

DÉCLARATION DE LIENS D'INTÉRÊT AVEC LA PRÉSENTATION

Intervenant : Fabrice BAUER, ROUEN

Je déclare les liens d'intérêt suivants :

MEDTRONIC, MSD, BAYER, NOVARTIS, ACTELION, GSK

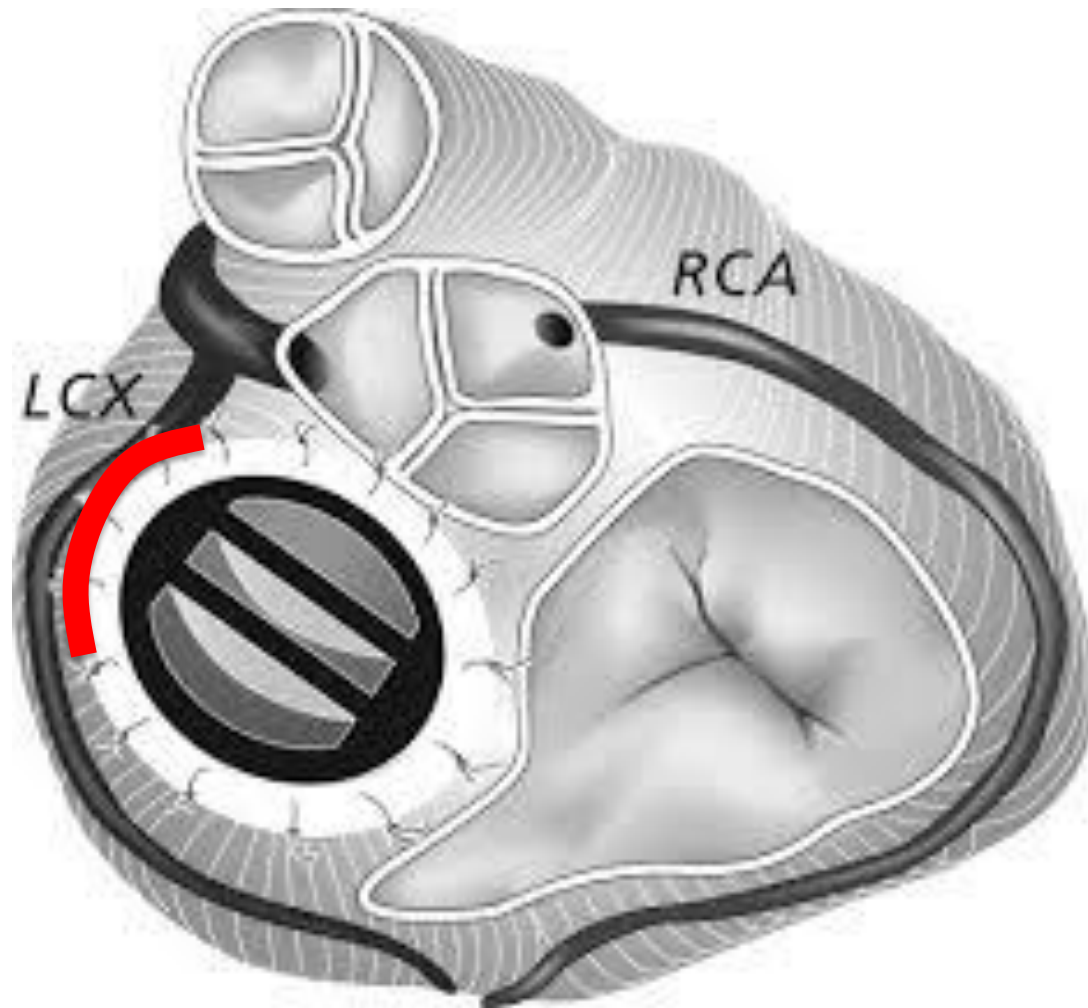


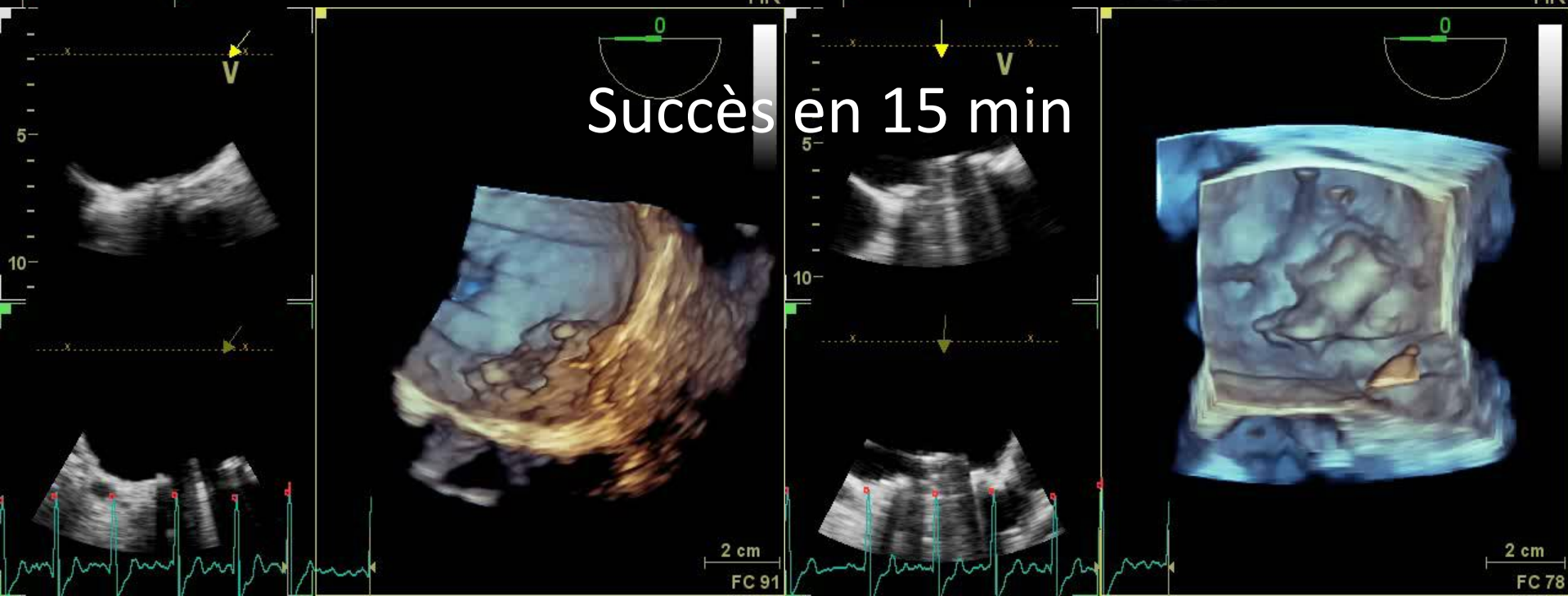
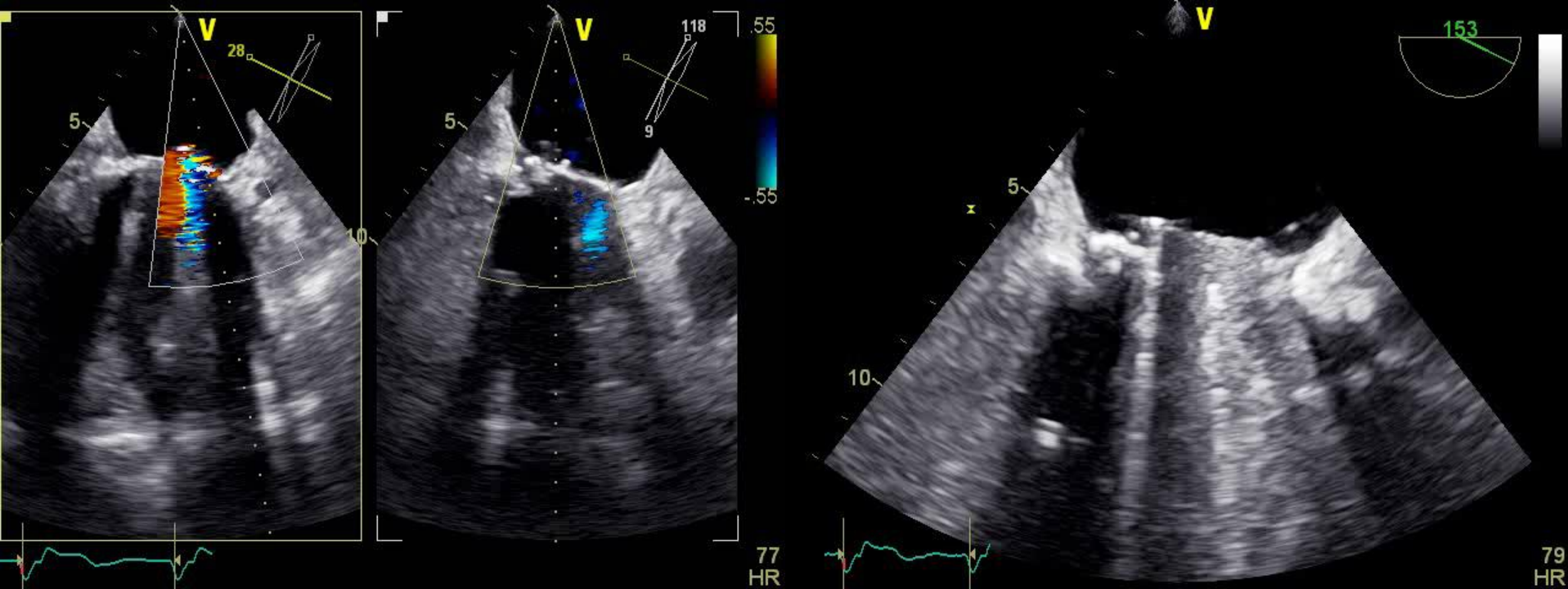
L'imagerie des fuites périprothétiques valvulaires

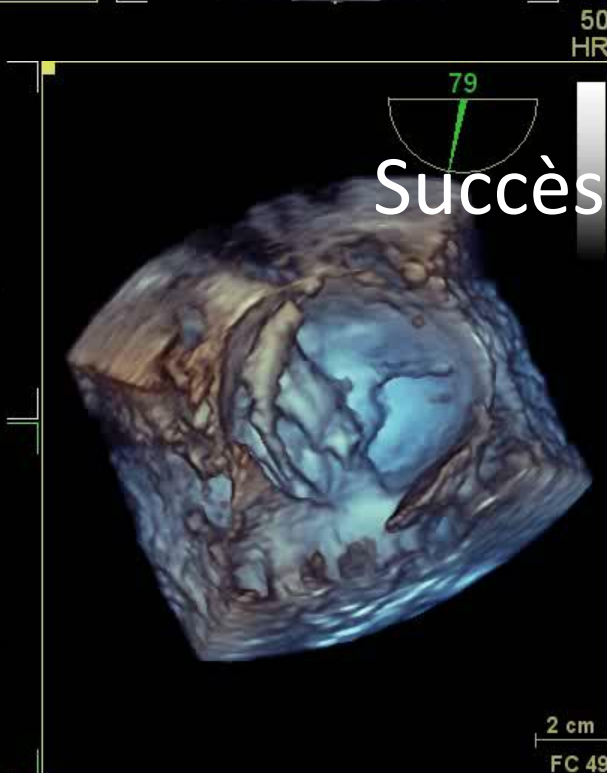
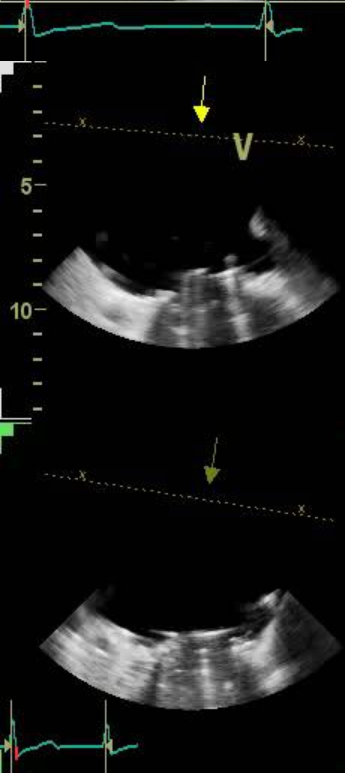
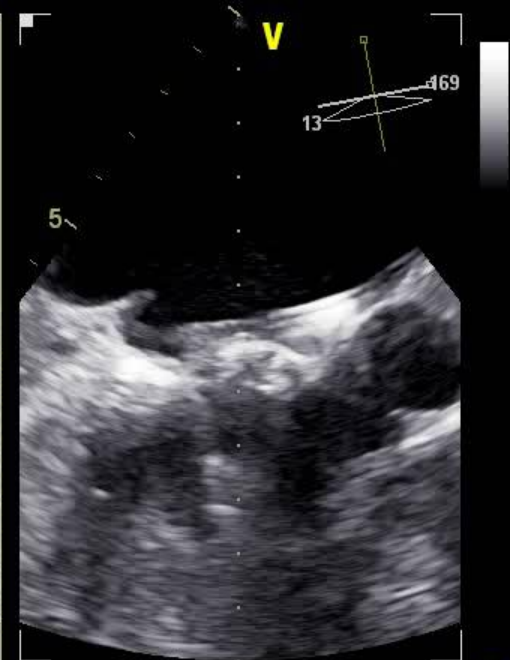
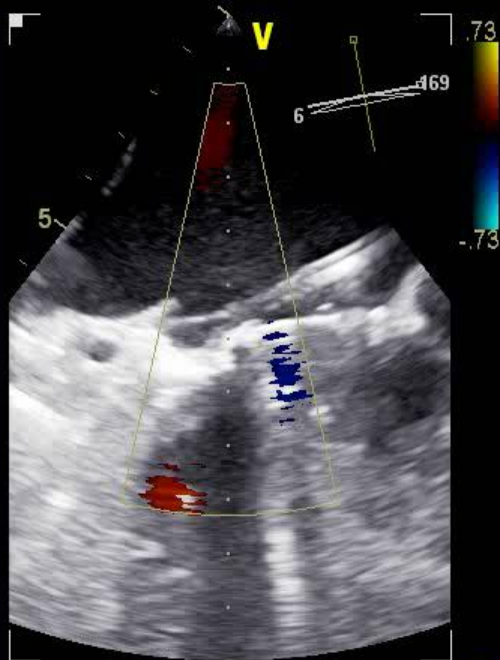
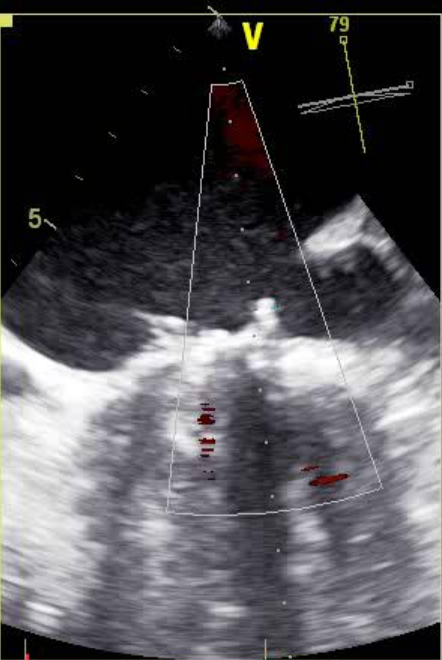
F Bauer

Comment bien évaluer une fuite périprothétique mitrale

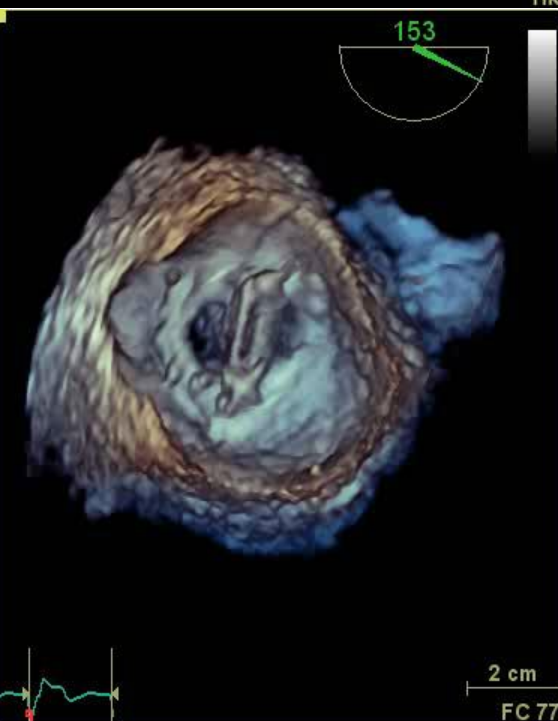
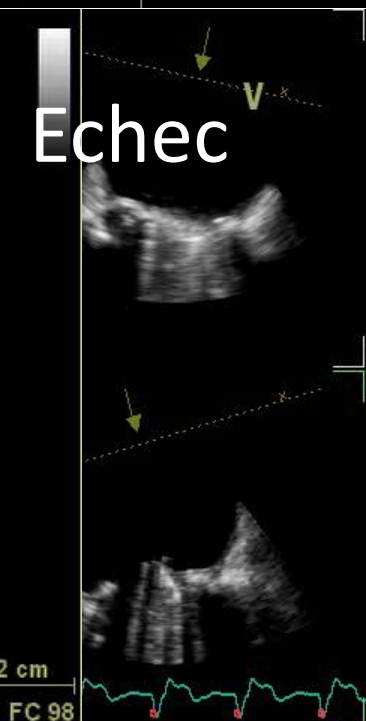
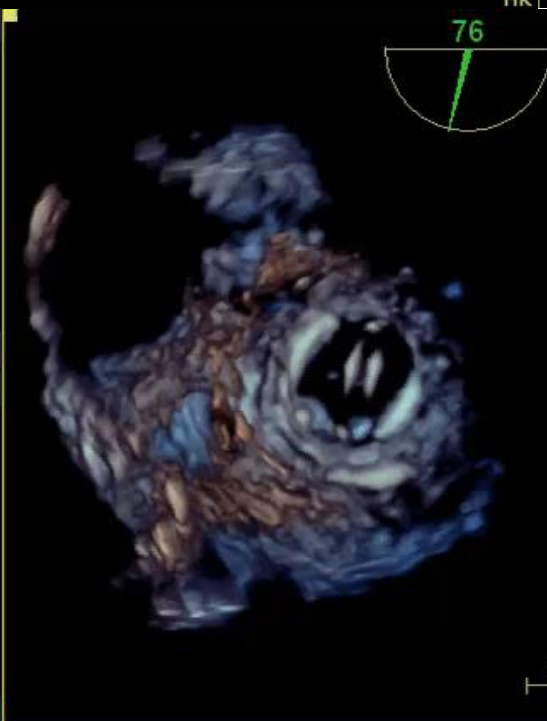
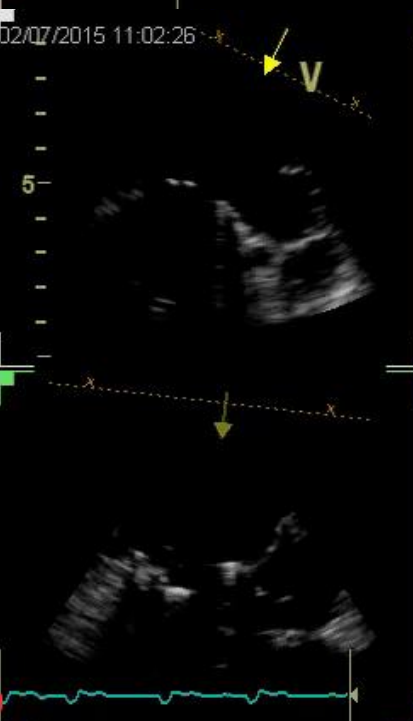
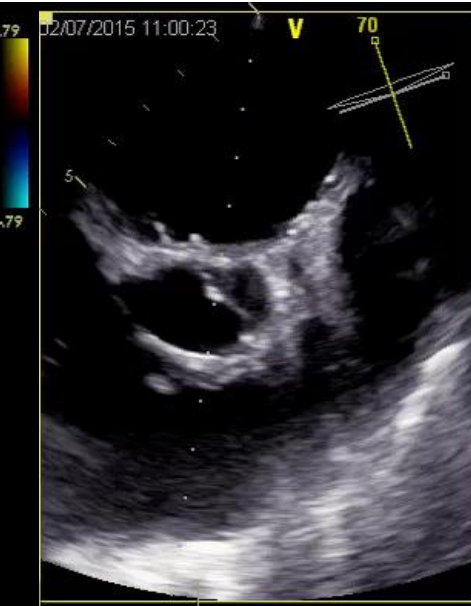
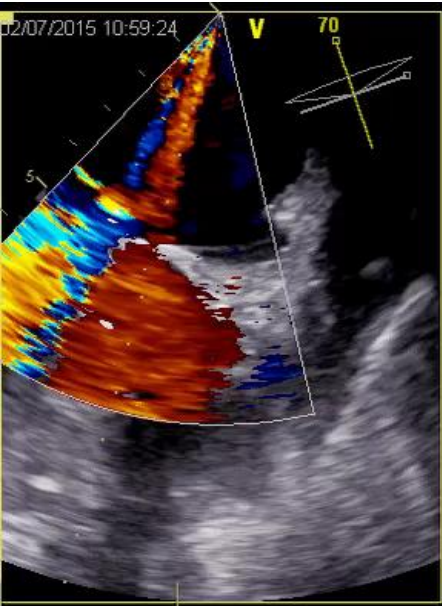
L'histoire de 3 patients







Succès en 45 min



Echec

L'imagerie des fuites para valvulaires

Ce que l'on sait

- L'échographie
 - Confirme la sévérité de la fuite
 - Confirme le mécanisme para valvulaire
 - Apporte des éléments étiologiques, de localisation
- Le scanner
 - Apporte des éléments anatomiques comme la localisation, les calcifications
 - Fusion d'image

Les questions posées

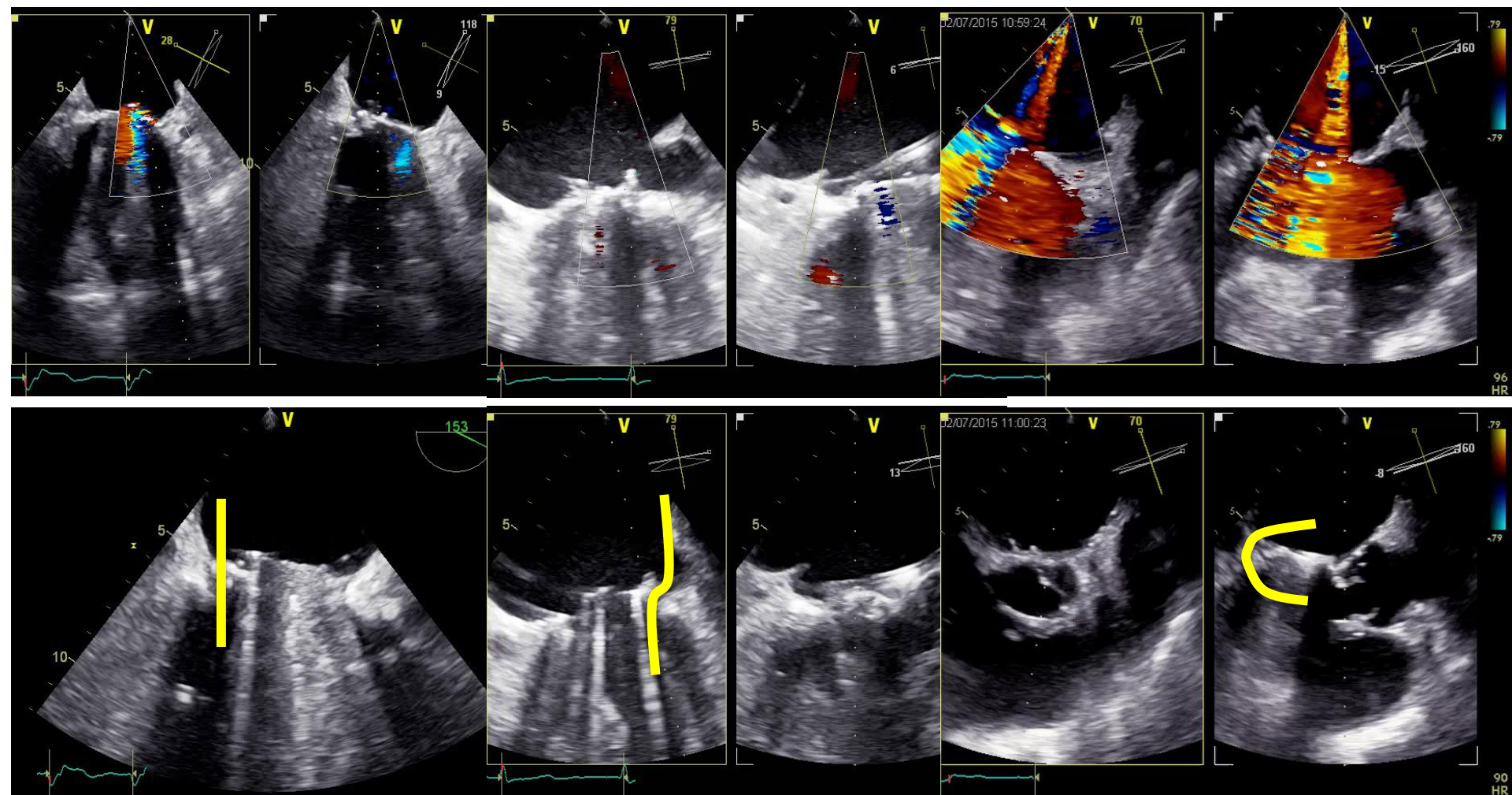
- La heart team valvulaire
- Une meilleure description anatomique des fuites
- Une standardisation des coupes
- Le développement de logiciels
- Un compte rendu d'imagerie type

UN SEUL OBJECTIF

La meilleure sélection des candidats

- C'est un procédure longue
- C'est une procédure à risque
- C'est une procédure consommatrice
 - De personnel
 - De dispositif
- Elle peut faire l'économie d'une chirurgie
- Elle est une véritable option chez les patients inopérable

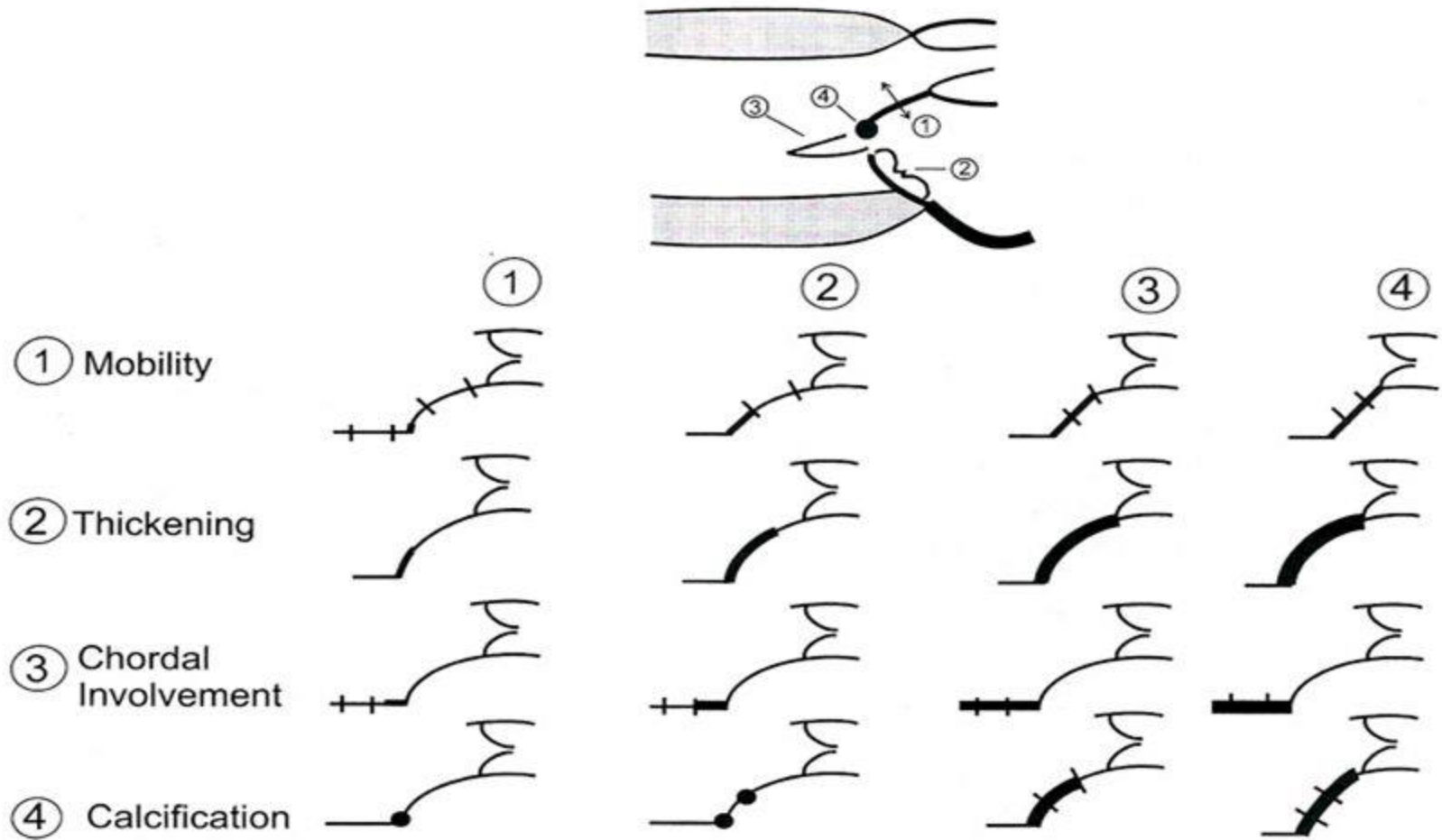
Méthodologie



Succès 15 min

Succès 45 min

Echec



Schematic demonstration of the calculation of the mitral stenosis score.

work of Wilkins et al.

Individuals with score ≤ 8 –excellent for BMV

Those with score ≥ 12 -less satisfactory results

Patients and methods

Patients

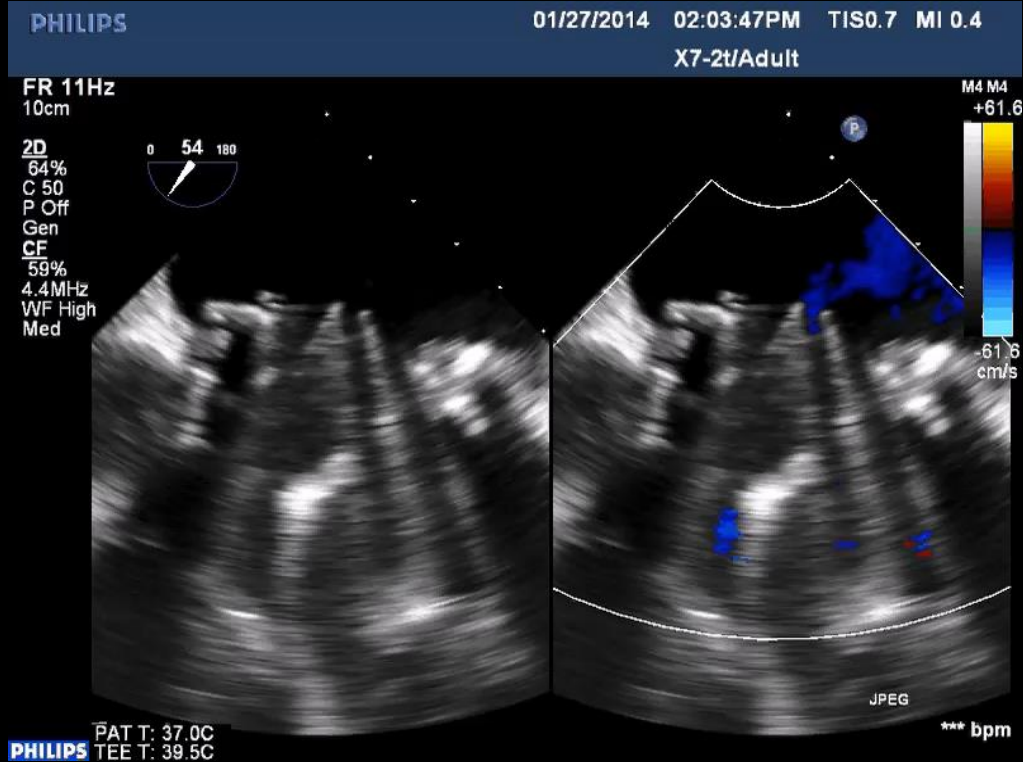
- 11 patients (five men and 5 women)
- 9 mitral and 2 aortic paravalvular leaks
- Age from 57 to 87 years, (mean 77y)
- All patients had a diagnosis of paravalvular leak on the basis of history, clinical examination, biology and former TEE.
- 8 apical and 3 transeptal approach

Methods

- To identify features that might predict the result of TCPL, we analysed 30 variables assessed at the clinical, haemodynamic and echocardiographic examinations performed before the procedure.
- The clinical variables included cardiac rhythm, NYHA functional class, age, and sex.
- From the echocardiogram, we assessed structural features of the paravalvular leak and valve location, and the type of approach (**at the physician's discretion, not guided by our approach**)

* TCPL: Transcatheter closure of paravalvular leaks

How we scored the echocardiographic study Hole access from 3 parameters, 2D approach

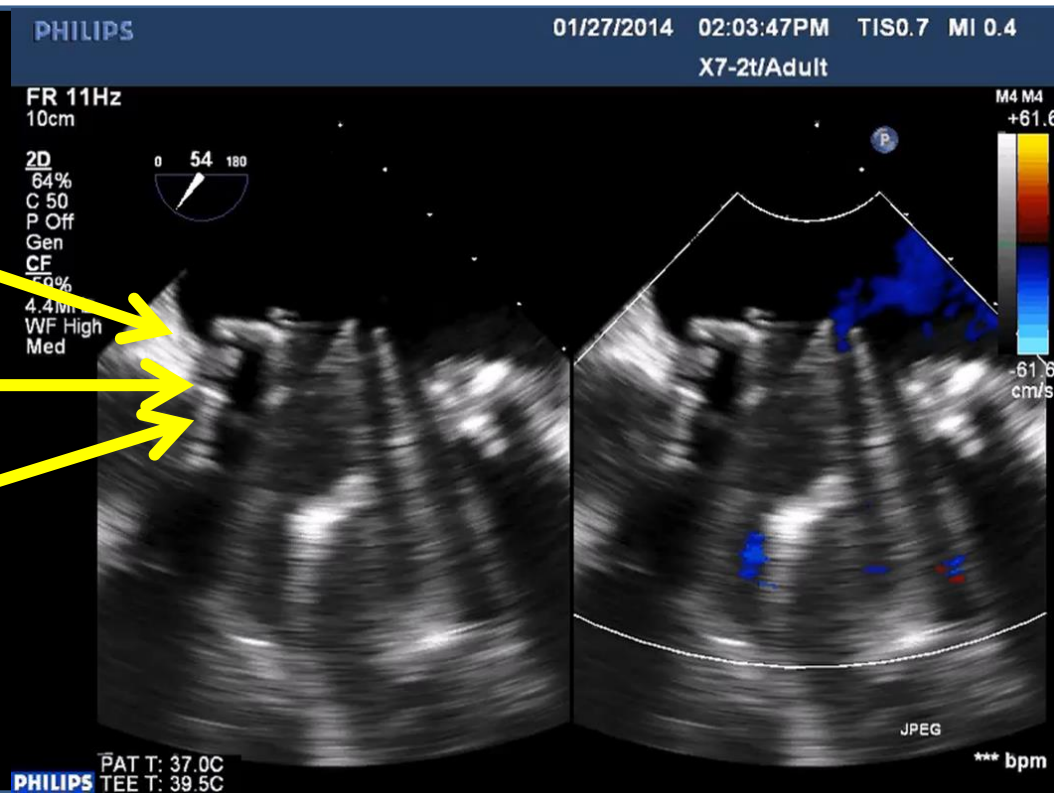


How we scored the echocardiographic study Hole access from 3 parameters, 2D approach

Flow angulation

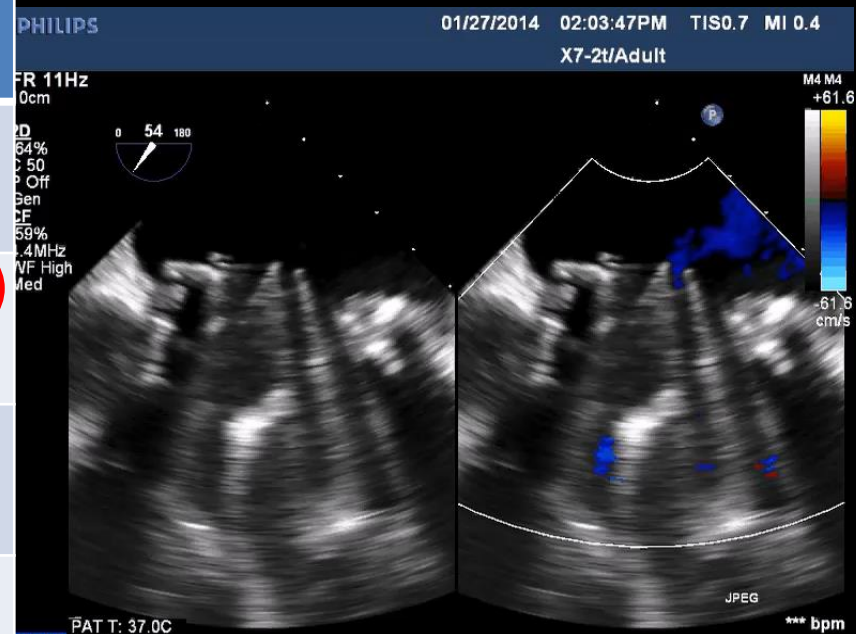
Calcification

Linearity



How we scored the echocardiographic study

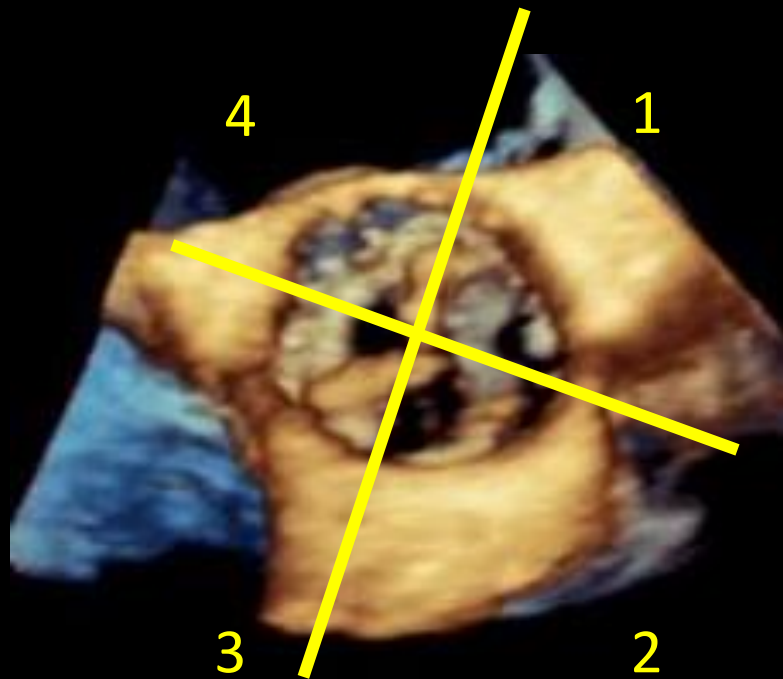
SCORE	LINEARITY	ANGULATION	CALCIFICATION
1	« I » shape	< 22.5°	No calcification
2	« C » shape	22.5 to 45.0°	Mildly calcified
3	« U » shape	45.0 to 67.5°	Moderately calcified
4	« S » shape	> 67.5°	Fully calcified



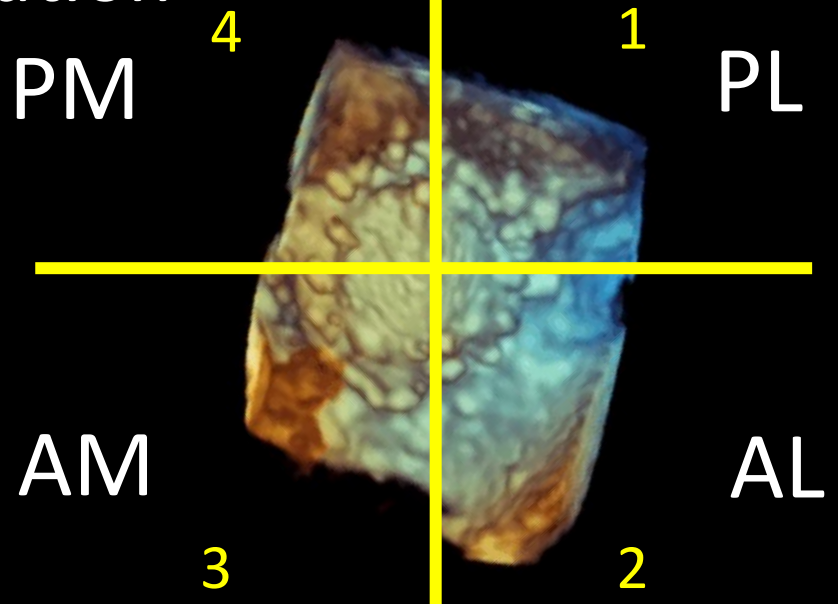
2 + 1 + 2

How we scored the echocardiographic study

Valve access from 2 scores, 3D approach



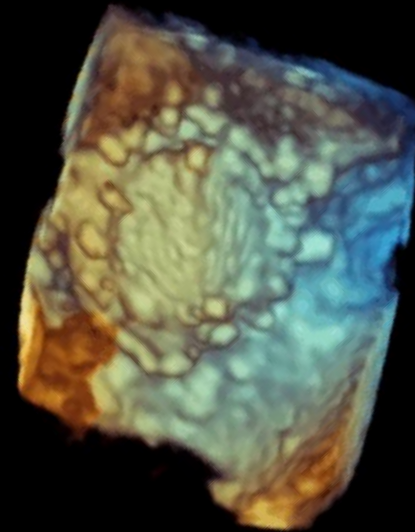
Location

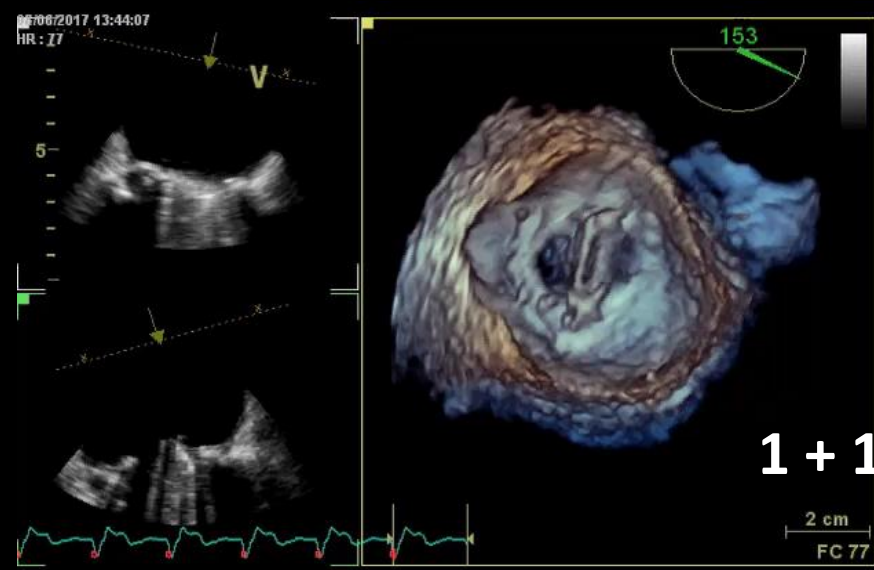


How we scored the echocardiographic study

Valve access from 2 scores, 3D approach

WIDTH



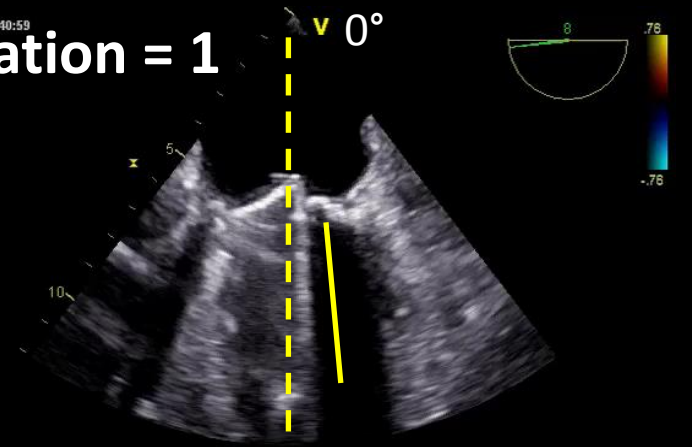


Calcifications = 1

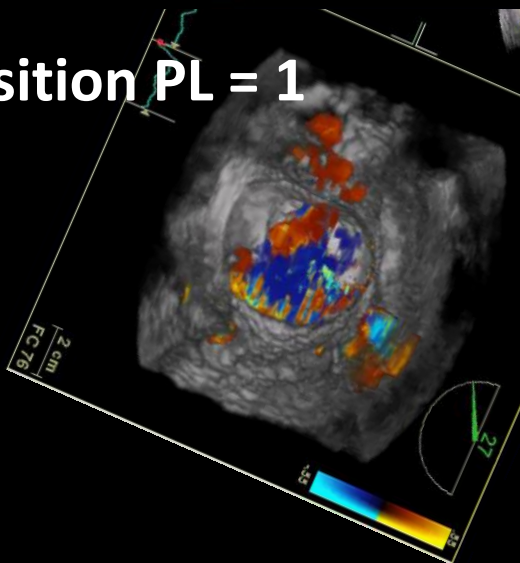
Angulation = 1

1 + 1 + 1 + 2 + 1

= 6



Position PL = 1

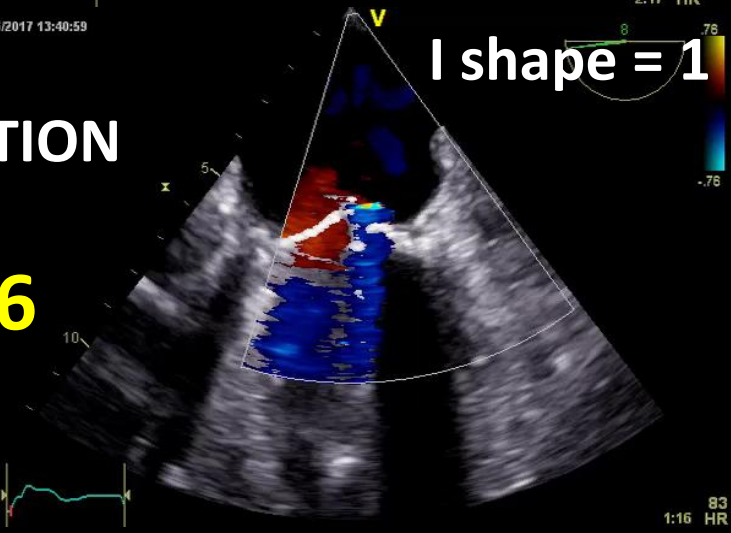


SUCCES IMPLANTATION

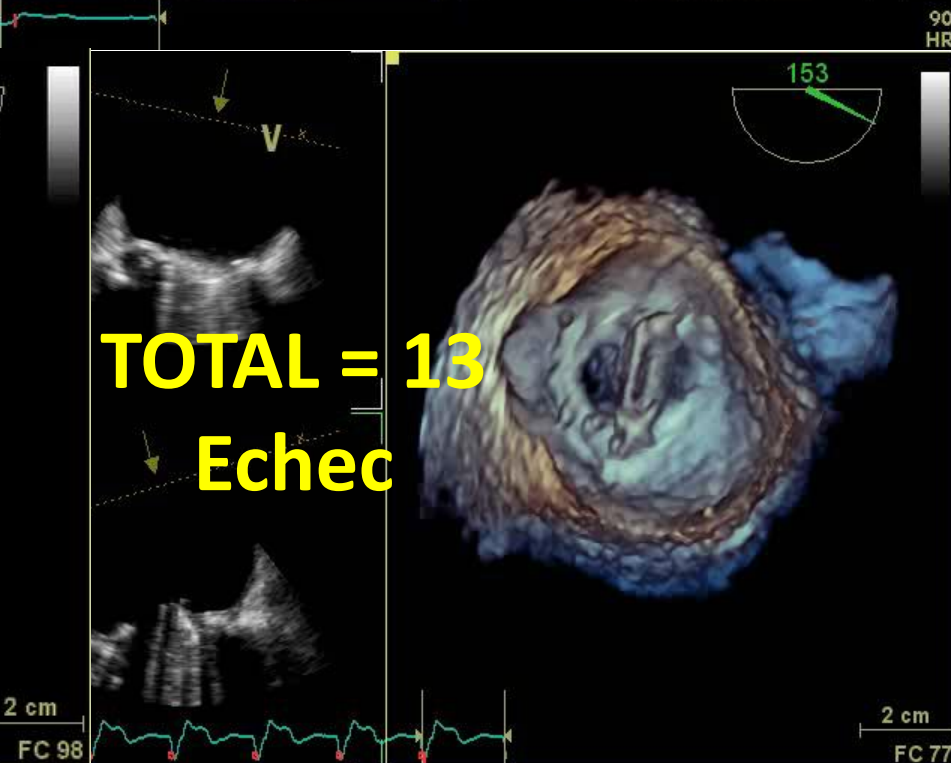
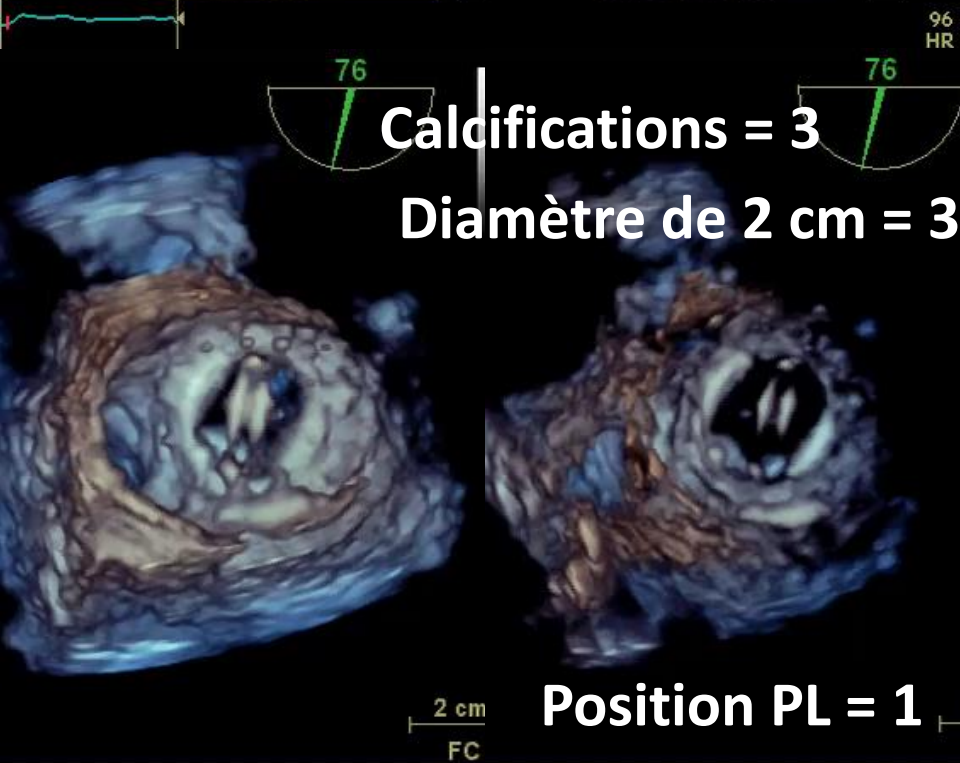
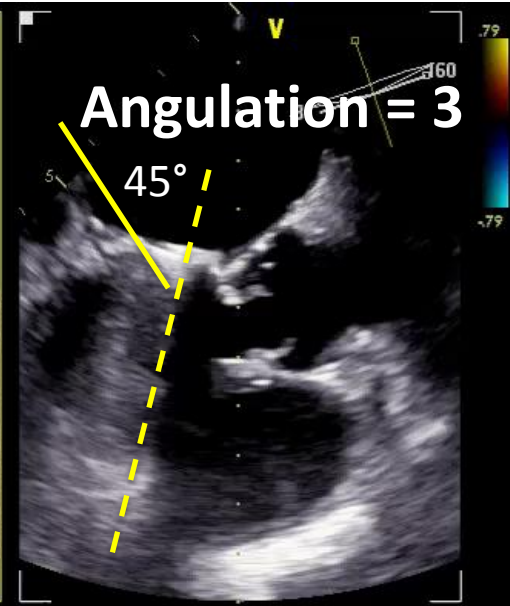
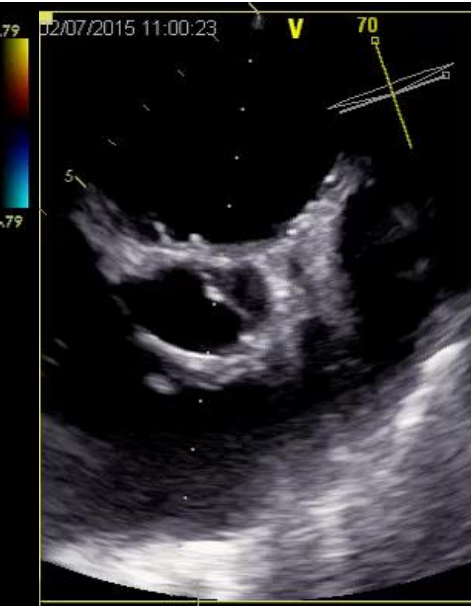
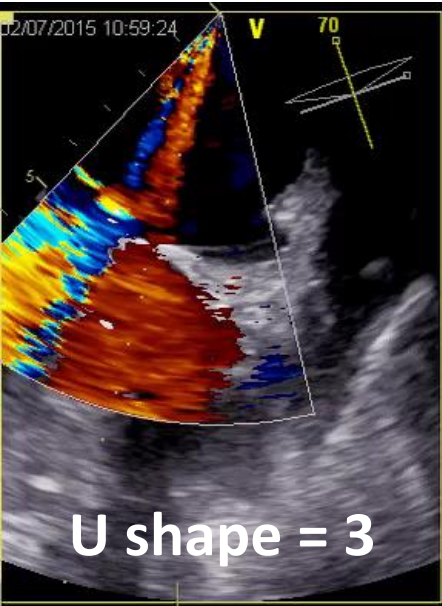
TOTAL = 6

Succès

I shape = 1



Diamètre de 3 cm = 2



L'imagerie multimodale

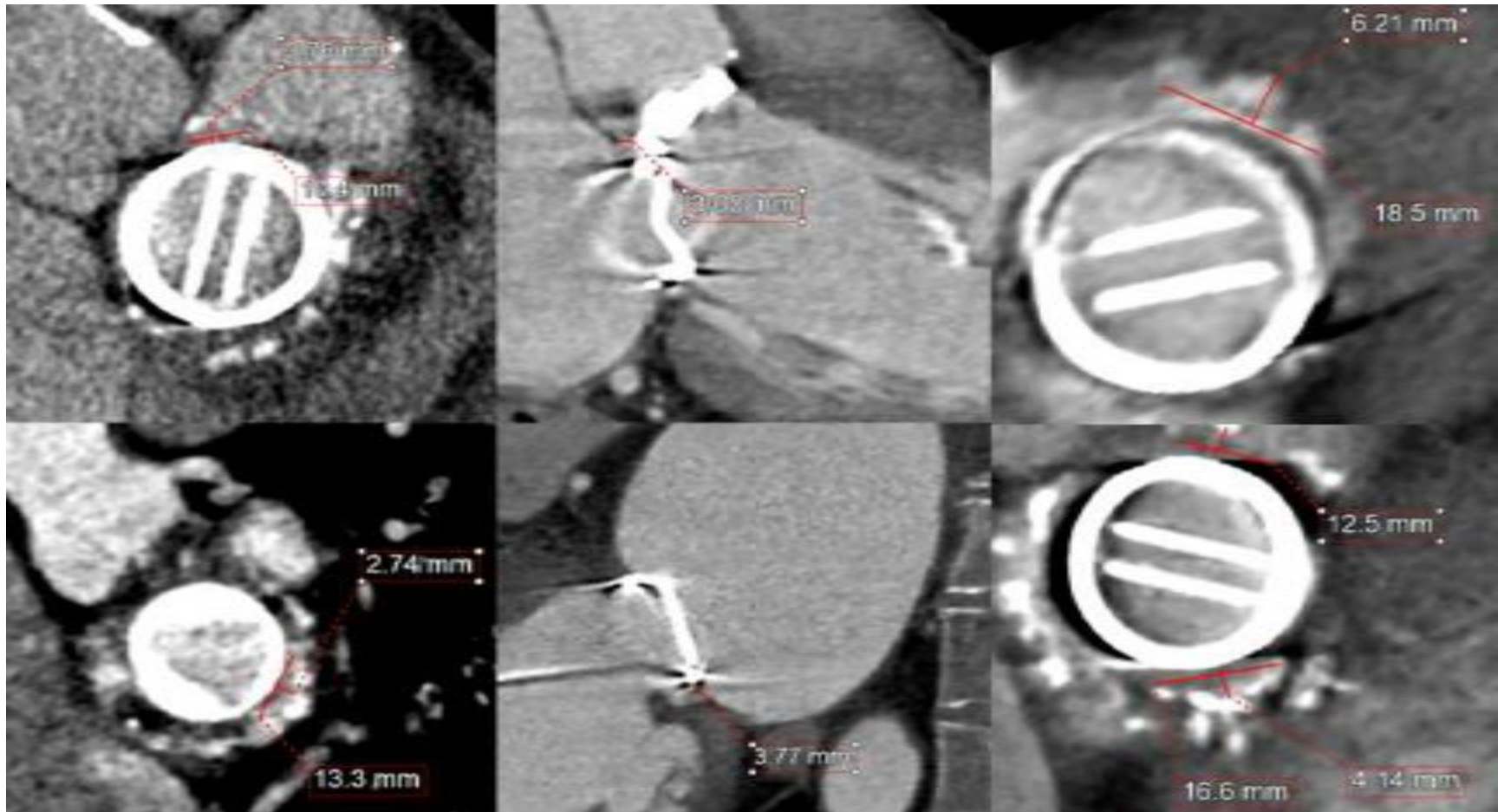
- Scanner, IRM, rien sur ICE
- Très complémentaire
- 20% des études
- Apporte des informations
 - ANATOMIQUE
 - FUSION D'IMAGES
 - FUTURISTIQUE
 - PEDAGOGIQUE

CT vs ETO dans le diagnostic

	TP	TN	FP	FN	Sensitivity, %	Specificity, %	PPV, %	NPV, %	Accuracy, %
CT	31	45	1	1	96.9 (31/32)	97.8 (45/46)	96.9 (31/32)	97.8 (45/46)	97.4 (76/78)
TTE	26	43	2	6	81.3 (26/32)	95.6 (43/45)	92.9 (26/28)	87.8 (43/49)	89.6 (69/77)
TEE	25	23	1	1	96.2 (25/26)	95.8 (23/24)	96.2 (25/26)	95.8 (23/24)	96.0 (48/50)
<i>P</i> value (CT and TTE)					0.086	0.558	0.479	0.089	0.073
<i>P</i> value (CT and TEE)					0.884	0.647	0.879	0.637	0.658
<i>P</i> value (TTE and TEE)					0.065	0.929	0.362	0.207	0.110

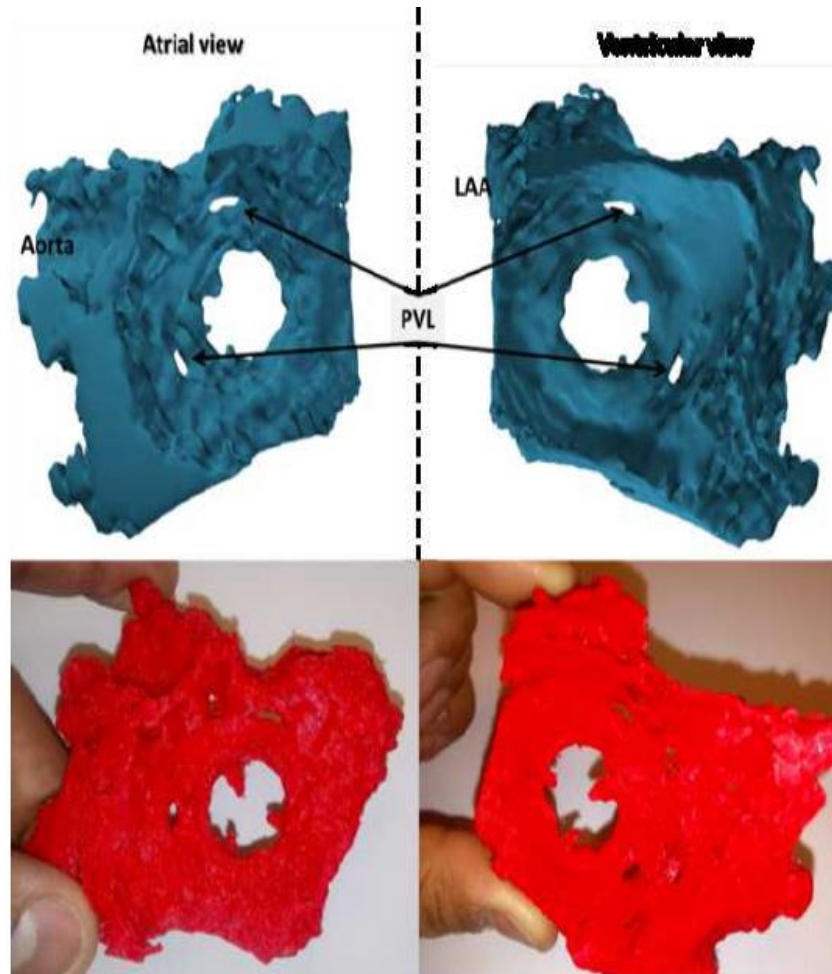
CT indicates computed tomography; FN, false-negative; FP, false-positive; NPV, negative predictive value; PPV, positive predictive value; TEE, transesophageal echocardiography; TN; true-negative; TP, true-positive; and TTE, transthoracic echocardiography.

prospective electrocardiogram triggered cardiac computed tomography



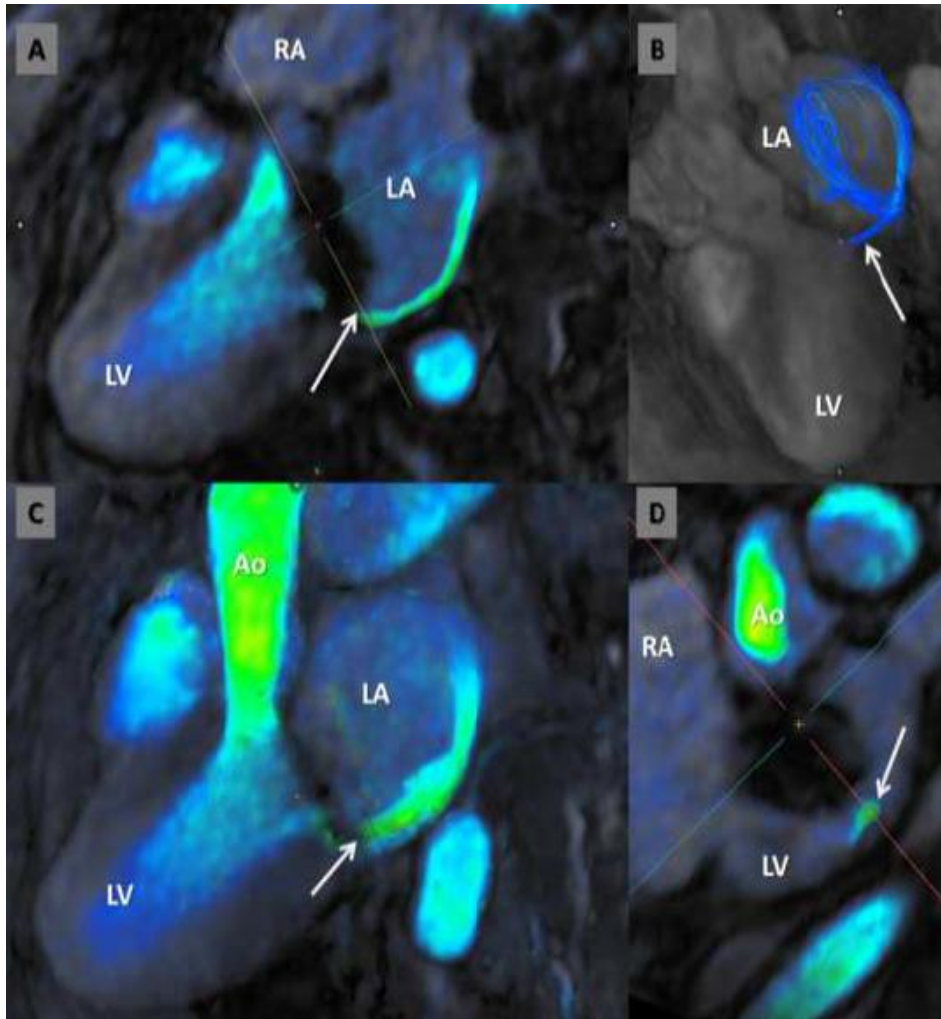
S Hascoet, ACVD, 2018

3D printing



S Hascoet, ACVD, 2018

4D flow, IRM



S Hascoet, ACVD, 2018

CONCLUSION

- TOUT EST A FAIRE
- Travail sur l'imagerie multimodale
 - pour la fusion d'image et l'approche de l'orifice régurgitant
 - Pour la description anatomique de l'orifice régurgitant et le succès de cathétérisme
- Standardisation nécessaire, protocole, heart team
- L'idée d'un score intéressante
 - Registre +++++ FFPP