Aspiration dans les cavités cardiaques
Thrombus/végétations

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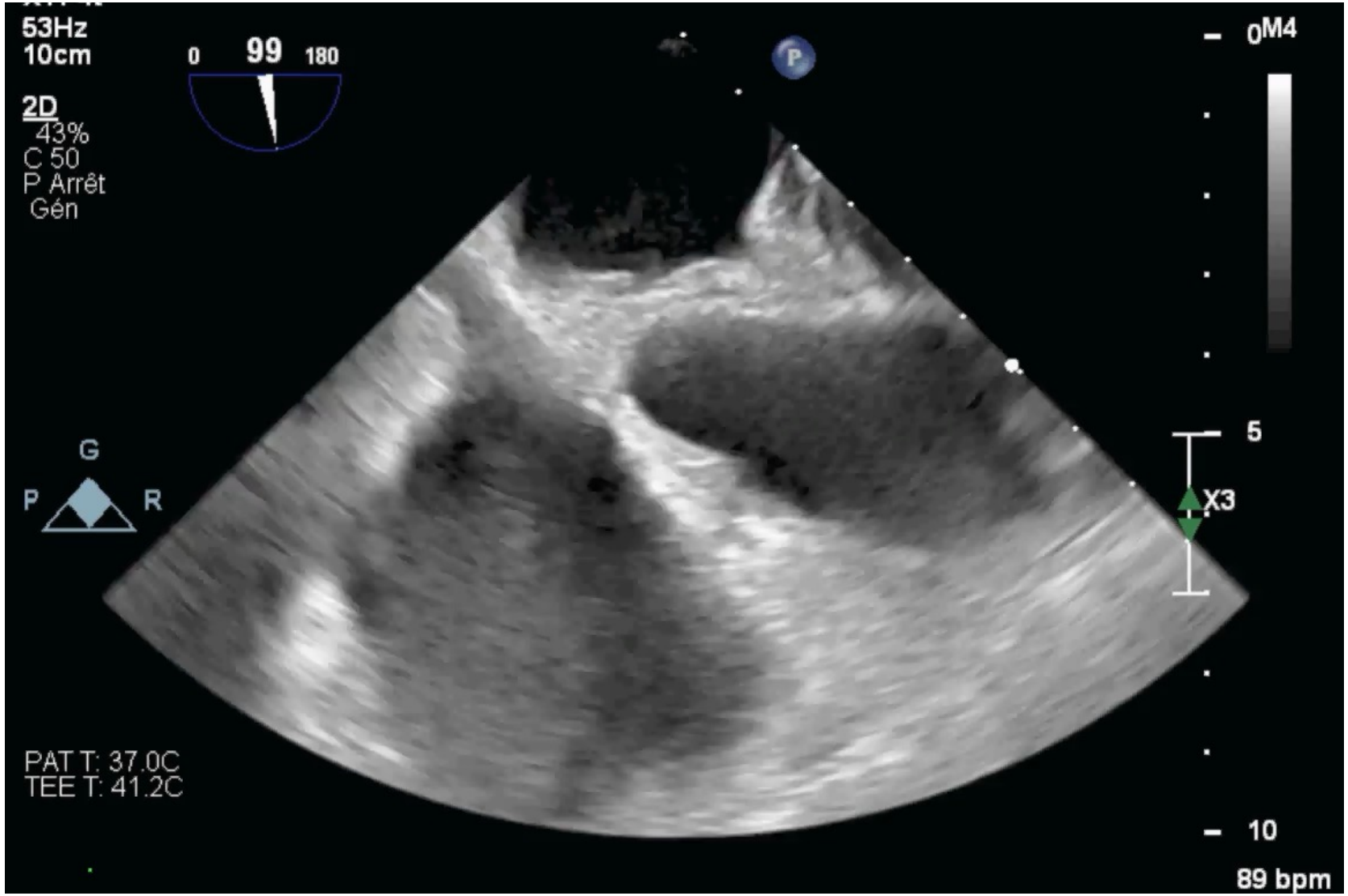
UNIVERSITÉ DE GENÈVE
FACULTÉ DE MÉDECINE

Cardiologie Structurelle

HUG Hôpitaux Universitaires Genève

- Patient de 53 ans
- ***ACR réfractaire sur maladie coronarienne tritronculaire sévère*** *traitée par angioplastie/stenting du tronc commun en direction de l'IVA et de la circonflexe, de la bissectrice et de l'IVA proximale-moyenne et circonflexe proximale-1ère marginales le 19.07.2025,*
- ***support par ECMELLA*** *jusqu'au 23.07.2025.*

Le 28.07.2025 développement d'une ***thrombopénie sévère (25 000 plaquettes) avec hématome multiples induite par l'héparine (HIT)***


53Hz
10cm
2D
43%
C 50
P Arrêt
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X3
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89 bpm
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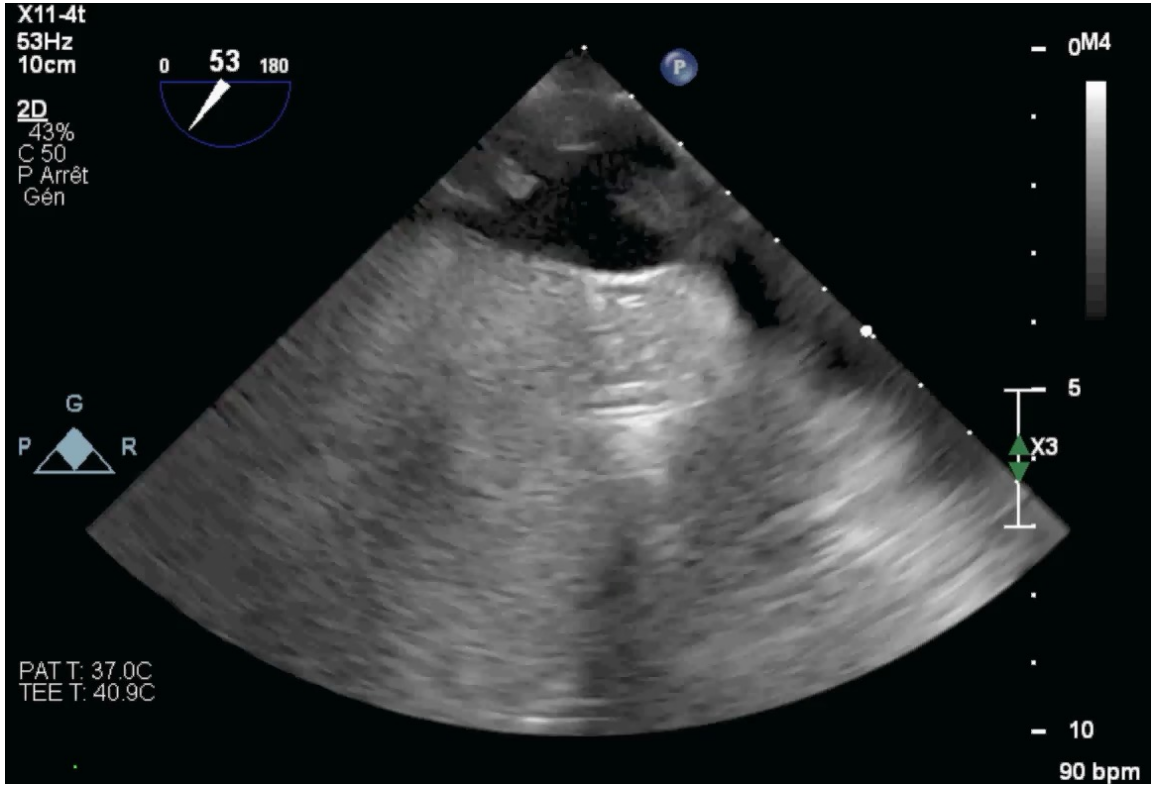
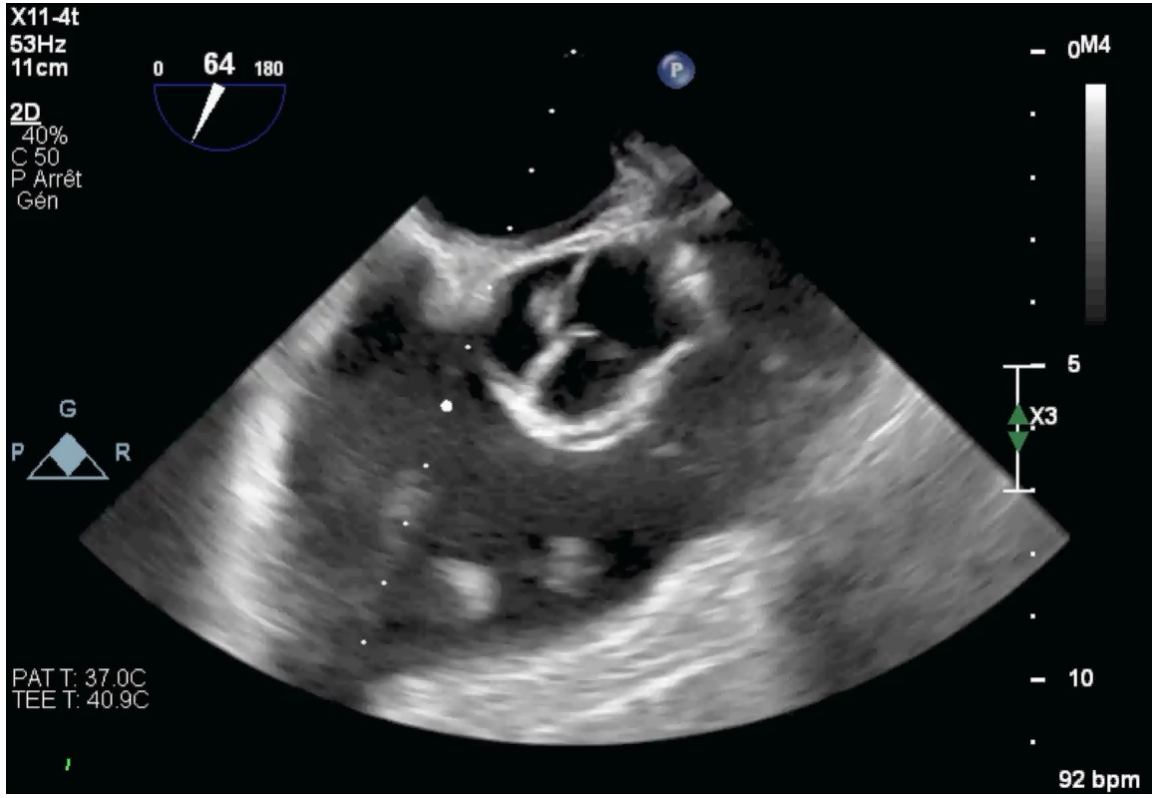
PAT T: 37.0C
TEE T: 41.2C

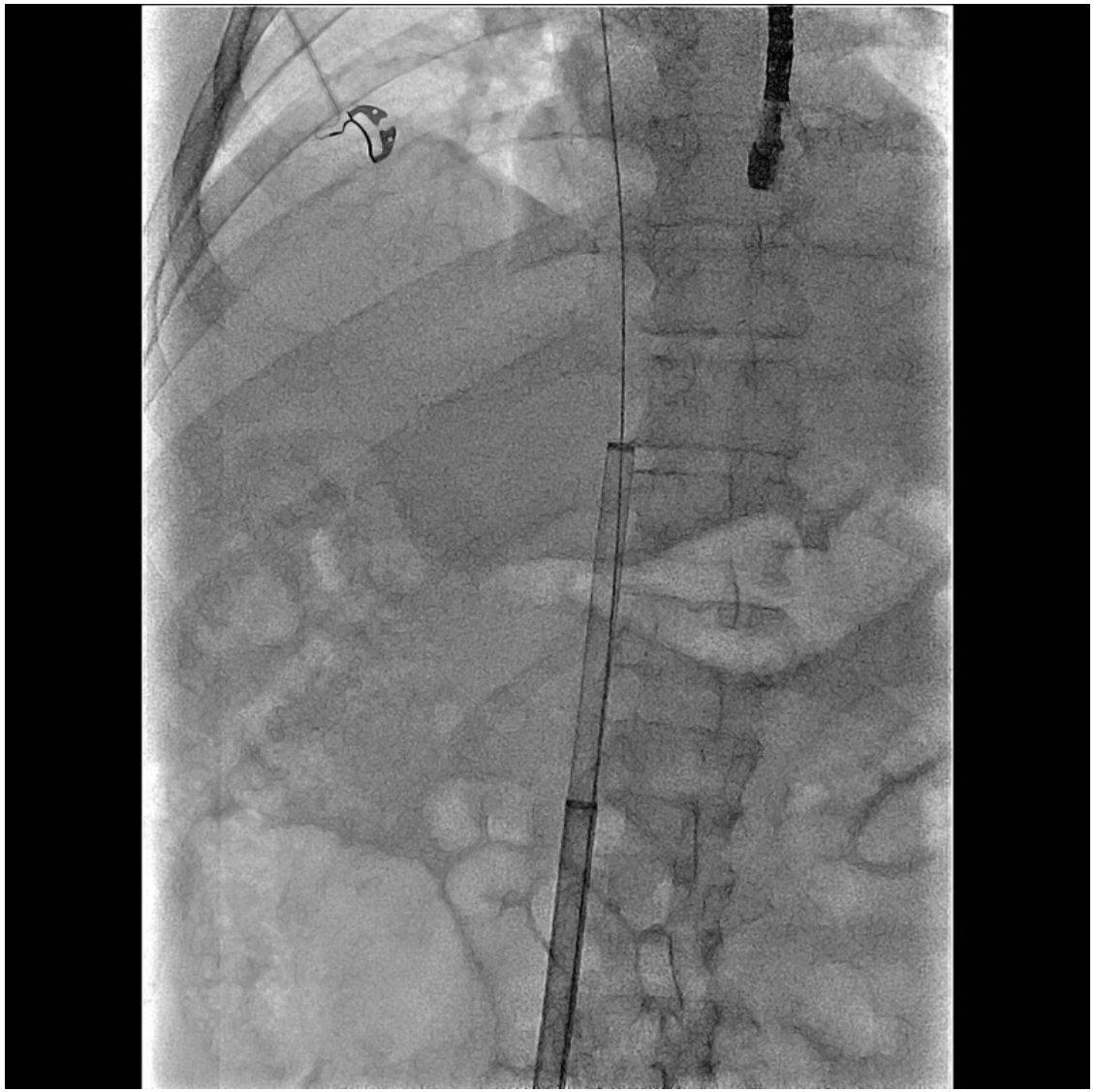


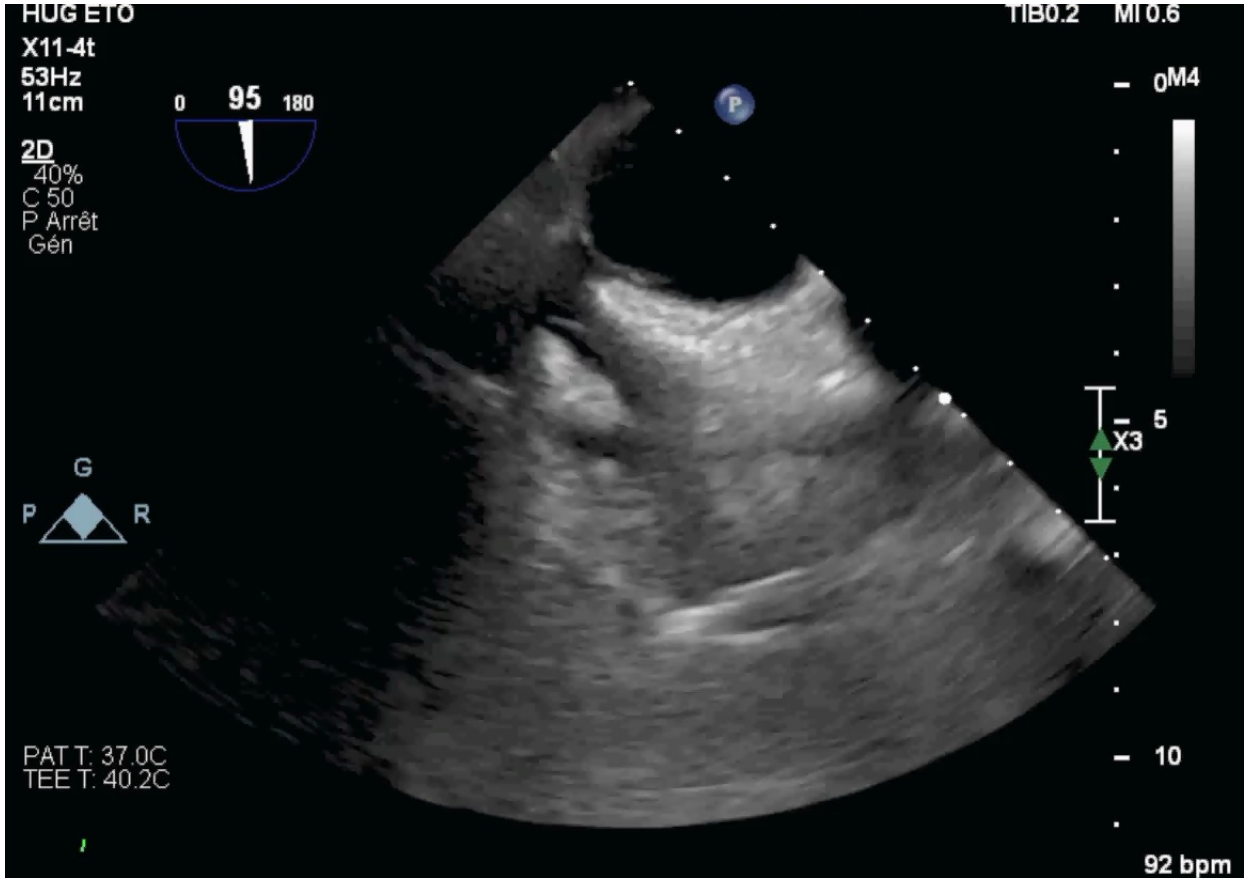
Thrombus dans VCI



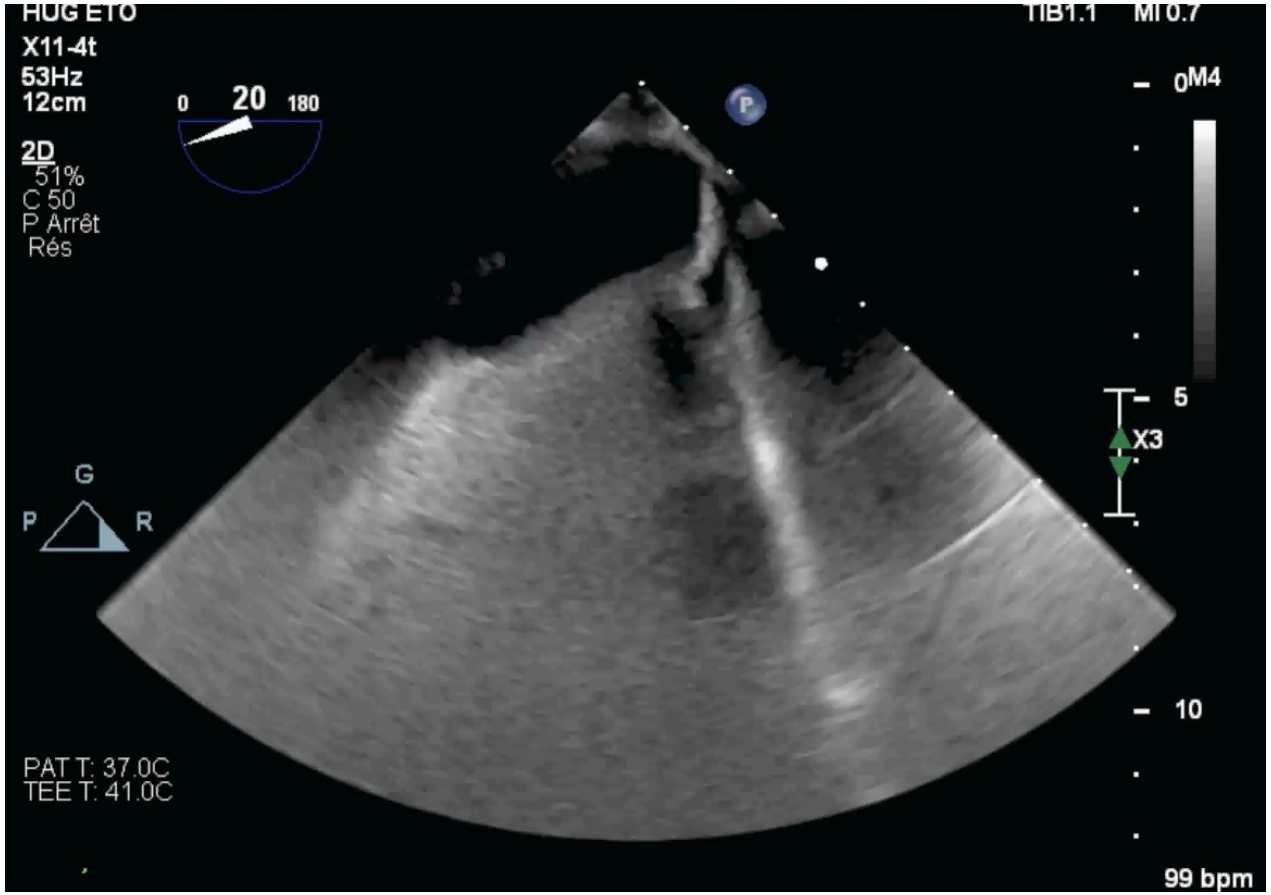
Thrombus dans VD

Flowtriever intro 24F
gaine droite 24F
gaine courbe 20F, 16F

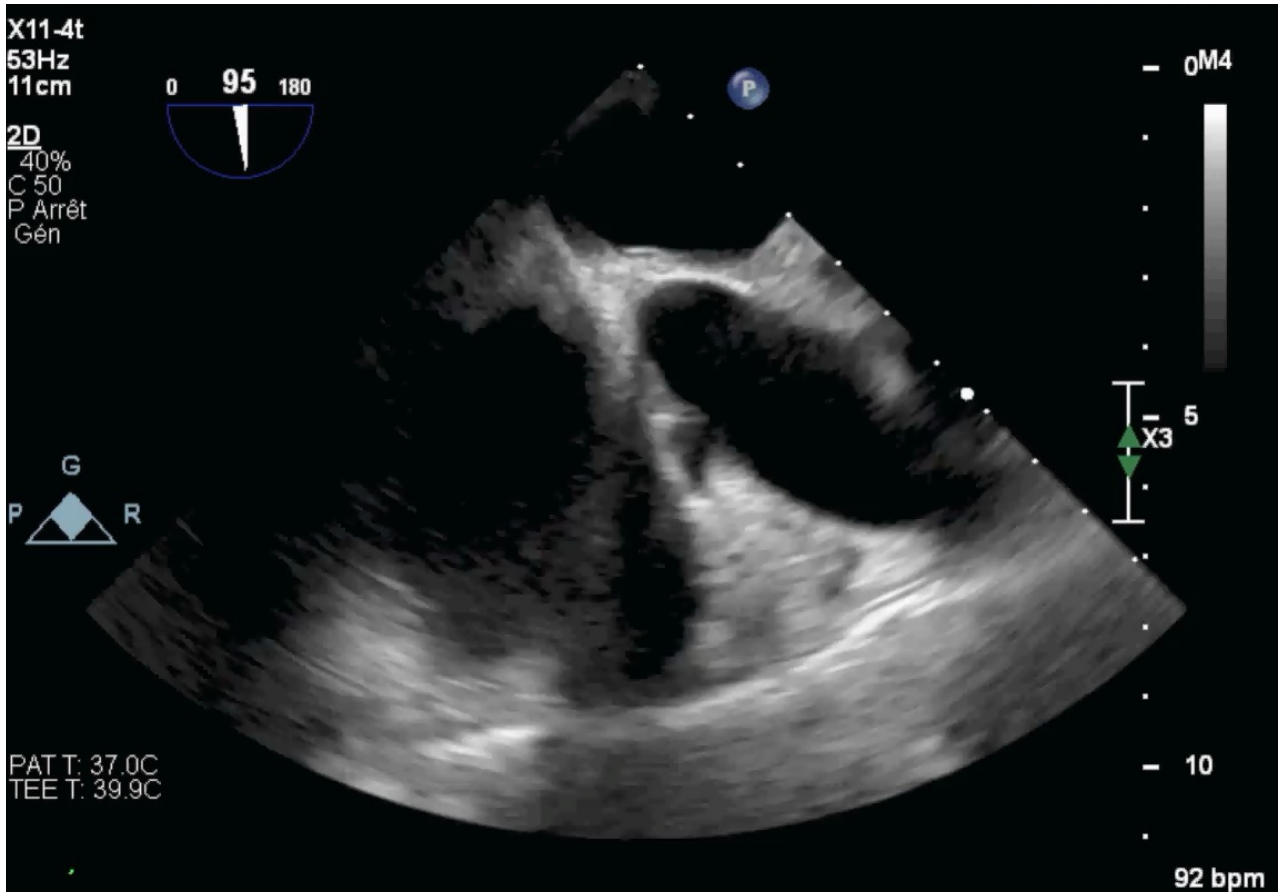




Moment de l’aspiration



VCI post libre



OD libre

Clot-in-transit and pulmonary embolism: an urgent call for awareness and action

Mario Di Marino [1], Vincenzo Cicchitti [2], Umberto Ianni [3], Fabrizio Ricci [1], Cesare Mantini [1], Giampaolo Niccoli [4], Francesco Pelliccia [5], Sabina Gallina [1], Raffaele De Caterina [6], Juan-Carlos Kaski [7], Mamas A Mamas [8], Marco Zimarino [2], Heart Team Study Group

Table 1 Classification of right heart thrombosis, as modified from the European Working Group on Echocardiography[6]

	Morphology	Mobility	Origin
Type A or 'transferred clot'	Snake-like shape: extremely mobile, elongated	Continuously changing position and conformation	Peripheral deep venous system
Type B or 'autochthonous clots'	Globular	Not very mobile: characteristically attached to atrial walls, chordae tendineae, tricuspid valve or other structures	Cardiac chambers: cardiac abnormalities are predisposing factors
Type C	Mixed	Mixed	Rare, genesis is unknown

Type A thrombi exhibited higher severity of PE **(98%)** as compared with **type B** (**40%,** A vs B <0.0001) and **type C** (**62%**, A vs C < 0.001)

The overall early mortality in all patients (≤8 days) was 25%
Type **A 44%,** Type **B 9%**, Type **C 29%.**
Several deaths occurred shortly after type A thrombus detection, emphasising rapid clinical instability

Di Marino M, *et al*. *Heart* 2025;**111**:151–158. doi:10.1136/heartjnl-2024-324747

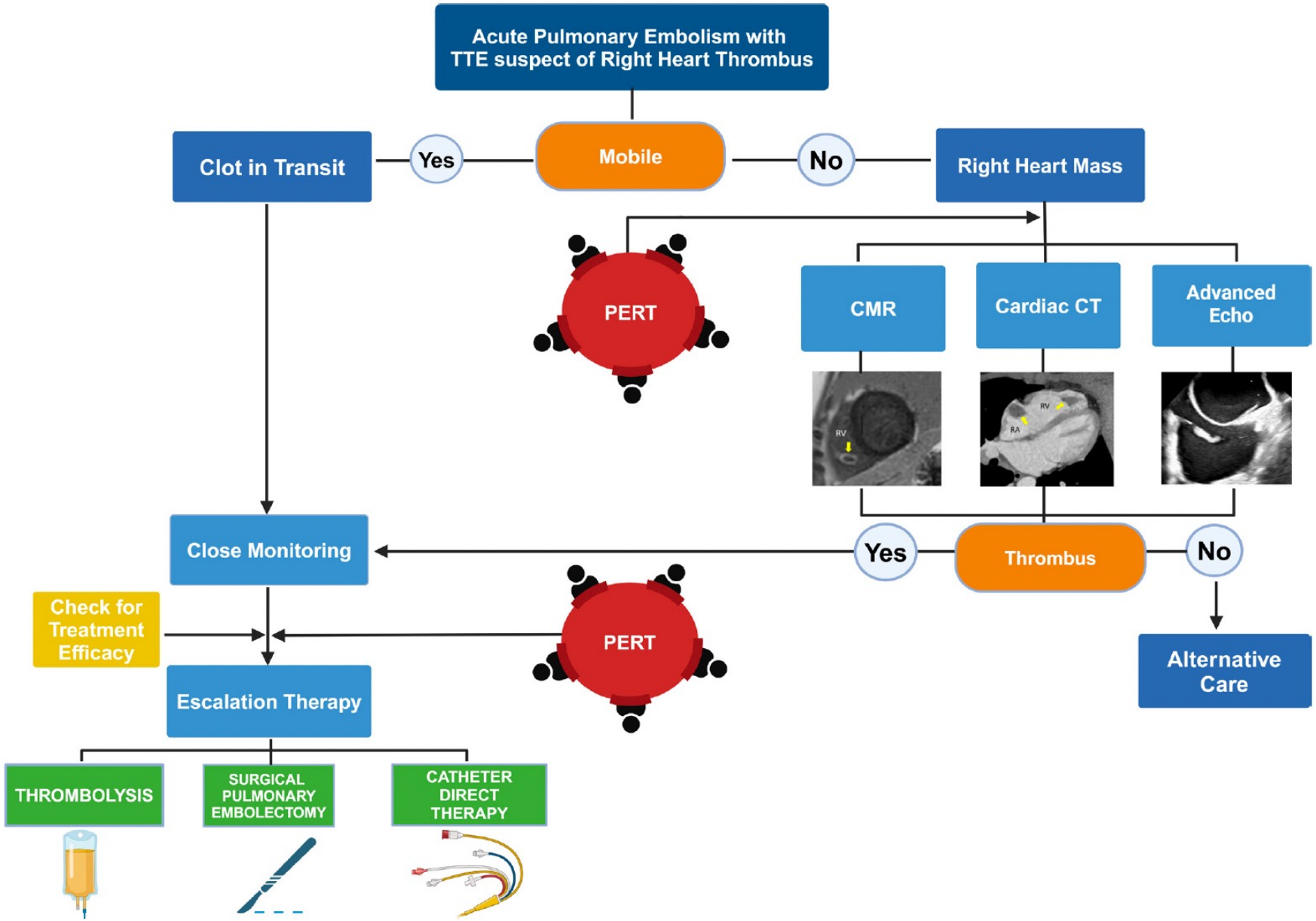
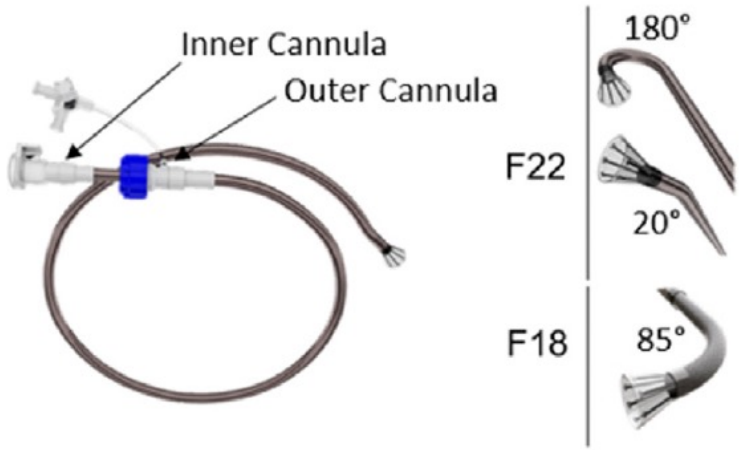
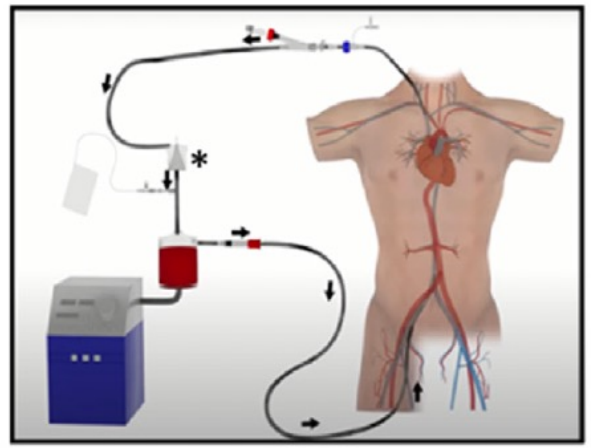


Figure 5 Diagnostic algorithm in case of suspected clot-in-transit. CMR, cardiac magnetic resonance; PERT, Pulmonary Embolism Response Team; TTE, transthoracic echocardiogram.

A





AngioVac

B

AlphaVac

C

Inari FlowTriever

D

Penumbra Lightning 12

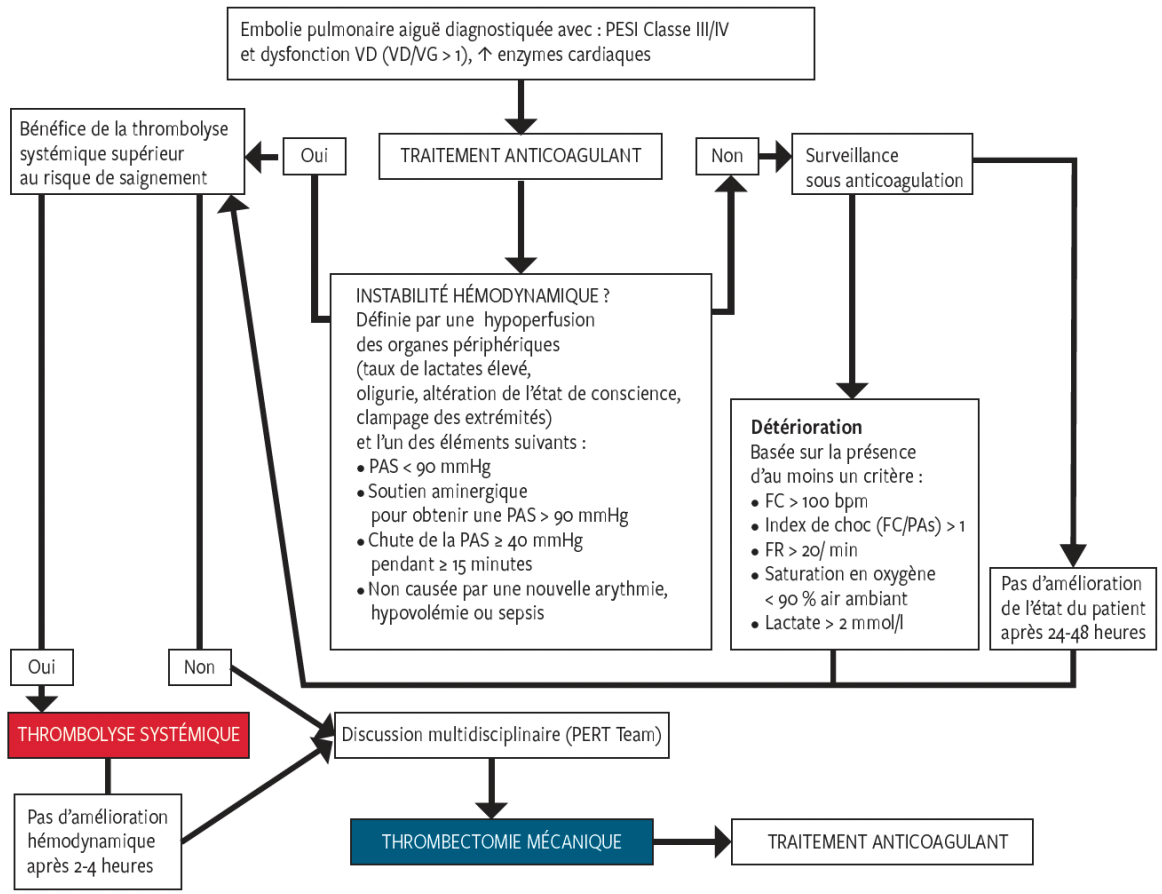
Thrombectomie mécanique dans l'embolie pulmonaire

Dre CECILIA BENGUEDDACHE-SCHWEBLIN[a*], Dre STEPHANIE ZBINDEN[a*], Pr MARCO ROFFI[b], Pr MARC RIGHINI[a,c] et Dr FRÉDÉRIC GLAUSER[a,c]

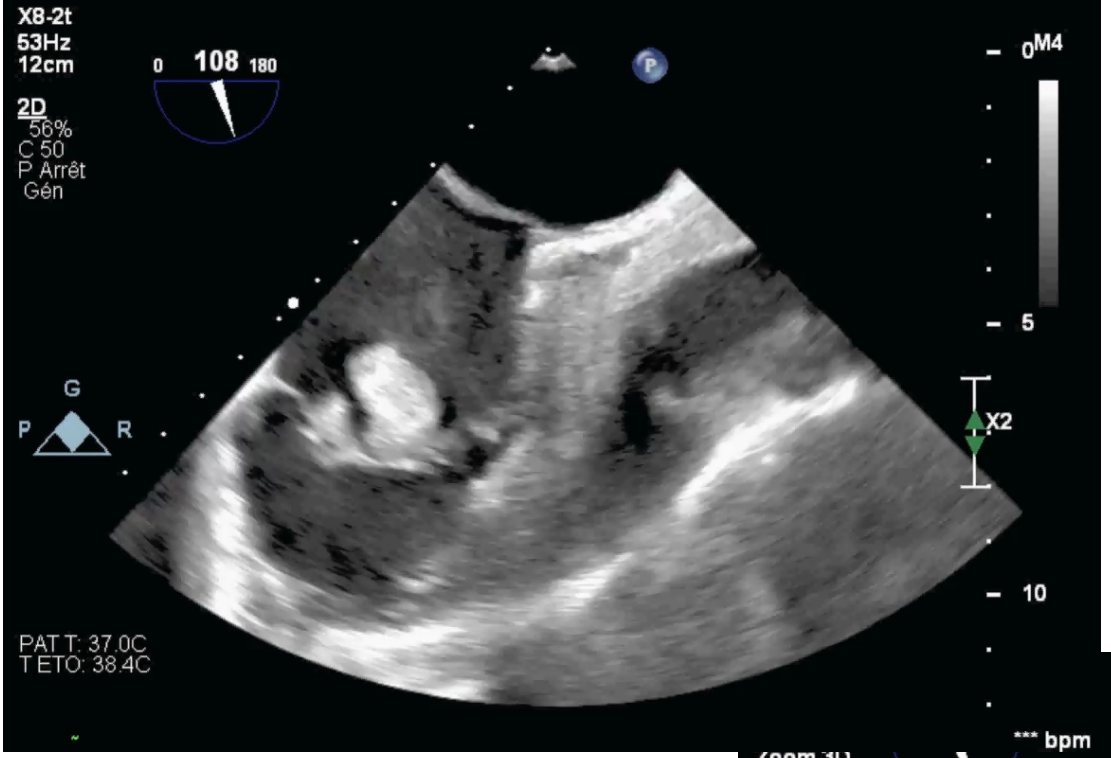
Rev Med Suisse 2024; 20: 2287-91 | DOI : 10.53738/REVMED.2024.20.898.2287

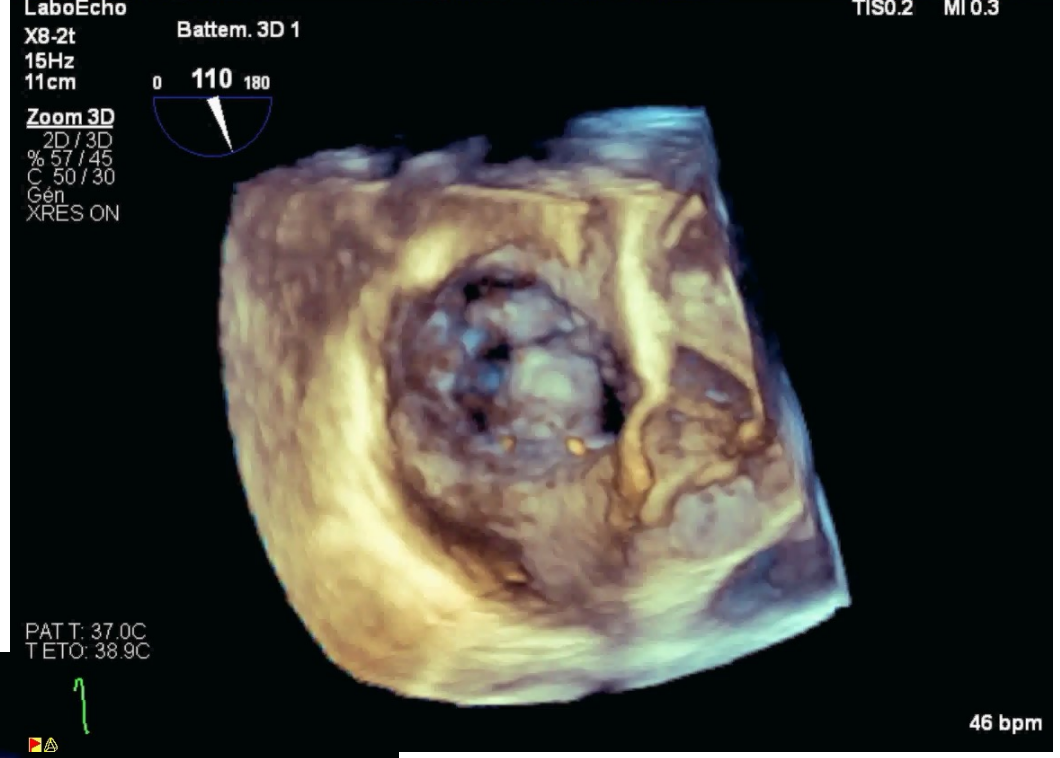
FIG 2 **Algorithme d'aide décisionnelle pour envisager une thrombectomie mécanique**

VD: ventricule droit; VG: ventricule gauche; ↑: augmentation.



- *Patient de 36 ans*
- *connu pour une **polydépendance** (injections de crack, d'opiacés et de dormicum avec aussi cocaïne fumée, OH et tabac)*
- *hospitalisé aux soins intensifs dans contexte **d'un choc septique sur endocardite de la valve tricuspide à S. Aureus** compliqué d'une **arthrite septique de l'épaule droite, et ostéomyélite** des processus épineux C3 à C5 et myosite des muscles paraspinaux*





végétation majeure de 29 x 18 mm attachée au feuillet antérieur

végétation secondaire de 15 x 9 mm attachée au feuillet septal

FOP

régurgitation tricuspide modérée

CJC Open ■ (2025) 1–3

Case Report

Percutaneous Mechanical Aspiration in Endocarditis

Nicholas A.S. Robichaud, MD,[a] Cara Spence, PhD,[a] Janine Eckstein, MD,[a,b] and Benjamin Leis, MD, MSc[a,b]

[a] *Department of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada*

[b] *Division of Cardiology, University of Saskatchewan, Saskatoon, Saskatchewan, Canada*

Historically, antibiotic therapy and adjunctive surgical intervention were the only definitive options for management of infective endocarditis (IE). Percutaneous mechanical aspiration (PMA) is emerging as an alternative adjunctive therapy for right-sided IE in select cases, specifically in poor surgical candidates or pacemaker-related infections.[1] Presented here is a case of a person who injects drugs with native valve tricuspid valve IE (TVIE) who underwent PMA for vegetation debulking, a compelling alternative to surgery when the risk of reinfection is high.

IE is a condition with a high incidence of morbidity and mortality that has an increasing prevalence within Saskatchewan communities. Between 2006 and 2016, the number of

Novel Teaching Points

- PMA is an emerging adjunctive technique in the management of right-sided endocarditis that especially holds promise in people who inject drugs, both for achieving source control of the infection and potentially reducing the risk of reinfection by vegetation debulking.
- A team model of endocarditis management involving addiction services, cardiology, cardiac surgery, infectious disease providers, and other healthcare practitioners can promote better access to care and adjunctive therapies for historically underserved populations.

JACC: CASE REPORTS VOL. 29, 2024

INTERVENTION AND SURGERY

CASE REPORT: HOW WE DID IT

Transcatheter Aspiration of Tricuspid Vegetation

Akiva Brin, MD,[a] Danny Dvir, MD,[a] Emanuel Harari, MD,[b] Shemy Carasso, MD,[a] Yonit Wiener-Well, MD,[c] Michael Glikson, MD,[a] Tal Hasin, MD[a]

ABSTRACT

OBJECTIVE This study sought to present the endovascular approach of transcatheter aspiration using the FlowTriever (Inari Medical) aspiration system for high surgical risk patients with right-sided infective endocarditis.

KEY STEPS General anesthesia and transesophageal echocardiogram guidance; ultrasonography-guided femoral vein access, preclosure sutures, and insertion of a 24-F sheath; insertion of straight 24-F aspiration cannula over a stiff wire, parked in the superior vena cava; introduction of a 20-F curved cannula inside the 24-F cannula to create a telescopic assembly; accurate positioning using the right ventricle inflow/outflow projection in biplane mode; adjustment of the curved cannula radius by sliding the inner cannula in and out inside the mother cannula; manual aspiration of the vegetation; Postaspiration transesophageal echocardiogram assessment.

POTENTIAL PITFALLS Avoid leaflet and annular injury and account for potential embolization.

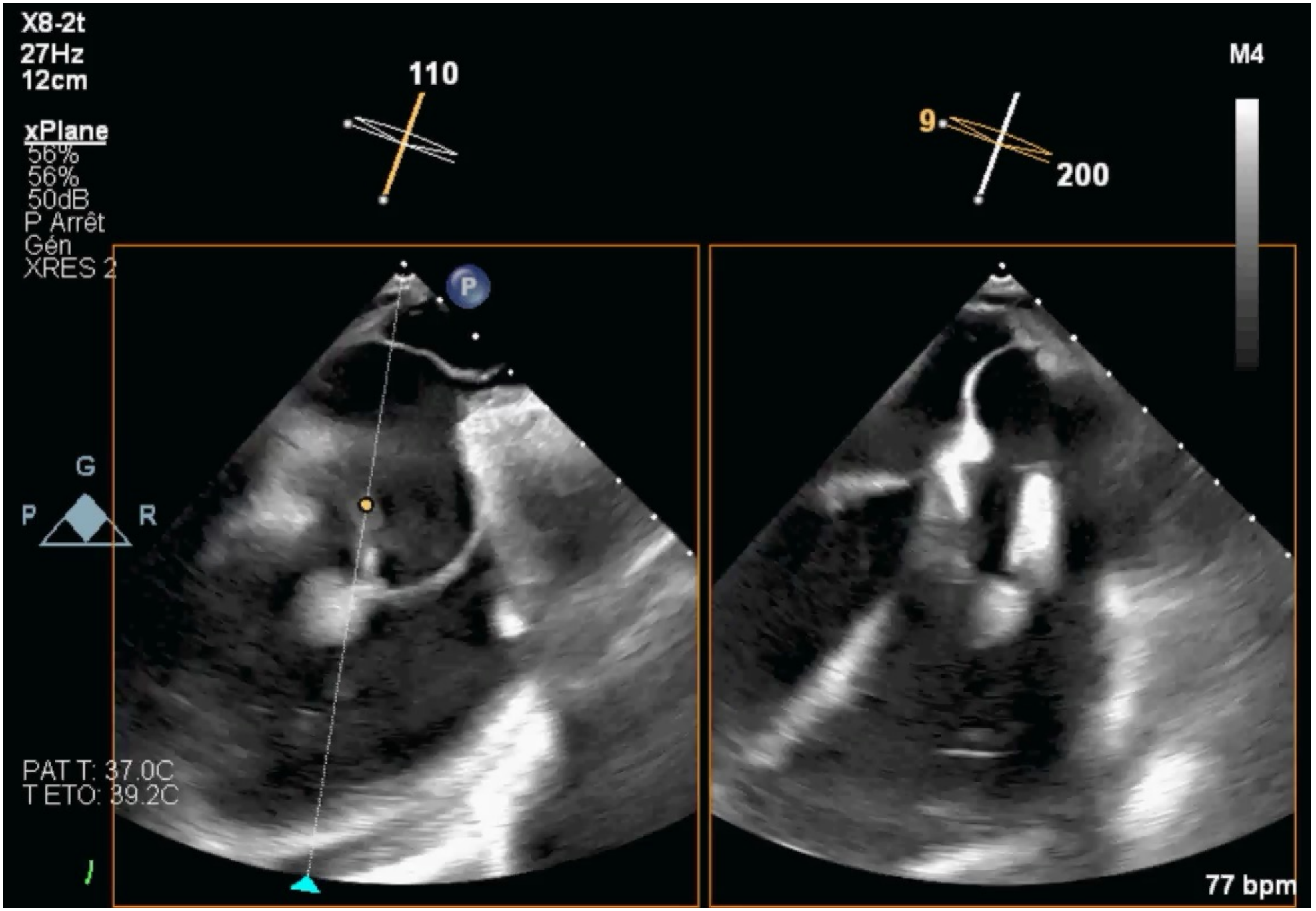
- *Les avantages principaux du Flowtriever sont:*
  - *L'utilisation d'un seul abord veineux au lieu de deux,*
  - *forte puissance d'aspiration*
  - *réduit le risque de perte sanguine et de dissémination de micro-fragments*

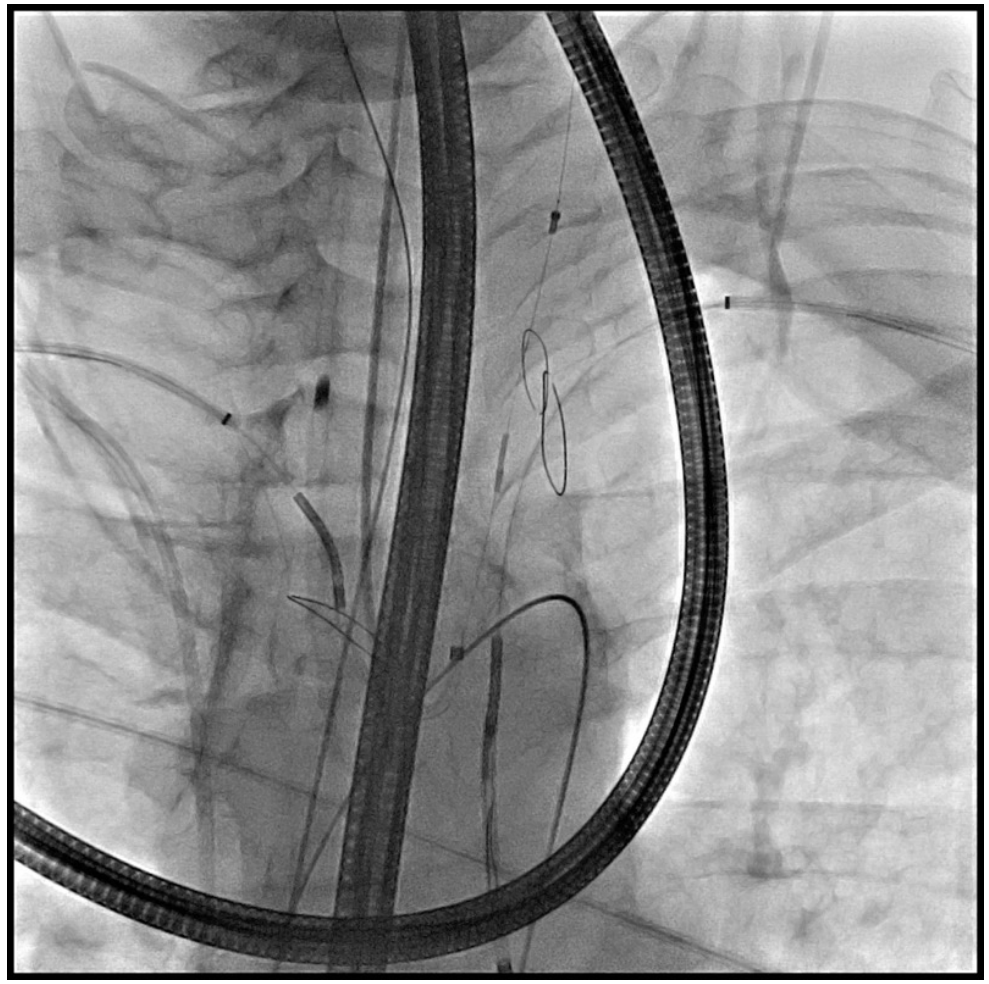
TABLE 1 Right-Sided Native Valve IE Debulking Using the Aspiration System

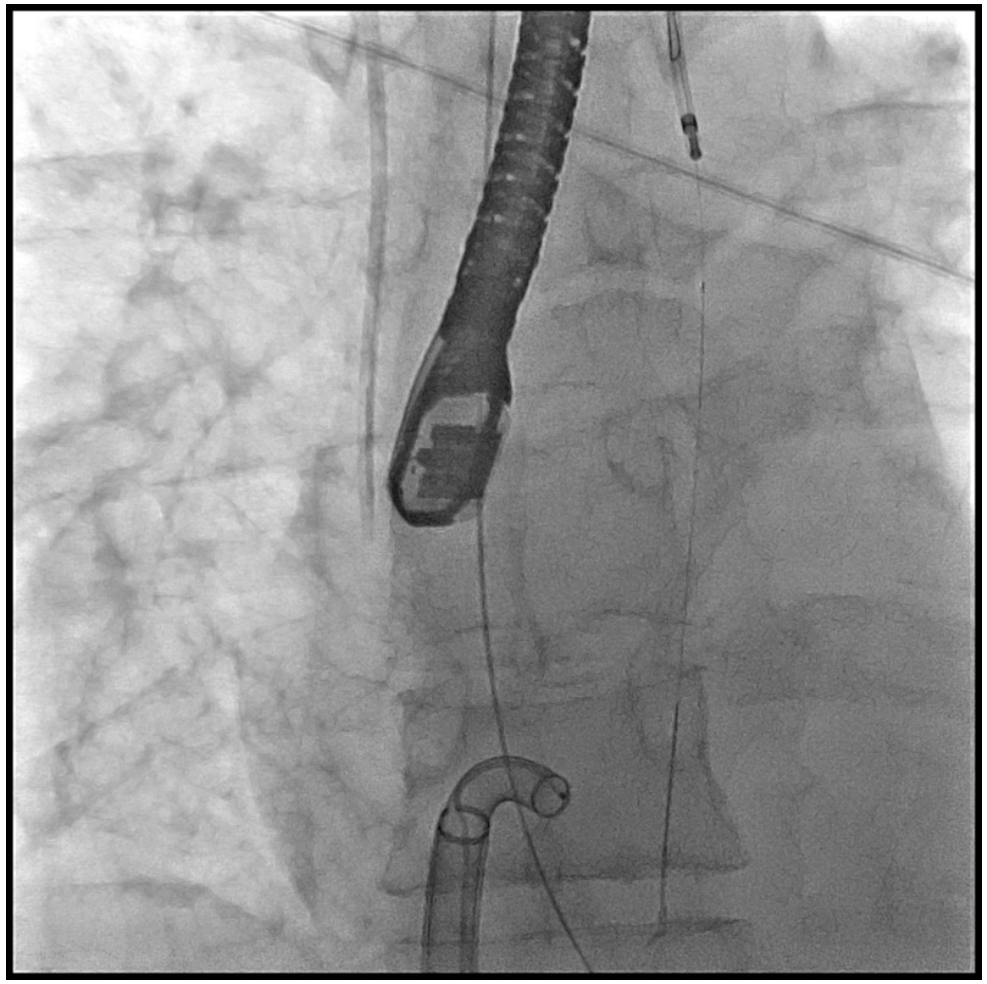
Number	First Author, Year	Sex	Age, y	Number of Vegetations	Size of Vegetation, cm	Pathogen	Number of Suctions	TR Grade Before Procedure	TR Grade Outcome	Length of Follow-Up, mo	Bridge to Surgery/ Definitive
1	Becker et al, 2022[6]	F	32	2	3.2 × 1.4 2.6 × 1.2	MRSA	3	Severe	Severe	5	Definitive
2	Almanfi and Nabous, 2022[7]	M	35	1	2.1 × 2.3	MSSA	4	Severe	Mild	7	Definitive
3	Morton et al, 2023[8]	F	48	1	N/A	*Candida albicans*	N/A	N/A	N/A	—	Bridge
4		M	39	2	1.4 × 1.1 2.1 × 1.3	PA	N/A	Moderate to severe	Severe	2	Definitive
5	Rozenbaum, 2023[9]	F	30	1	3	MSSA	Multiple	Severe	Severe	—	Bridge
6	Khalil et al, 2024[10]	M	68	1	3.7 × 0.5	MSSA	5	N/A	N/A	N/A	Definitive
7	Current case	F	35	1	2.3 × 0.7	MSSA	2	Mild	Mild	4	Definitive

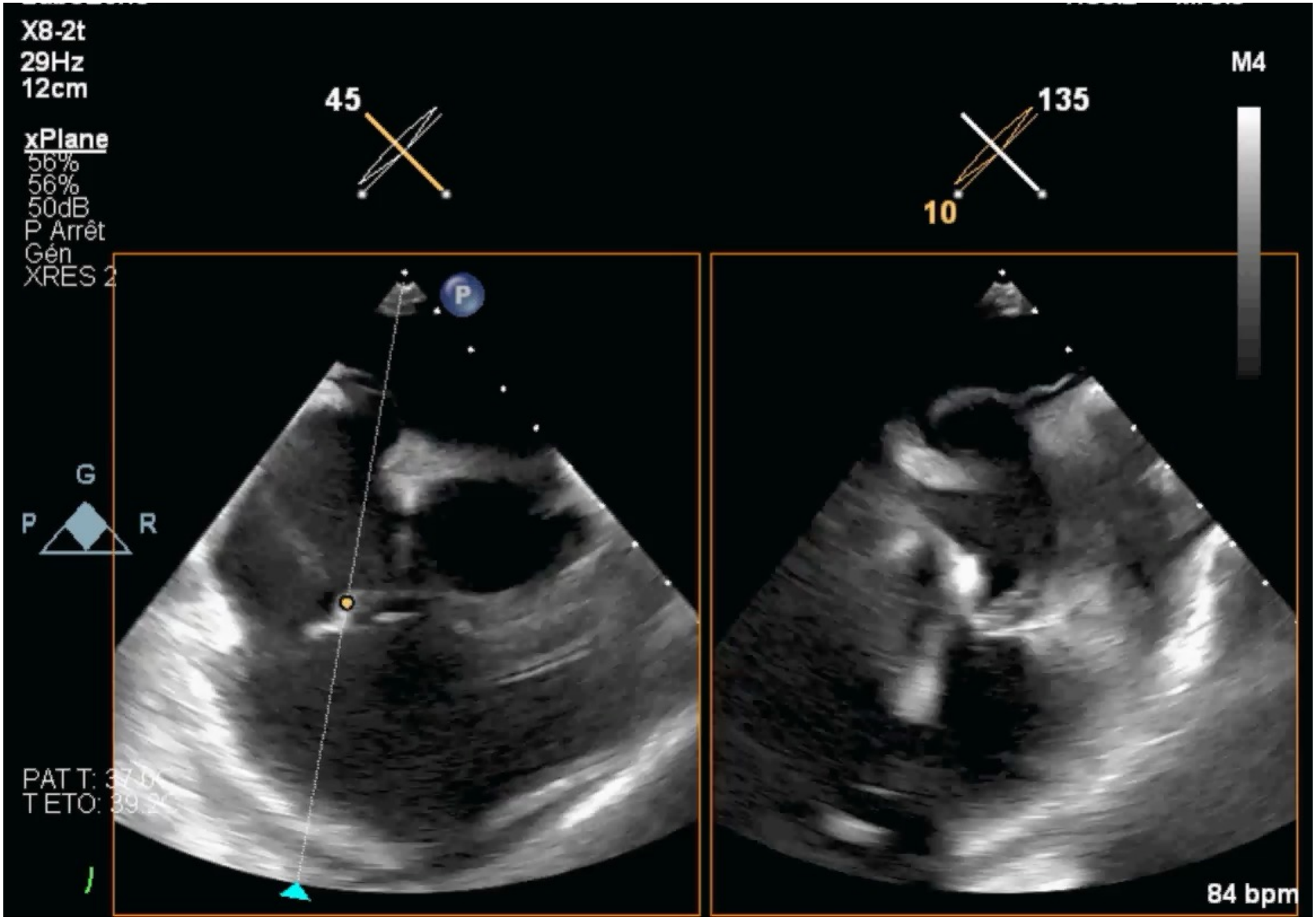
MRSA = methicillin-resistant *Staphylococcus aureus*; MSSA = methicillin-sensitive *Staphylococcus aureus*; N/A = not applicable; PA = *Pseudomonas aeruginosa*; TR = tricuspid regurgitation.

FIGURE 3 Triever20 Curve


X8-2t
27Hz
12cm
xPlane
56%
56%
50dB
P Arrêt
Gén
XRES 2
110
9
200
M4
G
P
R
PAT T: 37.0C
T ETO: 39.2C
77 bpm






X8-2t
29Hz
12cm
xPlane
56%
56%
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P Arrêt
Gén
XRES 2
45
135
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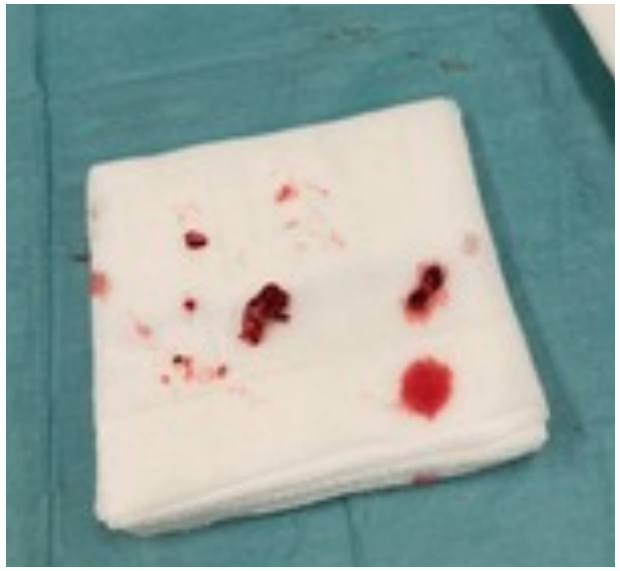
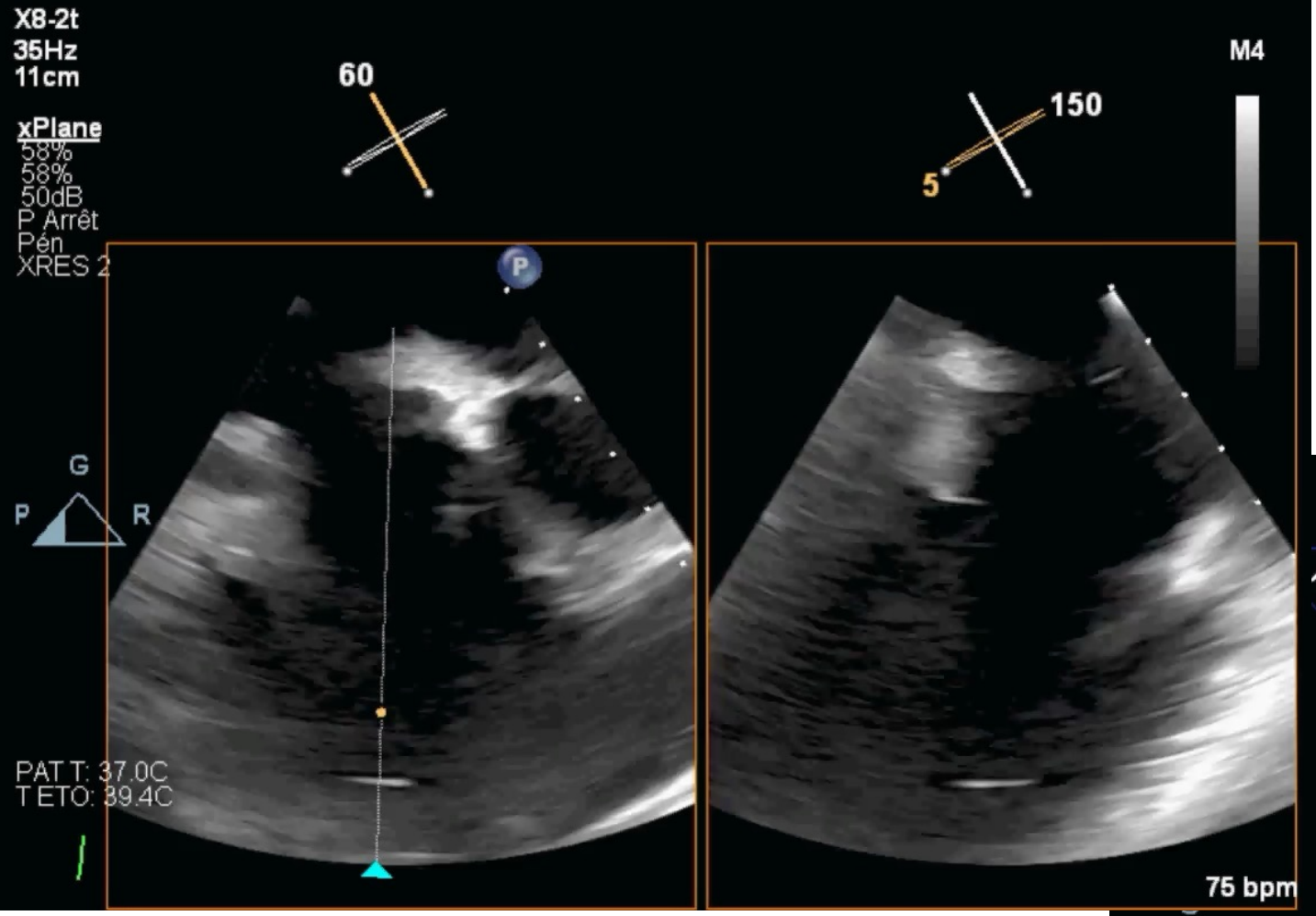
M4
G
P
R
84 bpm

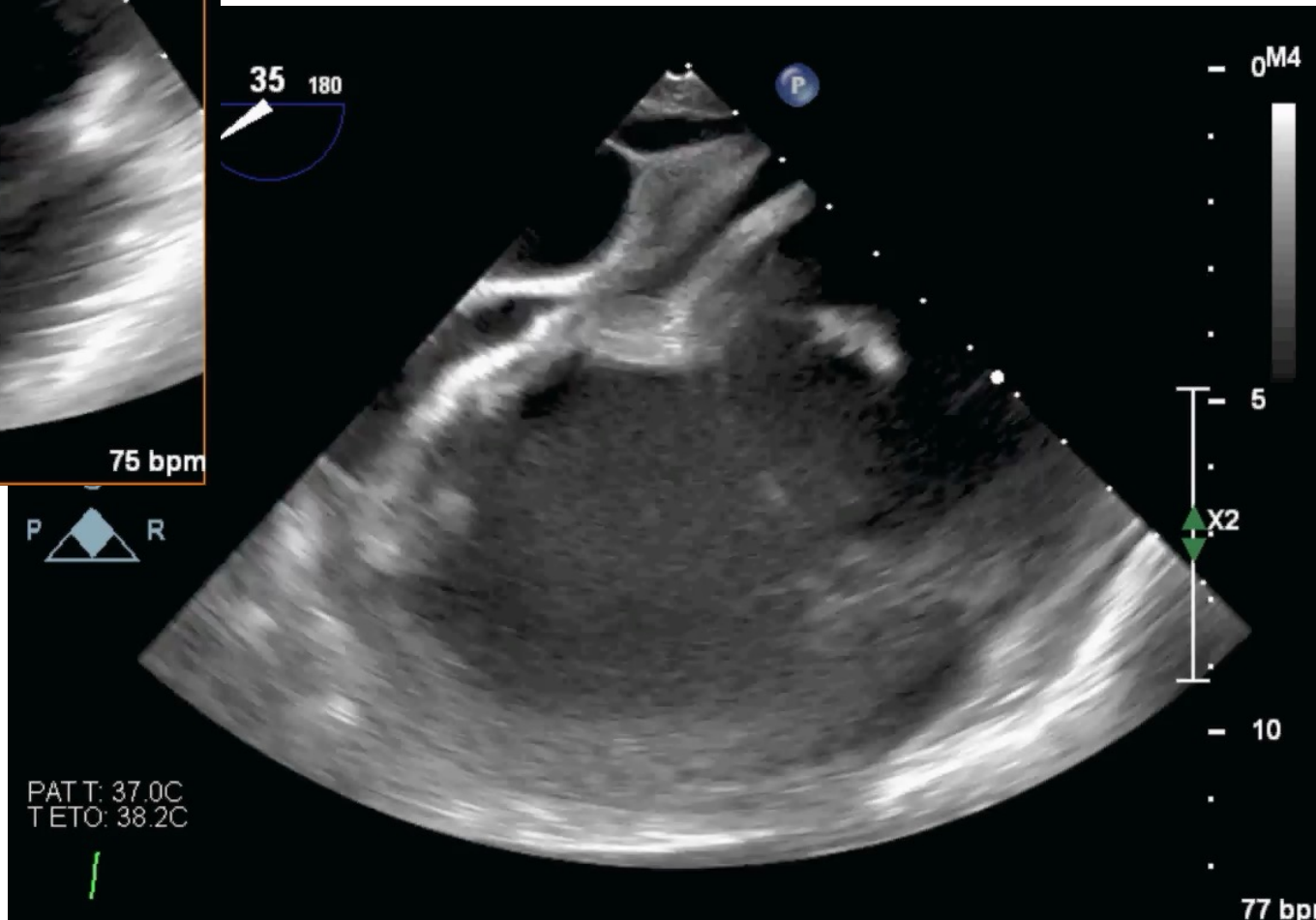


DIAGNOSTIC :

Valve tricuspide :

- **Enduits fibrinoleucocytaires et amas de bactéries (cocci), à corréler aux données microbiologiques.**
- **Absence de tissu valvulaire.**


X8-2t
35Hz
11cm
xPlane
58%
58%
50dB
P Arrêt
Pén
XRES 2
60
150
5
M4
G
P
R
PAT T: 37.0C
T ETO: 39.4C
75 bpm


35
180
M4
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10
X2
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R
PAT T: 37.0C
T ETO: 38.2C

JSCAI
The official journal of the Society for Cardiovascular Angiography & Interventions

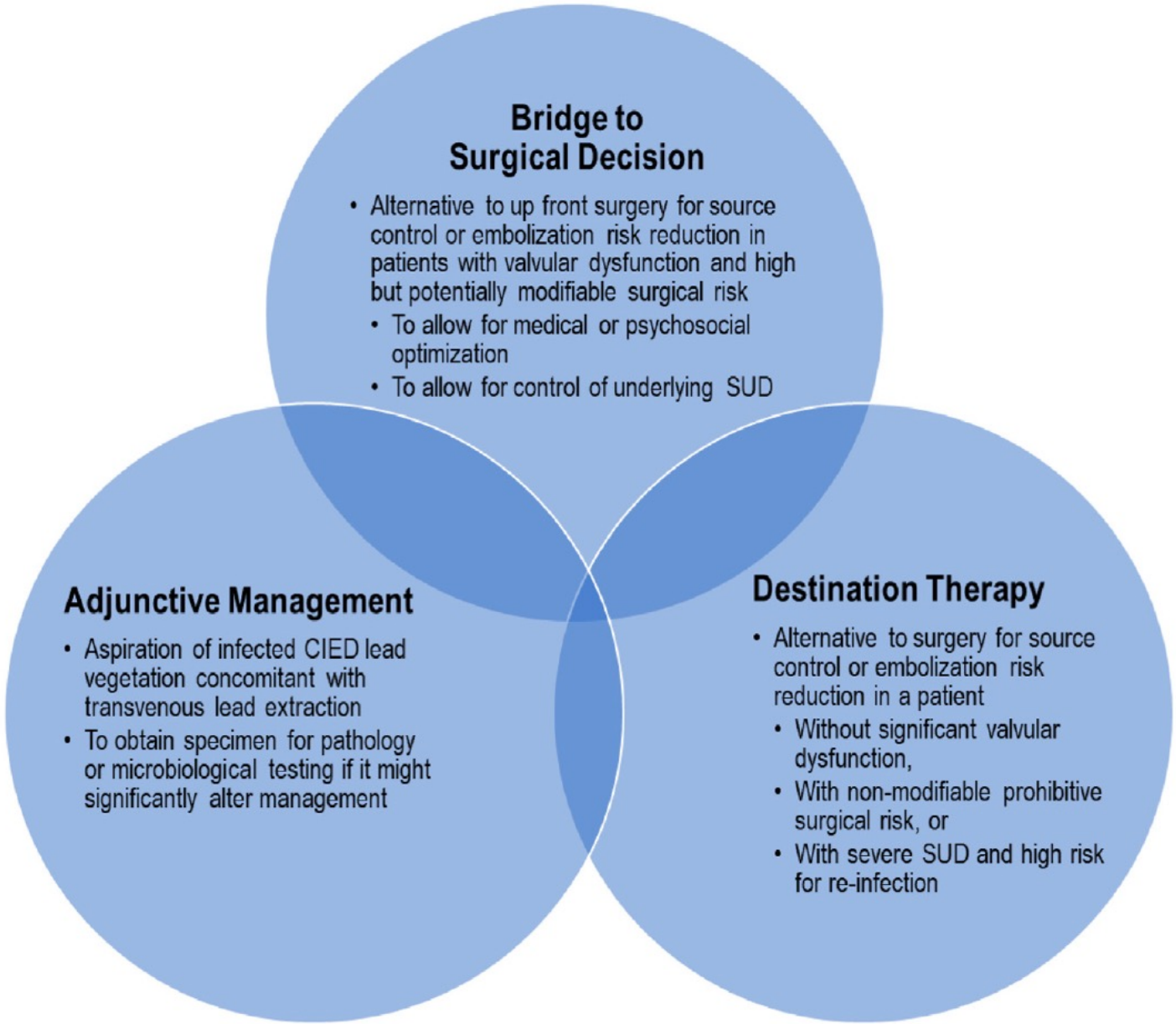
Comprehensive Review

Percutaneous Mechanical Aspiration in Infective Endocarditis: Applications, Technical Considerations, and Future Directions

Abdallah El Sabbagh, MD[a,*], Evin Yucel, MD[b], David Zlotnick, MD[c], John M. Moriarty, MD[d], Stephanie Younes, MD[e], Nadira Hamid, MD[f], Yasir Akhtar, MD[g], Larry M. Baddour, MD[h], Patrick O'Gara, MD[i], Christoph Starck, MD[j], Sripal Bangalore, MD[k], Sahil A. Parikh, MD[l], Kenneth Rosenfield, MD[b], Sanjum S. Sethi, MD[l]

Table 1. Applications of percutaneous mechanical aspiration in infective endocarditis.

Intravenous drug use
Persistent sepsis despite adequate antibiotics
Recurrent septic embole despite adequate antibiotics
Cardiac implantable electronic device infection/facilitating lead extraction
Diagnostic ambiguity


Bridge to Surgical Decision
• Alternative to up front surgery for source control or embolization risk reduction in patients with valvular dysfunction and high but potentially modifiable surgical risk
• To allow for medical or psychosocial optimization
• To allow for control of underlying SUD
Adjunctive Management
• Aspiration of infected CIED lead vegetation concomitant with transvenous lead extraction
• To obtain specimen for pathology or microbiological testing if it might significantly alter management
Destination Therapy
• Alternative to surgery for source control or embolization risk reduction in a patient
• Without significant valvular dysfunction,
• With non-modifiable prohibitive surgical risk, or
• With severe SUD and high risk for re-infection

Take Home Messages

- Nouvelles options pour aspirer des thrombus en transit et des végétations (drug addict, dispositif type pacemaker)
- Discussion multi-disciplinaire
- Plutôt procédure techniquement abordable surtout thrombus en transit
- Risque de migration