post radique (Restrictive)

IT Organique

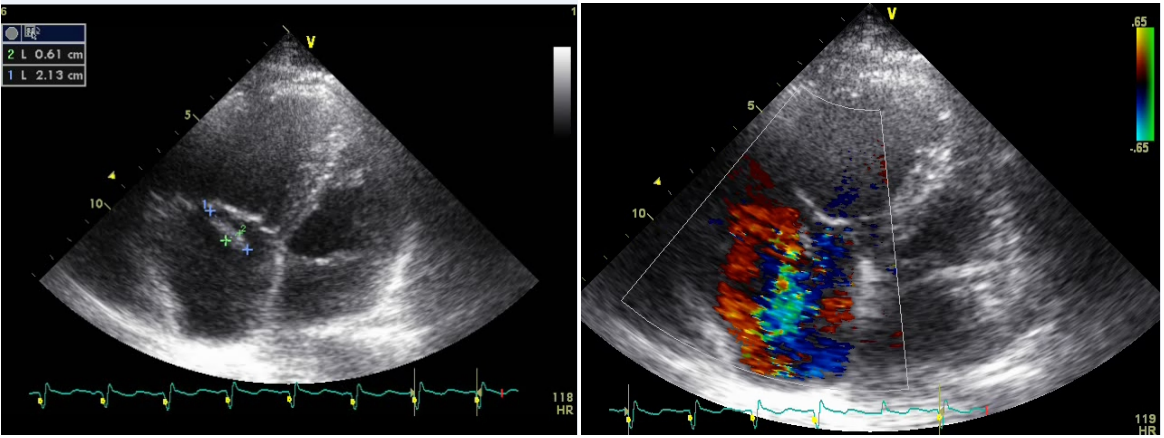
RAA



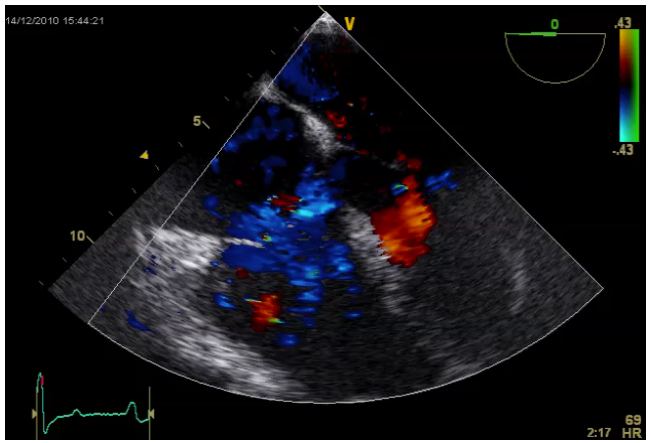
IT Organique
Endocardite

- **Point fort**
  - Toxicomane
  - Germe toujours Staphylocoque
  - Traitement médical ATB ++

Mr D, 28 ans



2008 : Insuffisance Cardiaque
Végétation diamètre 21 mm, Staphylocoque doré OxaS
avec localisation pulmonaire → Traitement ATB



2010
La végétation a disparu
Dyspnée stade 2

IT Organique

Endocardite

Surgical indications

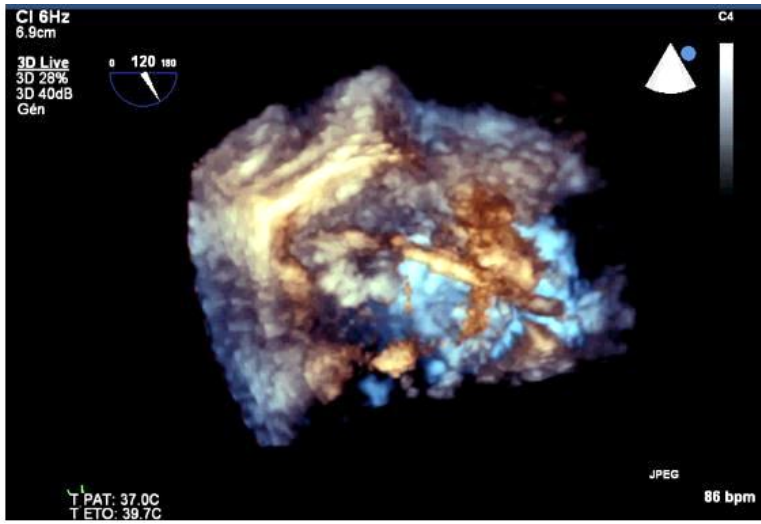
Surgical treatment should be considered in the following scenarios

	Level of evidence
	IIa / C

- **Microorganisms difficult to eradicate (e.g. persistent fungi) or bacteriemia for >7 days (e.g. *S. aureus*, *P. aeruginosa*) despite adequate antimicrobial therapy**
- **Persistent tricuspid valve vegetations >20 mm after recurrent pulmonary emboli with or without concomitant right heart failure**
- **Right heart failure secondary to severe tricuspid regurgitation with poor response to diuretic therapy**

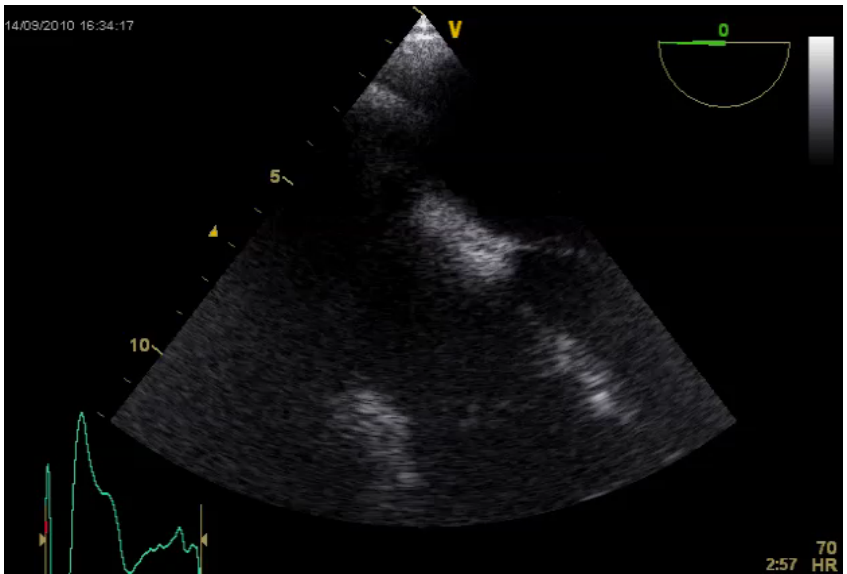
IT Organique

Sondes PMK



- **Point fort**
  - Germe toujours staphylocoque
  - Sensibilité écho 70%
  - Pet Scan +++
  - Traitement: ATB + Ablation de tout le matériel

laser



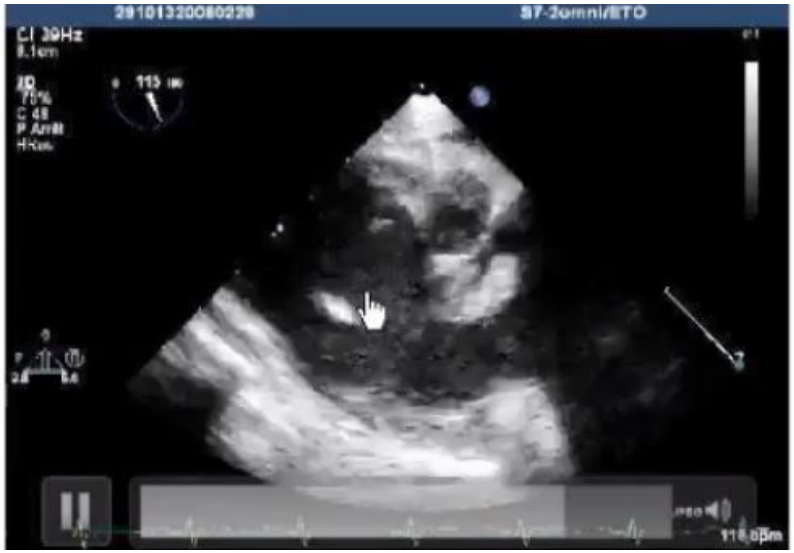
Stand by chirurgical obligatoire

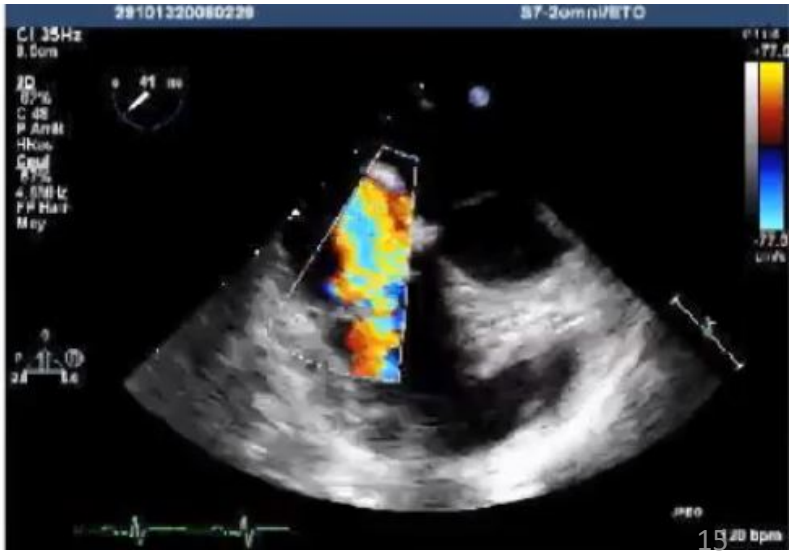
IT Organique

Endocardite

Le germe est un **Streptocoque**

→ A quoi faut-il penser ?

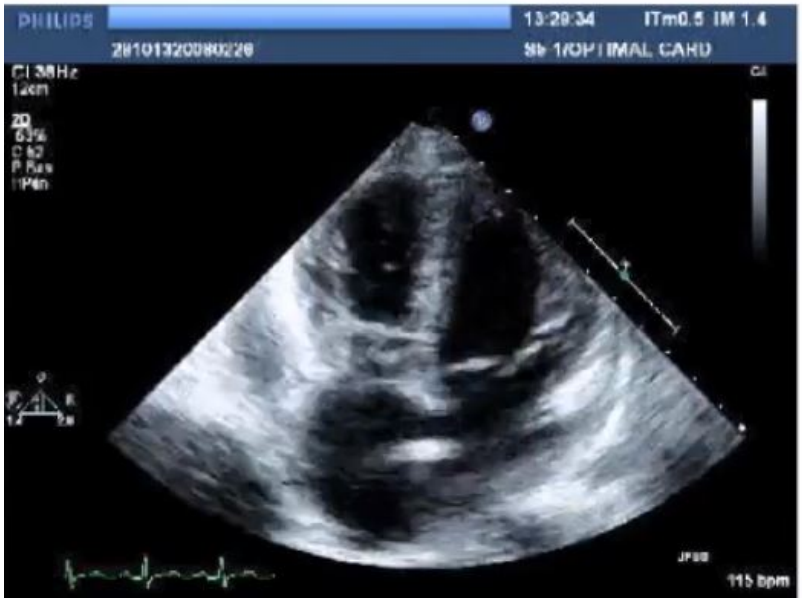


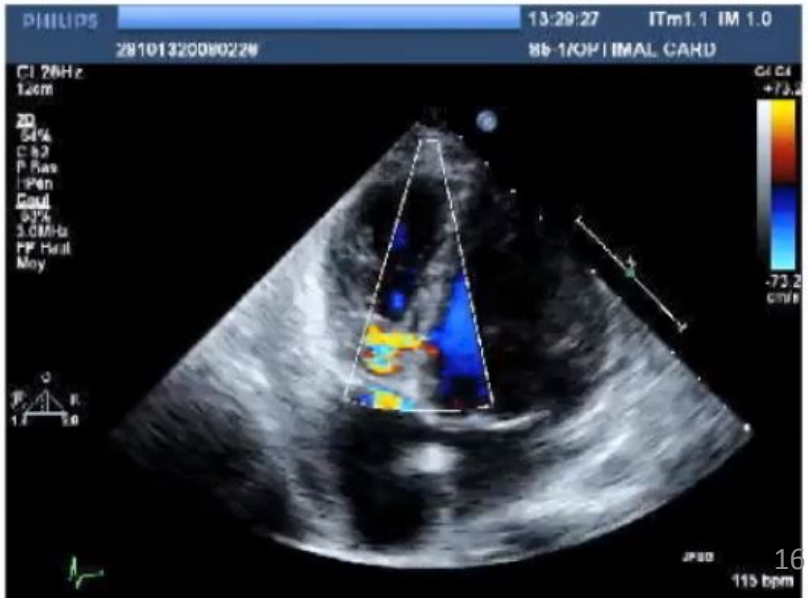


IT Organique

Endocardite

- Point fort :
  - Le germe n’est pas un staphylocoque (Strepto oralis)
  - Pensez à une pathologie du cœur gauche → chiriurgie

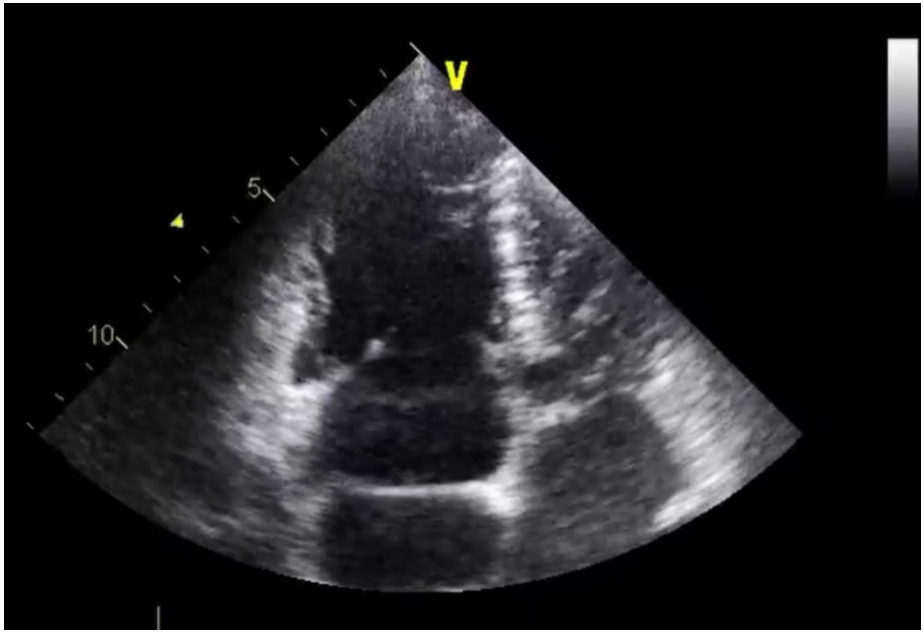




IT Organique

Carcinoïde

- 5 HIA (sérotonine)
- NSE
- Chromagrine A (sang)



Aspect restrictif des feuillets tricuspides
Valve béante

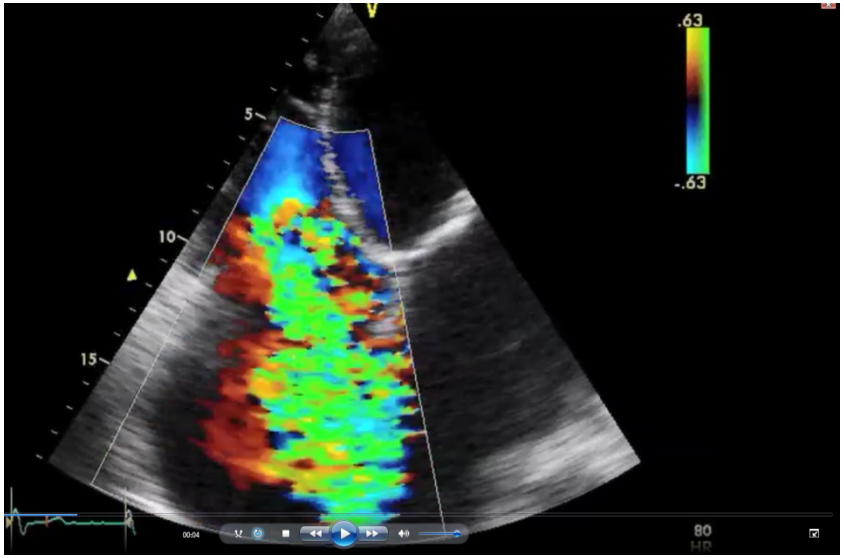
QUANTIFICATION

LA PISA

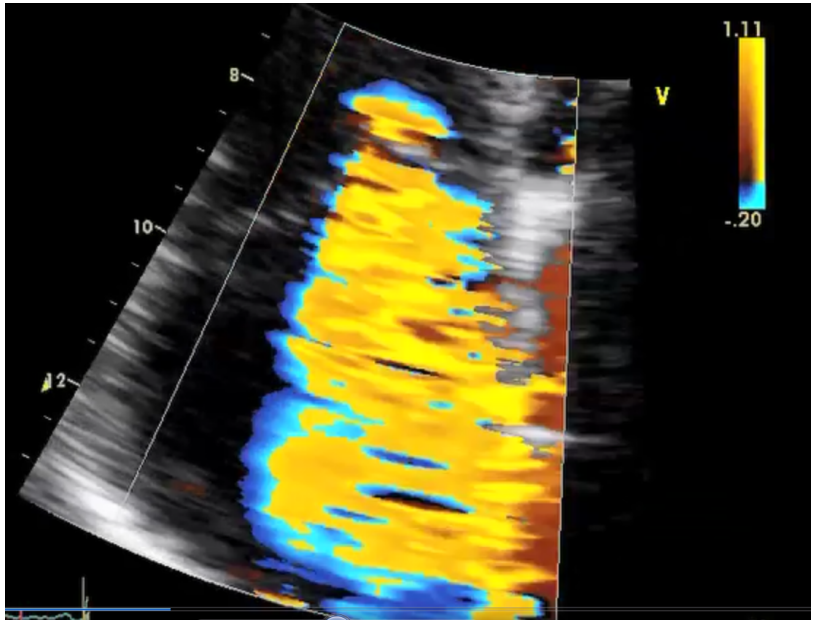
- **Rayon PISA** (limite de Nyquist 28 cm/s)
  - Fuite sévère **grade IV > 9 mm**
  - Fuite moyenne grade III 6-9 mm
  - Fuite modérée grade II < 6 mm

- Fuite sévère
  - » SOR > 40 mm²
  - » VR > 45 ml
  - » **Vena Contracta > 7 mm**
  - » Inversion flux syst dans les veines hépatiques
  - » Doppler Continu aspect dense et triangulaire

LA PISA



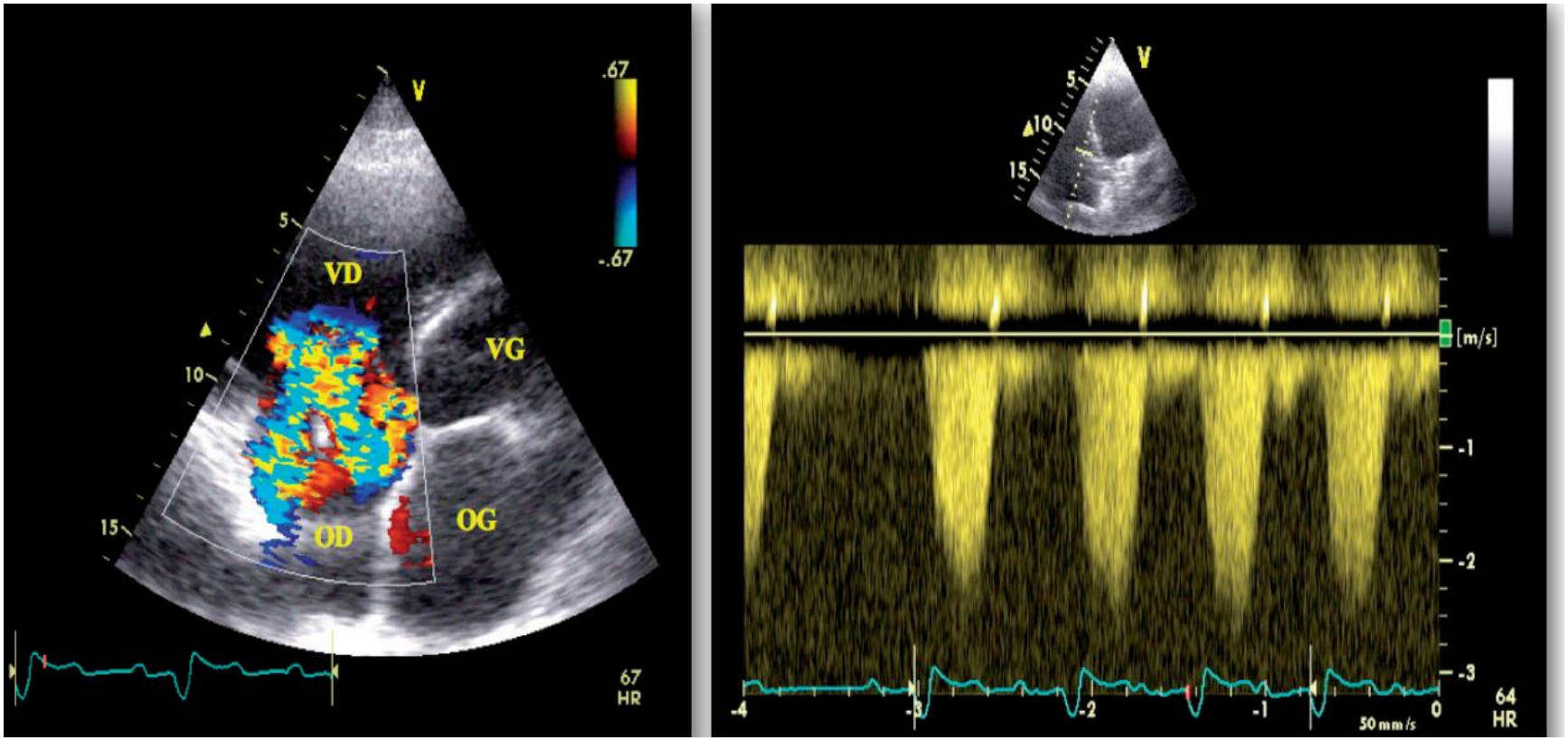
IT importante PISA 9 mm



IT
LA FONCTION VD

- **Le plus difficile**
  - Echographie
  - IRM
  - Le bon sens clinique

LA FONCTION VD
IT



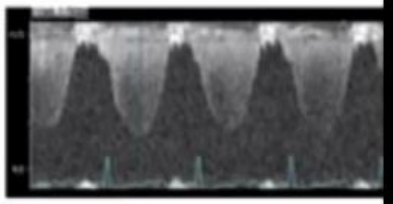
Echo : estimation Pression Pulmonaire

et Résistances pulmonaires = Vmax IT / ITv AP > 0,2 → patho

Post-charge VD

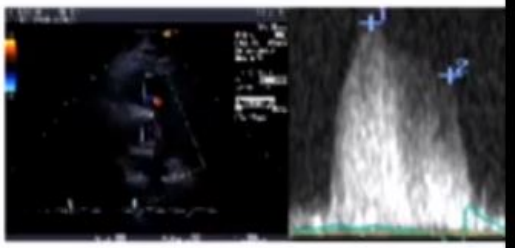
Pression Pulmonaire

❖ Systolic Pulmonary Artery Pressure (SPAP)



- ✓ **Tricuspid regurgitation** Yock Circulation 1984

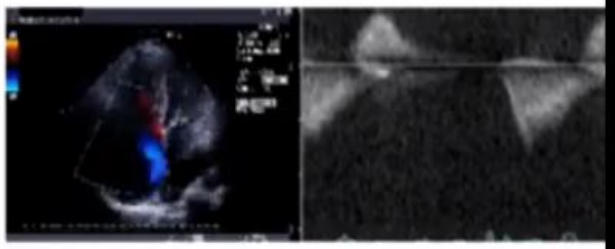
  Equation de Bernouli : gradient VD-OD



- ✓ **Pulmonary regurgitation** Raffoul Arch Mal Coeur 1990

  PAPs = 3 PAPm – 2 PAPd

+ **RA pressure** estimated



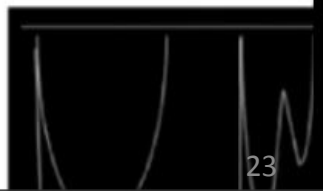
⚠ **Severe tricuspid regurgitation**

➔ Early equalization of RV & RA pressures

➔ Not applicable

❖ Indirect signs of PH

- ✓ PW Doppler of pulmonary flow
- ✓ Acceleration time < **100 ms predict PH**

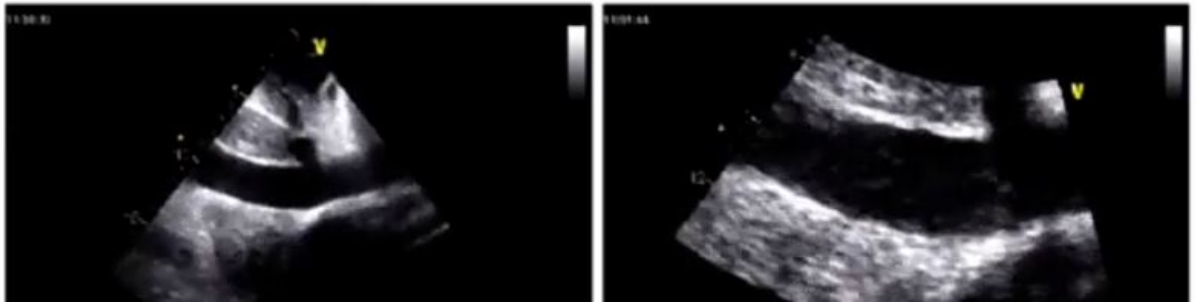


POD

- IVC diameter < 21 mm that collapses > 50% (sniff test)
  ➔ Normal RAP = **3 mm Hg** (0-5)

- IVC diameter > 21 mm that collapses < 50% (sniff test)
  ➔ Increased RAP = **15 mm Hg** (10-20)

- In scenarios in which IVC diameter and collapse do not fit this:
  ➔ Intermediate RAP = **8 mm Hg** (5-10)



Pré-charge VD

IT
LA FONCTION VD
Echographie

Les meilleurs critères (Albergel)

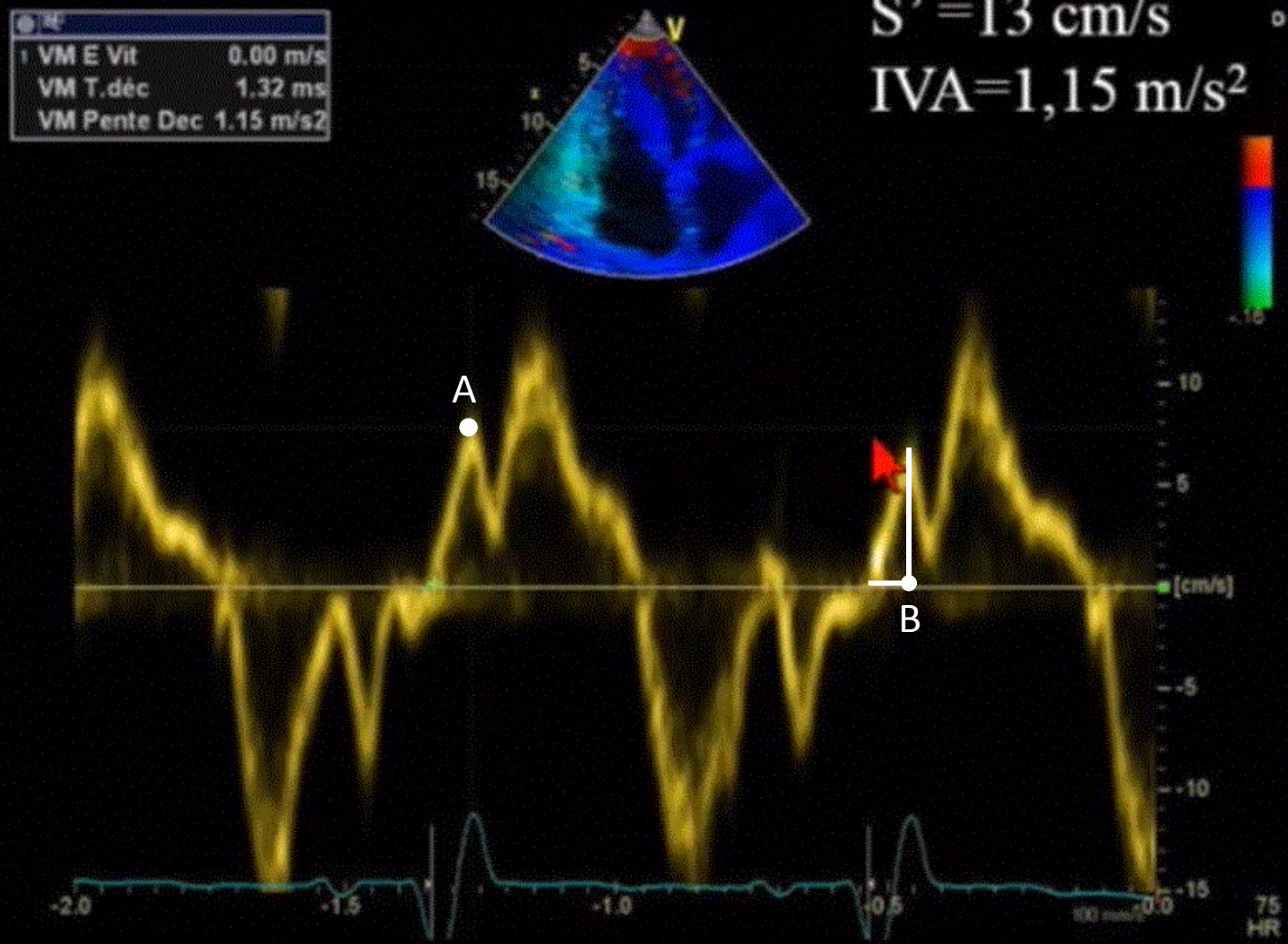
- FRS Normale > 35%
- Onde S Normale > 10cm/s
- **IVA** (Indépendant Pré charge et Post charge)
  Normale >1,8 m/s²

Fonction intrinsèque du VD

En cas d'IT importante, seule l'IVA est utile

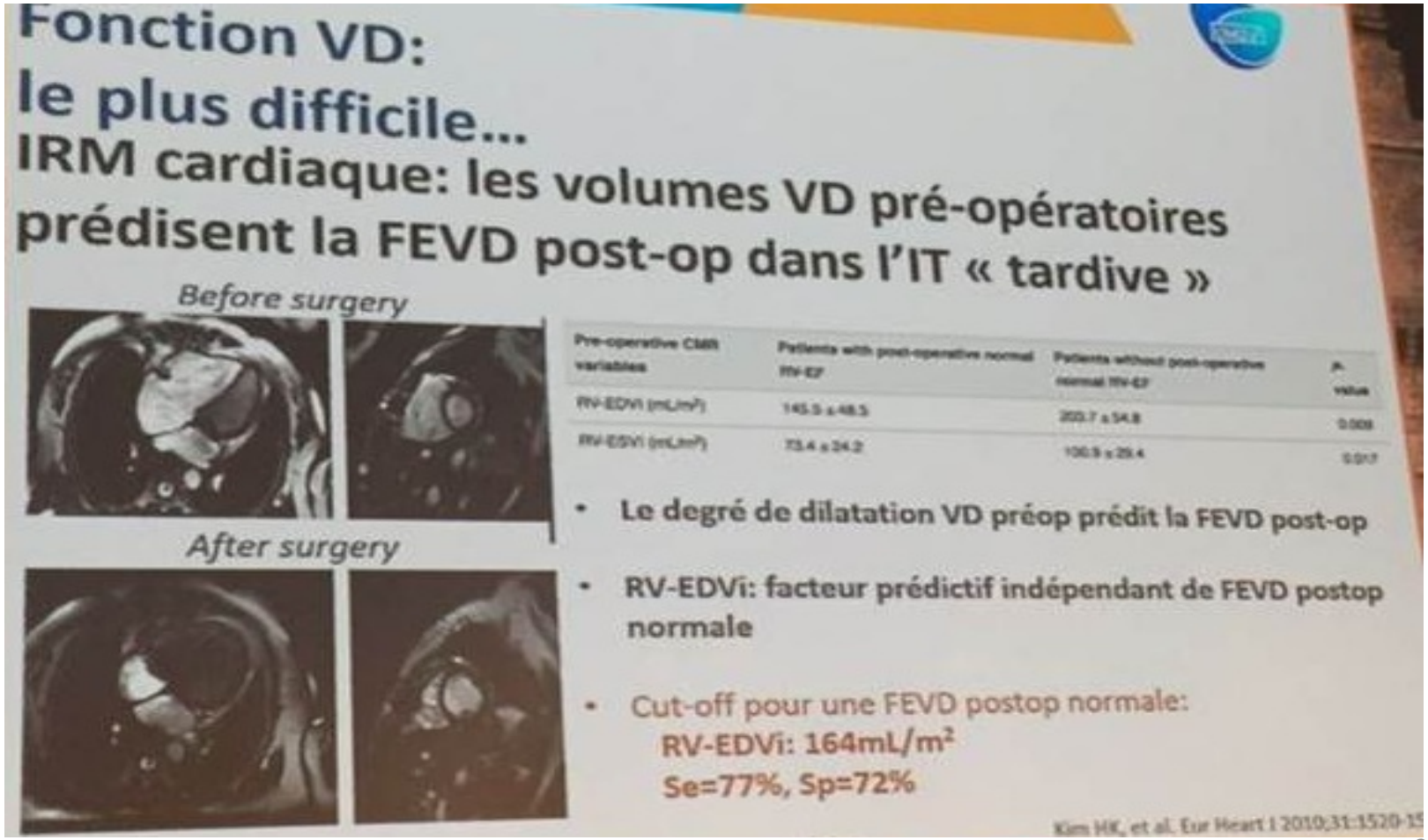
S' : be-all and end-all of RV function ??

Severe TR



IVA =

IT
LA FONCTION VD
IRM



IT
LA FONCTION VD
Le bon sens clinique

- Attention HTP pré capillaire
- Importance du KT Droit

IT
LA FONCTION VD
Le bon sens clinique

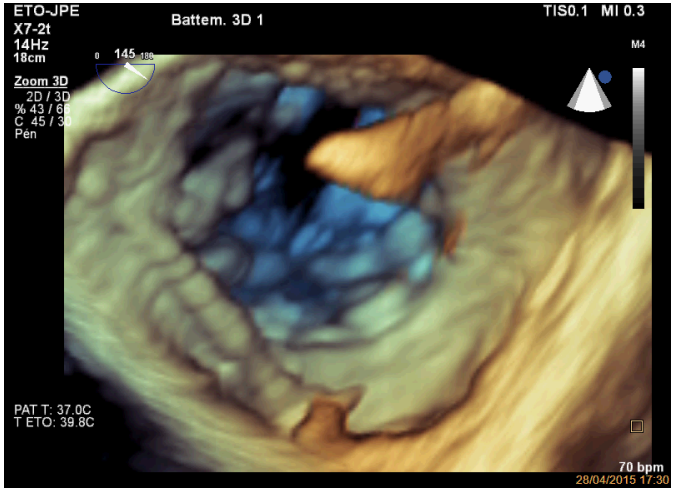
- Attention! IT Tardive

Mr. R, 70 ans

Stimulateur cardiaque 2008

Plusieurs épisodes d'IC droite

Indication opératoire 2015



IT stade III - IV

Coro normale

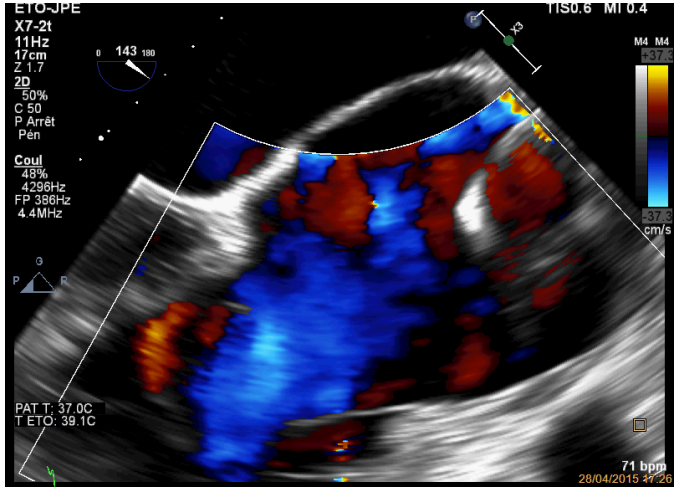
PCPm = 22 mmHg

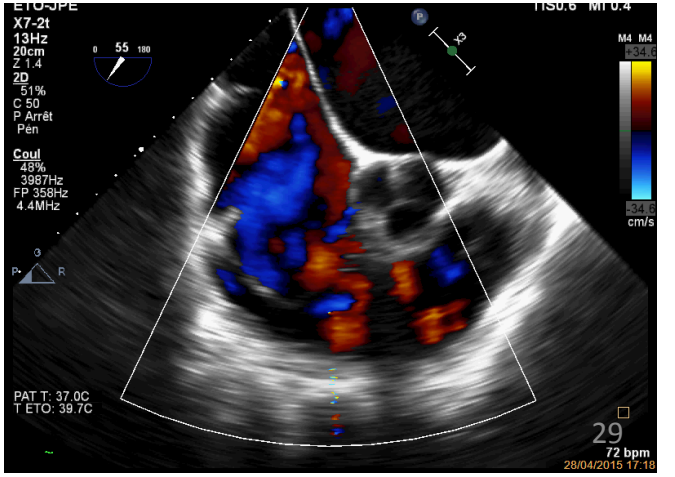
AP = 43 – 16 – 27 mmHg

OD = 21 mmHg

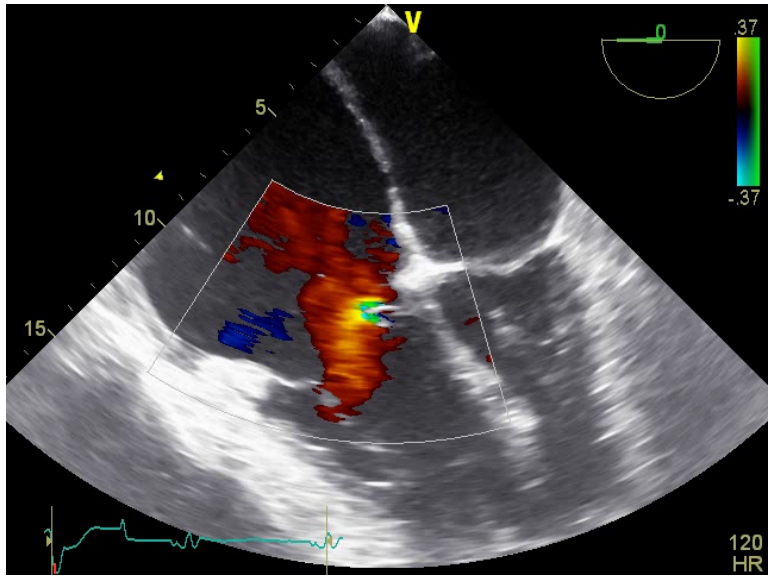
VD = 40 – 8 – 17 mmHg

FEVG = 52% mmHg

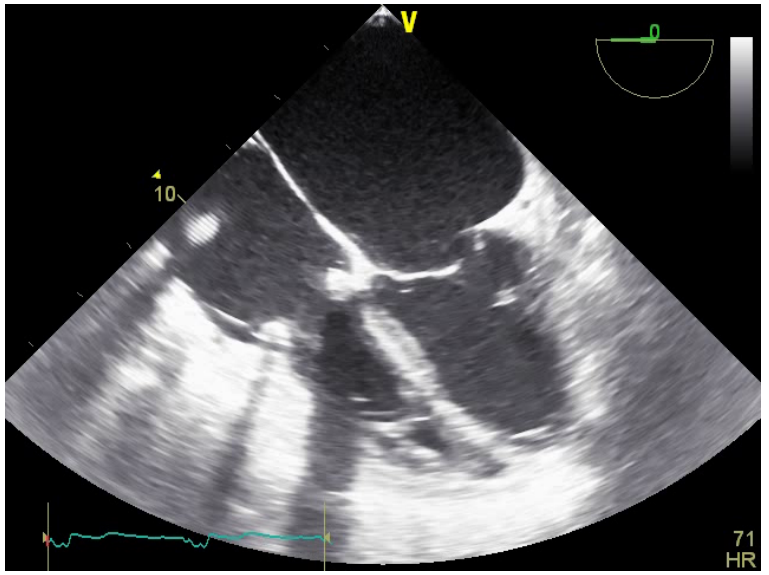




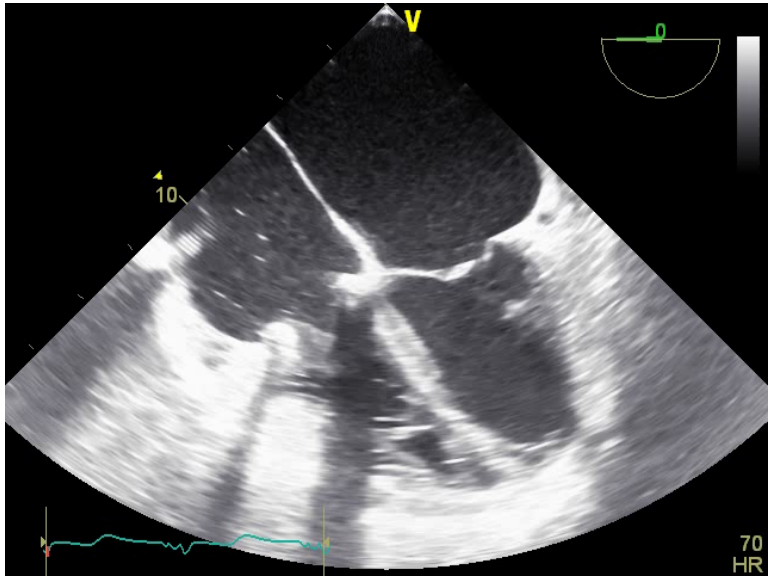
Mr. R au bloc opératoire



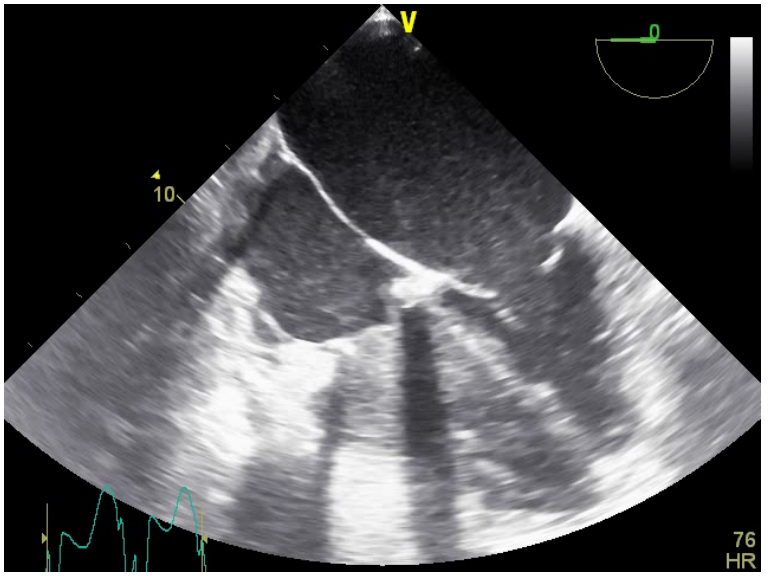
Avant chir



Après chir



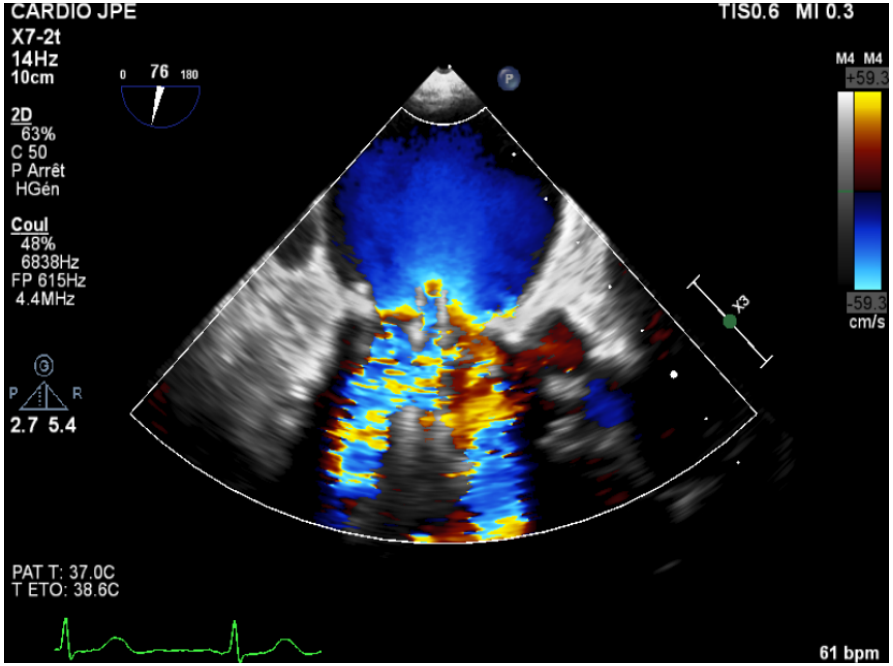
Après chir

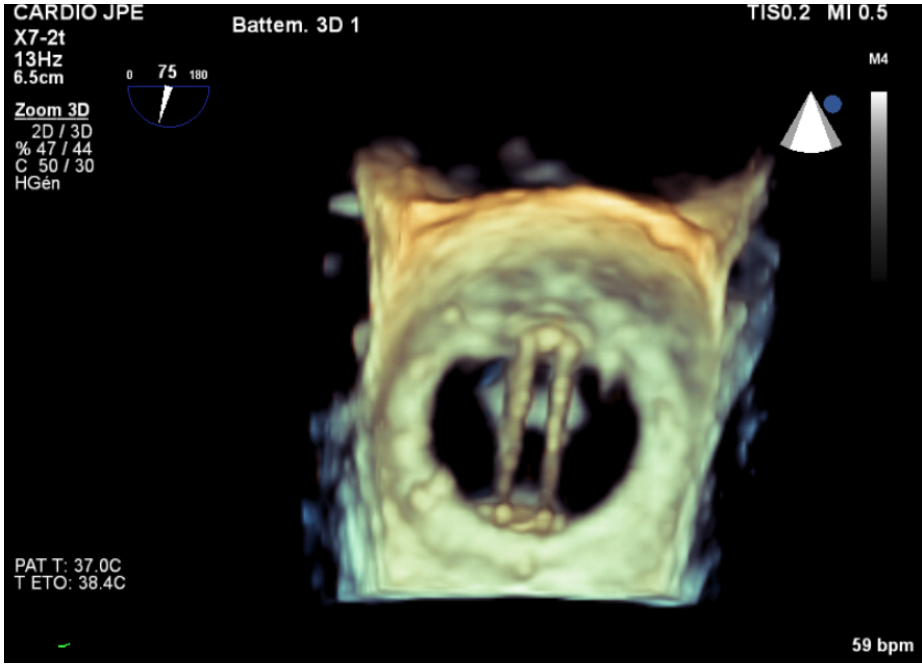


Après chir

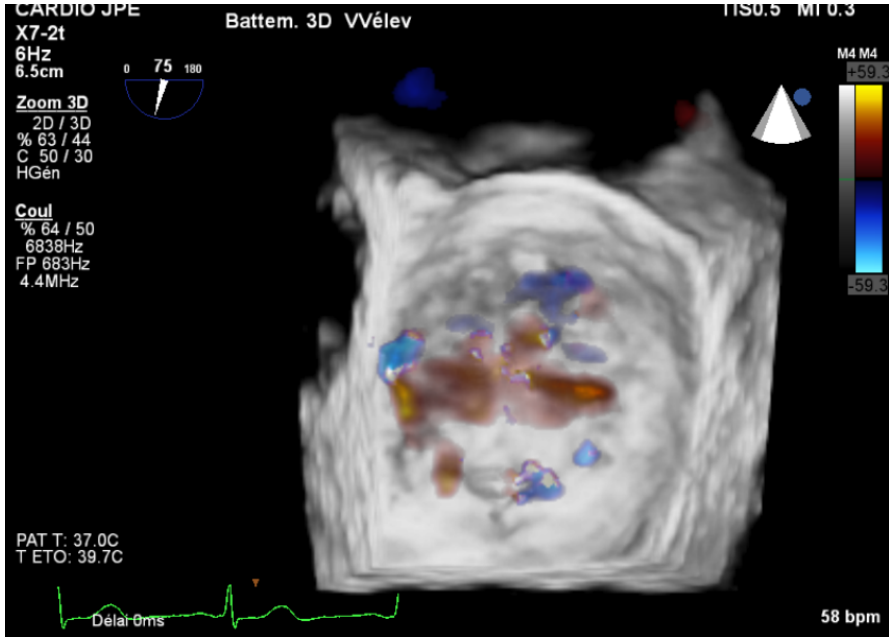
Mm. B (née en 1951)

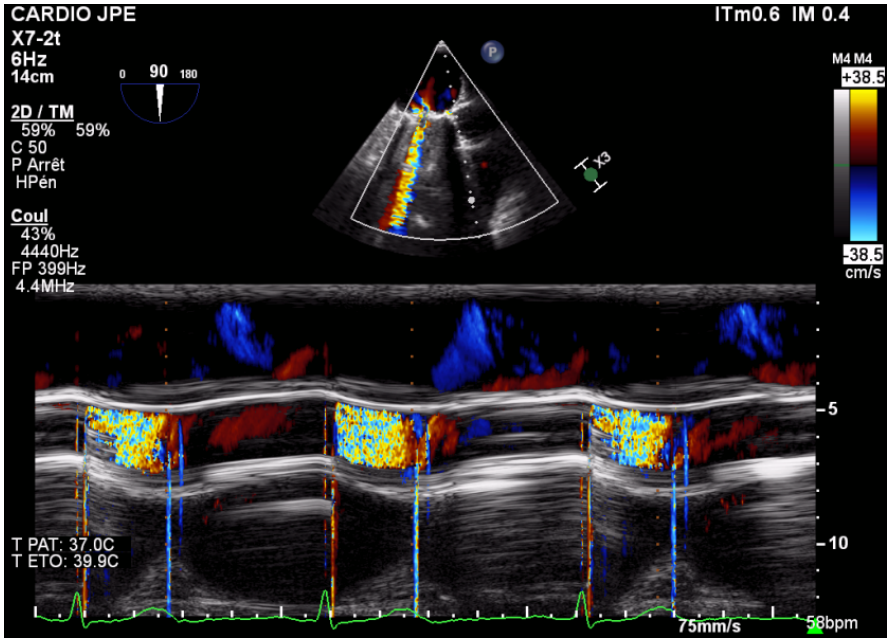
- 1983 : Bioprothèse aortique et commissurotomie mitrale
- 2000 : St Jude aortique 21 + St Jude mitrale 27 + commissurotomie tricuspide
- 2015 : dyspnée stade II-III, BNP = 279

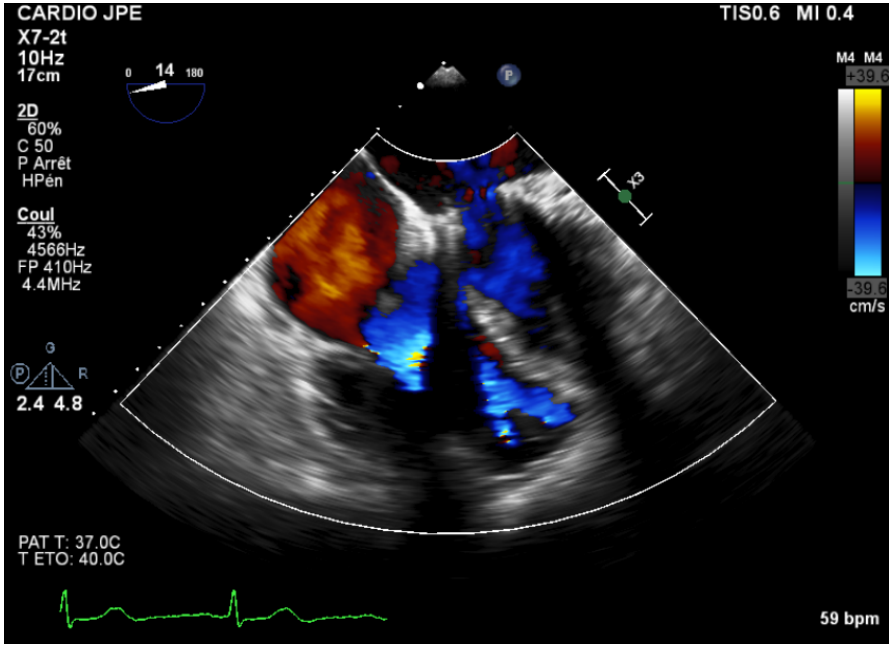


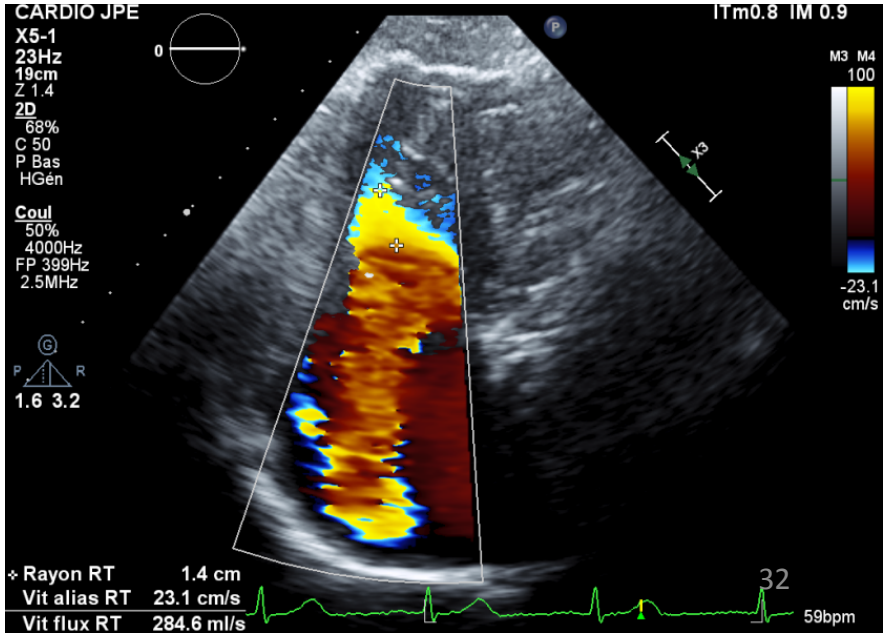


Mm. B

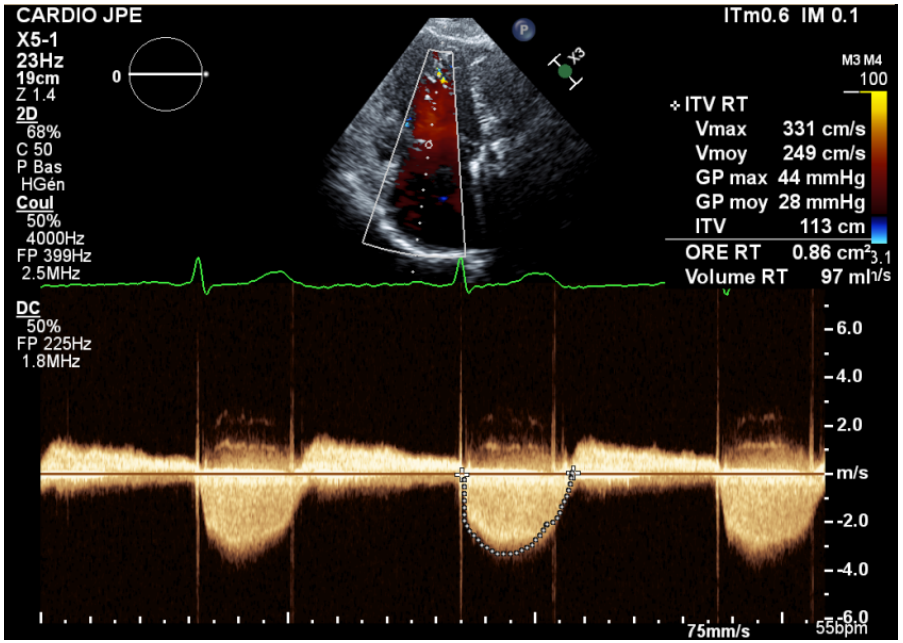

CARDIO JPE
X7-2t
6Hz
6.5cm
Battem. 3D VVélev
TIS0.5 MI 0.3
Zoom 3D
2D / 3D
% 63 / 44
C 50 / 30
HGén
Coul
% 64 / 50
6838Hz
FP 683Hz
4.4MHz
M4 M4
PAT T: 37.0C
T ETO: 39.7C
Délai 0ms
58 bpm

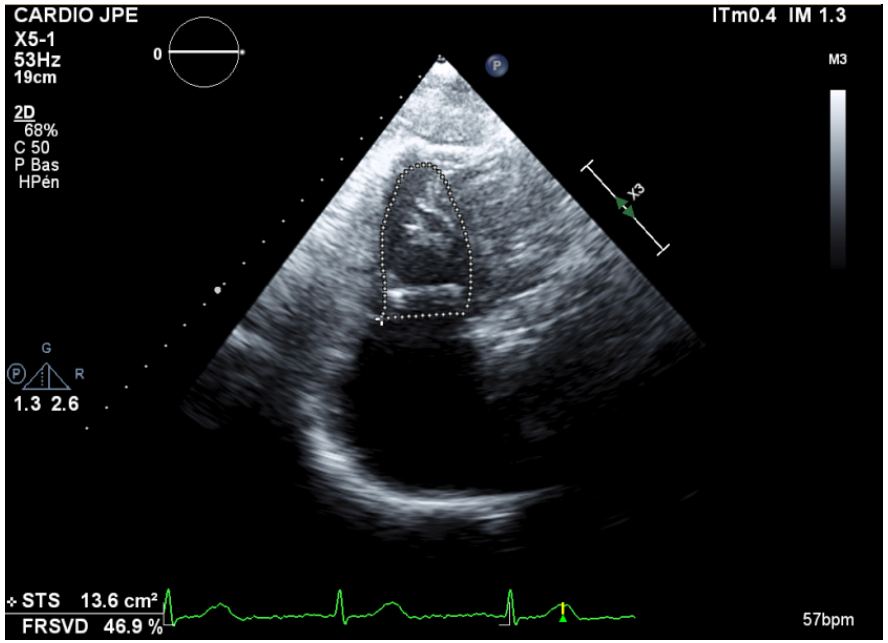

CARDIO JPE
X7-2t
6Hz
14cm
ITm0.6 IM 0.4
2D / TM
59% 59%
C 50
P Arrêt
HPén
Coul
43%
4440Hz
FP 399Hz
4.4MHz
M4 M4
+38.5
-38.5
cm/s
T PAT: 37.0C
T ETO: 39.9C
75mm/s
58bpm

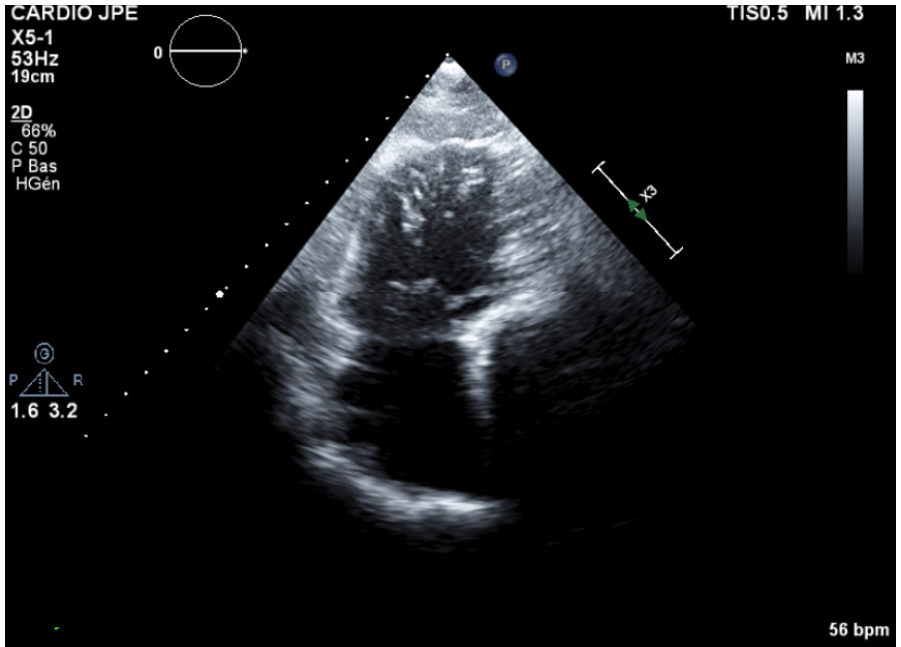

CARDIO JPE
X7-2t
10Hz
17cm
TIS0.6 MI 0.4
2D
60%
C 50
P Arrêt
HPén
Coul
43%
4566Hz
FP 410Hz
4.4MHz
M4 M4
cm/s
2.4 4.8
PAT T: 37.0C
T ETO: 40.0C
59 bpm

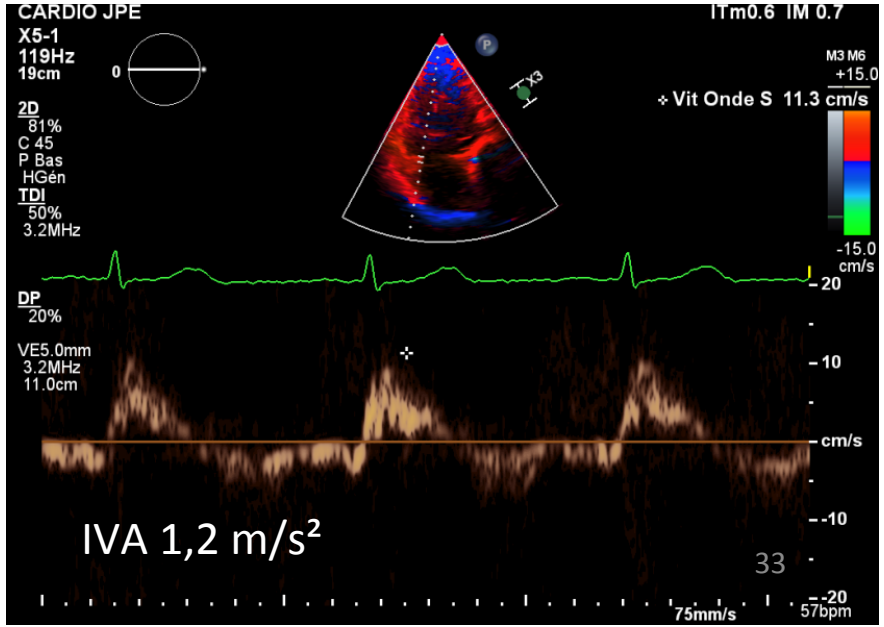

CARDIO JPE
X5-1
23Hz
19cm
Z 1.4
ITm0.8 IM 0.9
2D
68%
C 50
P Bas
HGén
Coul
50%
4000Hz
FP 399Hz
2.5MHz
M3 M4
100
-23.1
cm/s
1.6 3.2
Rayon RT 1.4 cm
Vit alias RT 23.1 cm/s
Vit flux RT 284.6 ml/s
32
59bpm

Mm. B

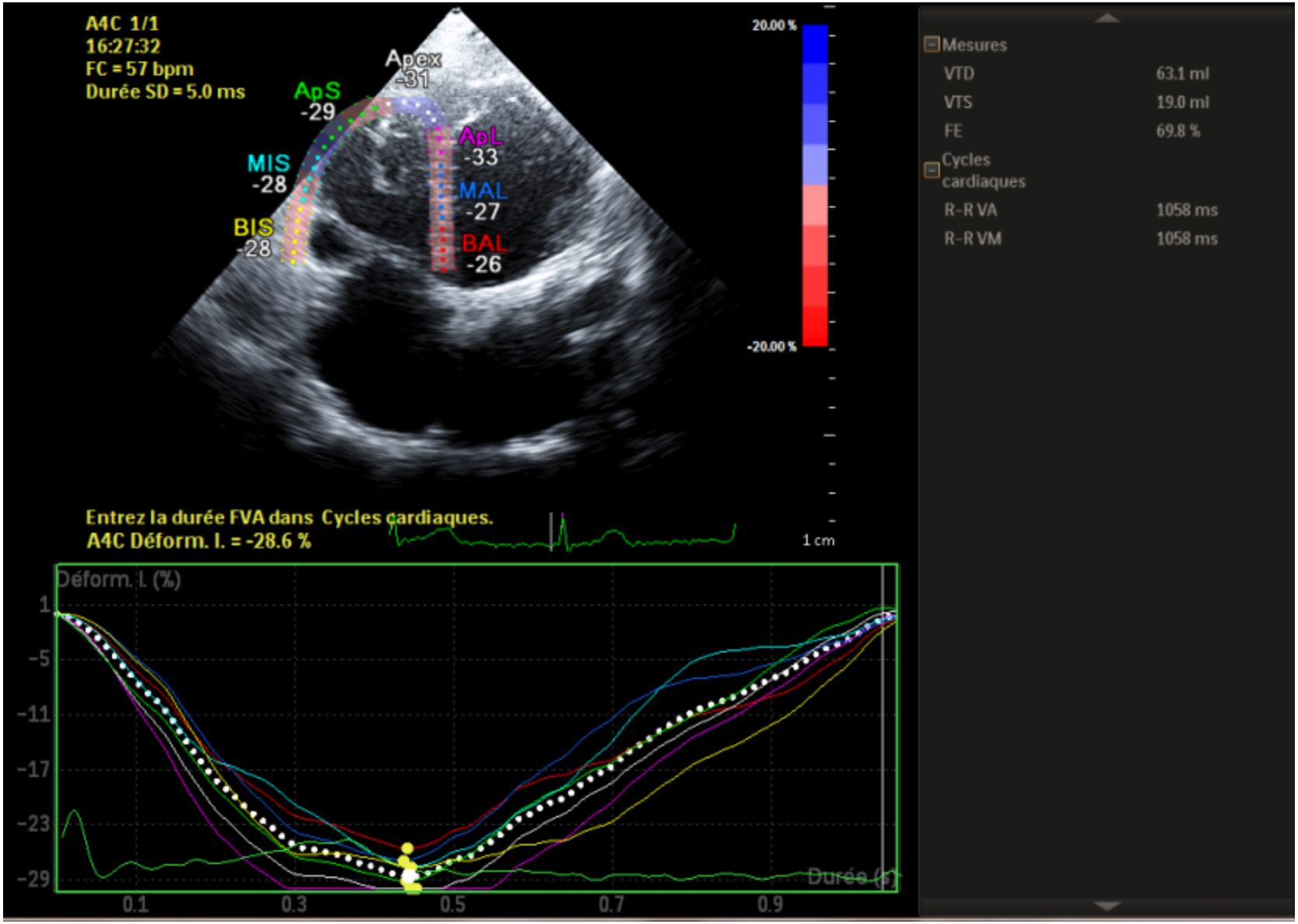

CARDIO JPE
ITm0.6 IM 0.1
X5-1
23Hz
19cm
Z 1.4
2D
68%
C 50
P Bas
HGén
Coul
50%
4000Hz
FP 399Hz
2.5MHz
DC
50%
FP 225Hz
1.8MHz
M3 M4
100
ITV RT
Vmax 331 cm/s
Vmoy 249 cm/s
GP max 44 mmHg
GP moy 28 mmHg
ITV 113 cm
ORE RT 0.86 cm²
Volume RT 97 ml
3.1
m/s
6.0
4.0
2.0
-2.0
-4.0
-6.0
75mm/s
55bpm


CARDIO JPE
ITm0.4 IM 1.3
X5-1
53Hz
19cm
2D
68%
C 50
P Bas
HPén
M3
1.3 2.6
STS 13.6 cm²
FRSVD 46.9 %
57bpm


CARDIO JPE
TIS0.5 MI 1.3
X5-1
53Hz
19cm
2D
66%
C 50
P Bas
HGén
M3
1.6 3.2
56 bpm


CARDIO JPE
ITm0.6 IM 0.7
X5-1
119Hz
19cm
2D
81%
C 45
P Bas
HGén
TDI
50%
3.2MHz
M3 M6
+15.0
Vit Onde S 11.3 cm/s
-15.0
cm/s
DP
20%
VE5.0mm
3.2MHz
11.0cm
20
10
cm/s
-10
-20
IVA 1,2 m/s²
75mm/s
57bpm

Mm. B


A4C 1/1
16:27:32
FC = 57 bpm
Durée SD = 5.0 ms
Apex
-31
ApS
-29
MIS
-28
BIS
-28
ApL
-33
MAL
-27
BAL
-26
20.00 %
-20.00 %
Entrez la durée FVA dans Cycles cardiaques.
A4C Déform. l. = -28.6 %
1 cm
Déform. l. (%)
1
-5
-11
-17
-23
-29
0.1
0.3
0.5
0.7
0.9
Durée (s)
Mesures
VTD 63.1 ml
VTS 19.0 ml
FE 69.8 %
Cycles cardiaques
R-R VA 1058 ms
R-R VM 1058 ms

CAT

A. Traitement médical

B. Traitement chirurgical

C. Autre examen

CONCLUSION

INSUFFISANCES TRICUSPIDES

- Conclusion 1 Message

  – Une fuite de grade > II

  – Une dilatation anneau > 40 mm

  Doivent être corrigés dans le même temps opératoire du cœur gauche

  (Travaux G. Dreyfus et Benedetto)

INSUFFISANCES TRICUSPIDES

- Conclusion 2

  – La valve tricuspide : ne pas l'oublier dans chaque examen **impact pronostic**

  – Chaque IT a son **traitement**

  – ATTENTION aux **IT tardives :** il est difficile de prédire la FE VD **post-opératoire** (Echo IVA 1,8 m/s²

  La réversibilité IRM VTD 164 mL)

MERCI DE VOTRE ATTENTION !

Un moment de bonheur avec vous...