

ENDOCARDITE INFECTIEUSE: POINT DE VUE CHIRURGICAL



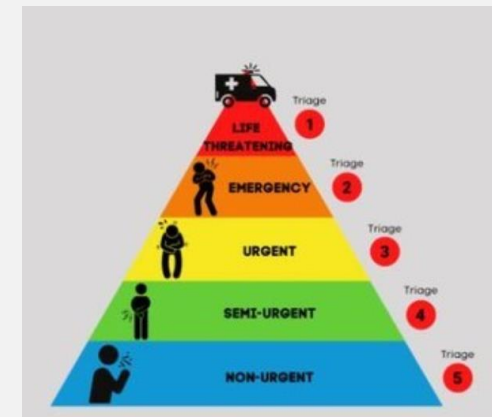
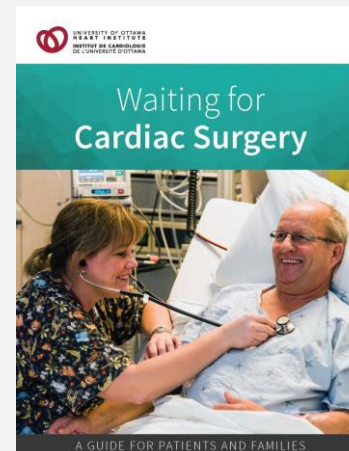
CONFLITS D'INTERETS

- Financier: Aucun
- merci à l'organisation d'avoir pensé à moi pour ce topo!

QUI NE PAS « REFROIDIR » = QUI OPÉRER « RAPIDEMENT »?



RAPIDEMENT? C'EST-À-DIRE...?



IE WITH HEART FAILURE



- Most frequent complication of IE
- Main indication for urgent and emergent surgery for IE
- Cardiogenic shock about 5%
- HF complicating IE is associated with poor in-hospital and 1 year survival
- **Surgical treatment = only effective treatment**
- Emergent Surgery: NYHA IV, pulmonary oedema, mechanical ventilation, cardiogenic shock
- Urgent Surgery: NYHA III, Severe echographic regurgitation

(i) Heart failure

Emergency^d surgery is recommended in aortic or mitral NVE or PVE with severe acute regurgitation, obstruction, or fistula causing refractory pulmonary oedema or cardiogenic shock. [420,423,424,429,476,477](#)

I

B

Urgent^d surgery is recommended in aortic or mitral NVE or PVE with severe acute regurgitation or obstruction causing symptoms of HF or echocardiographic signs of poor haemodynamic tolerance. [5,420–422,429](#)

I

B

Association Between Valvular Surgery and Mortality Among Patients With Infective Endocarditis Complicated by Heart Failure

JAMA[®]
The Journal of the American Medical Association

Clinical Infectious Diseases

MAJOR ARTICLE

IDSA
Infectious Diseases Society of America

hivma
hiv medicine association

OXFORD

Clinical Infectious Diseases[®] 2021;73(5):765–74

Characteristics and Outcome of Acute Heart Failure in Infective Endocarditis: Focus on Cardiogenic Shock

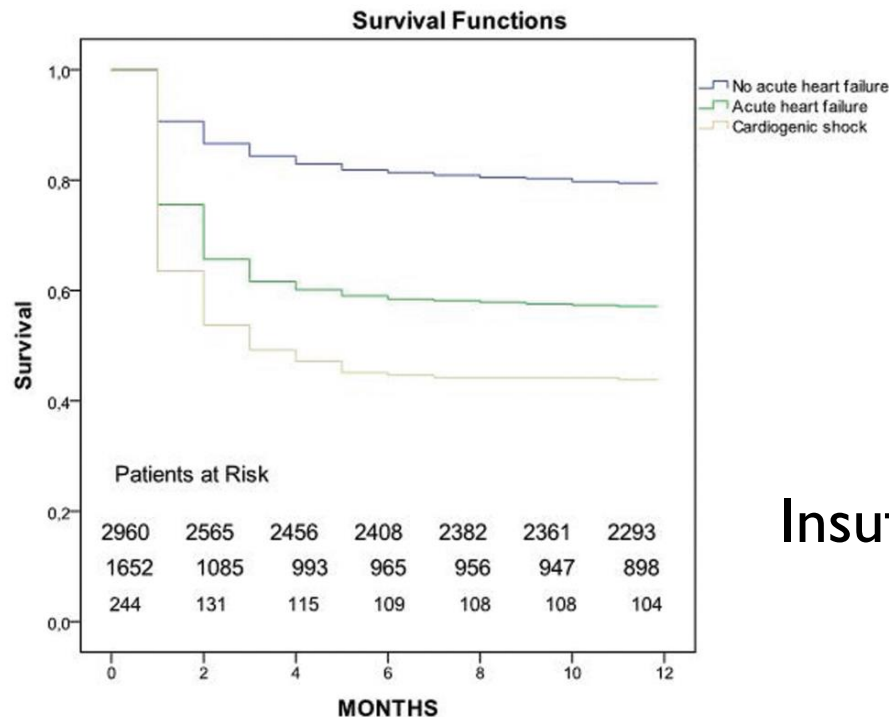
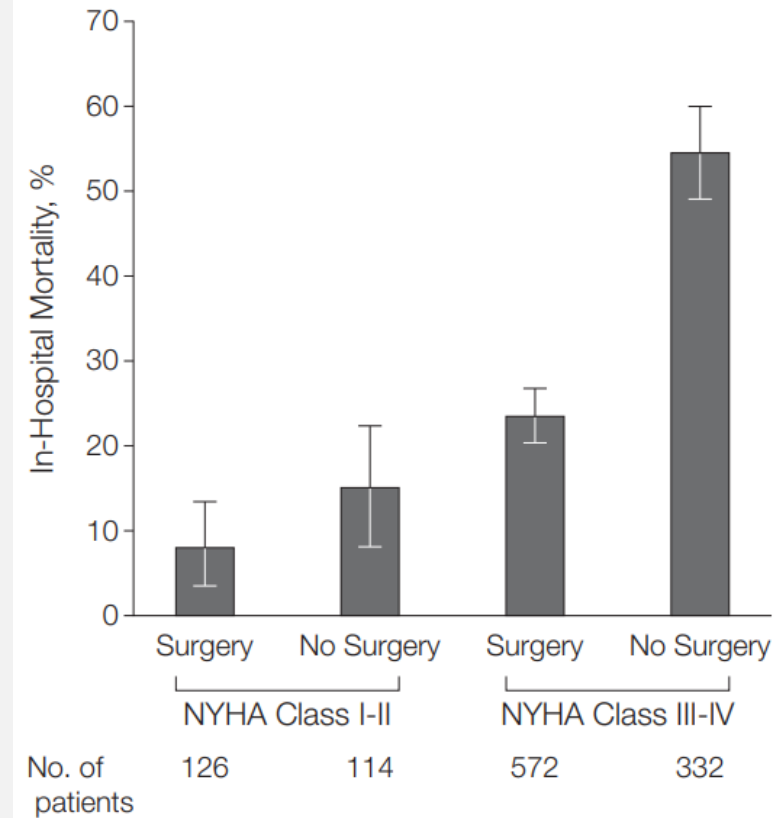


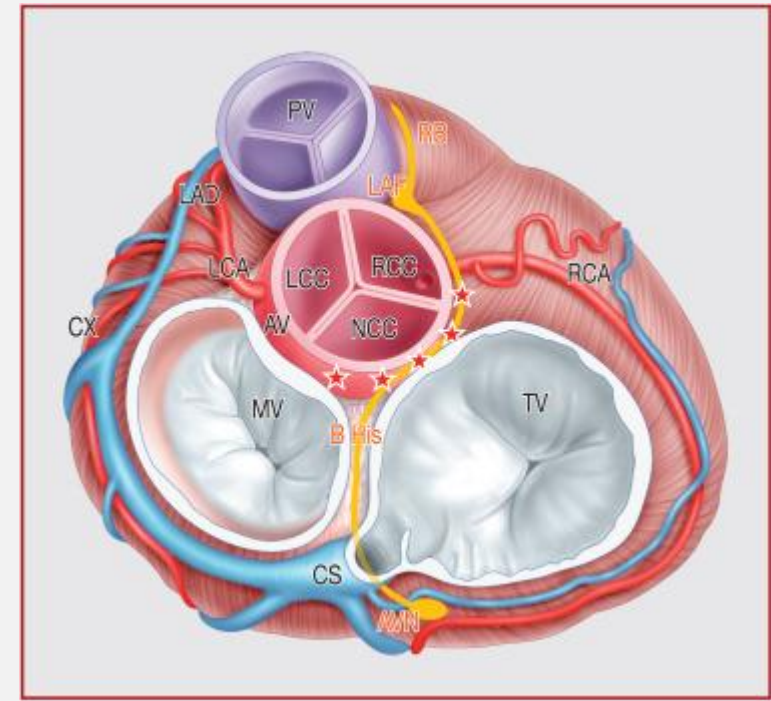
Figure 2. In-Hospital Mortality Rates for Patients With Infective Endocarditis and Heart Failure as a Function of Surgical Treatment



Insuffisance cardiaque = Ne pas Refroidir et Chirurgie!

IE WITH PERIVALVULAR EXTENSION /ABCESS

- Incidence: from 10 to 30%, higher in patients with PVE
- More frequent in aortic valve than mitral valves
- Patients with signs of local progression
- Increasing vegetation size
- Perivalvular involvement (abcess), Cardiac CT as alternative imaging procedure
- Surgery should be performed urgently! (within 2 or 3 days)



(ii) Uncontrolled infection

Urgent^d surgery is recommended in locally uncontrolled infection (abscess, false aneurysm, fistula, enlarging vegetation, prosthetic dehiscence, new AVB).^{5,420,421,429,445}

I

B

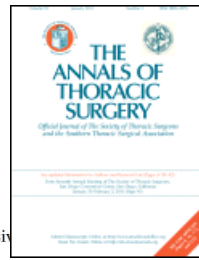
Semi-Urgence



Infective Endocarditis With Paravalvular Extension: 35-Year Experience

Simon Rouzé, MD, Erwan Flécher, MD, PhD, Matthieu Revest, MD, Amedeo Anselmi, MD, Marie Aymami, MD, Antoine Roisné, MD, Julien Guihaire, MD, PhD, and Jean Philippe Verhoye, MD, PhD

Departments of Vascular and Cardio-Thoracic Surgery, Infectious Diseases, and Anaesthesiology and Intensive Care Medicine, University Health Centre, Rennes, France



955 EI, 207 avec abcès

Results. The operative mortality of the cohort was 16% (n = 34). Abnormal communication, mechanical

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journal homepage: www.clinicalmicrobiologyandinfection.com



ELSEVIER

Original article

Factors associated with local invasion in infective endocarditis: a nested case–control study

Abarna Ramanathan^{1,*}, James C. Witten², Steven M. C. Gosta B. Pettersson², Nabin K. Shrestha¹

Recommendations

Surgery is recommended for early PVE (within 6 months of valve surgery) with new valve replacement and complete debridement. ^{621,635}

Class^a

Level^b

I

C

Periannular Complications in Infective Endocarditis Involving Native Aortic Valves



Effect sizes for variables that remained significant in multivariable analysis

Variable	Odds ratio (95% CI)	p
Aortic valve involvement	6.23 (3.55–11.44)	<0.001
Mechanical valve	1.30 (0.16–7.30)	0.778
Bioprosthetic valve	3.88 (2.36–6.44)	<0.001
Significant paravalvular leak	3.80 (1.60–9.89)	0.004
New AV nodal block	3.77 (1.87–7.90)	<0.001
Central nervous system emboli	1.85 (1.13–3.04)	0.014
Microorganism (ref: viridans group streptococci)		0.003
<i>Staphylococcus aureus</i>	1.33 (0.65–2.73)	
Coagulase negative staphylococci	1.75 (0.80–3.85)	
Other streptococci	7.54 (2.42–24.87)	
<i>Enterococcus</i>	0.78 (0.37–1.62)	
Fungi	0.22 (0.05–0.84)	
Pathogen not identified	1.12 (0.38–3.11)	
Other	1.13 (0.56–2.26)	
Aortic valve × mechanical valve (interaction term)	14.46 (1.95–152.60)	0.014

Overall
(n = 201)

Aortocavitary Fistulae
(n = 46)

Nonruptured Abscesses
(n = 155)

In-hospital mortality

Overall (n = 201)

Surgical mortality (n = 172)*

57 (28%)

46 (27%)

16 (35%)

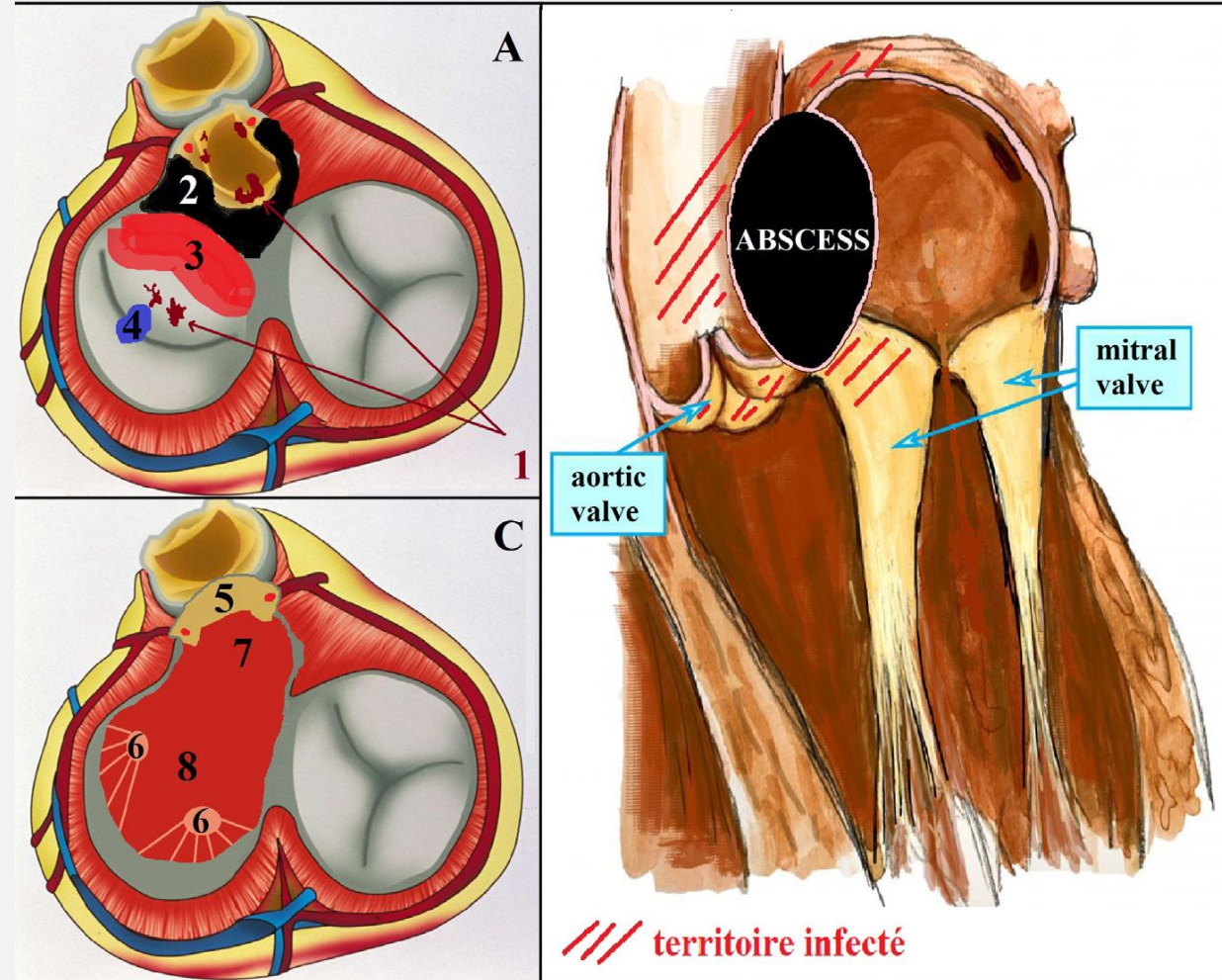
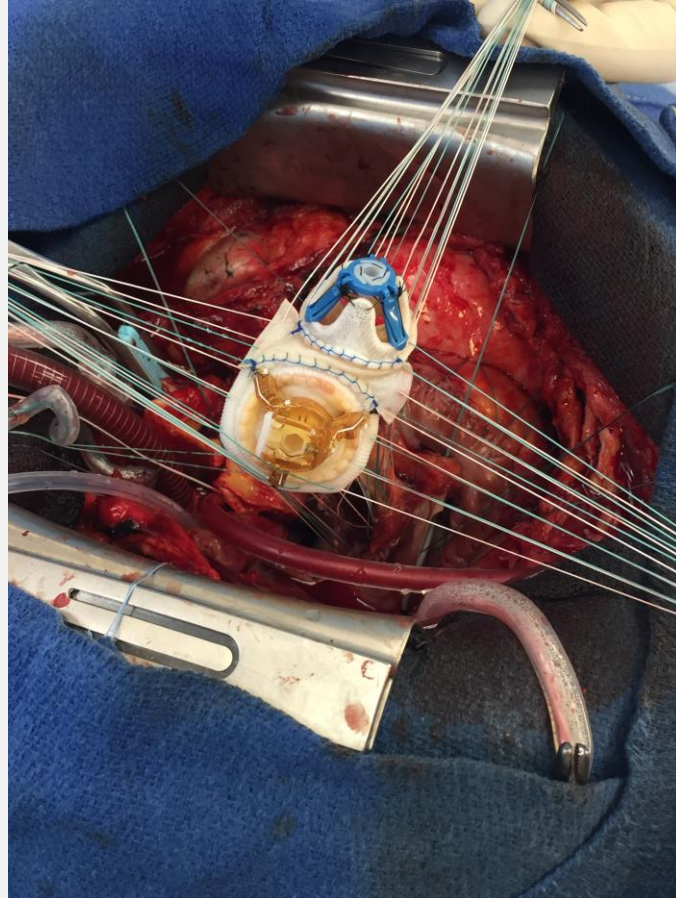
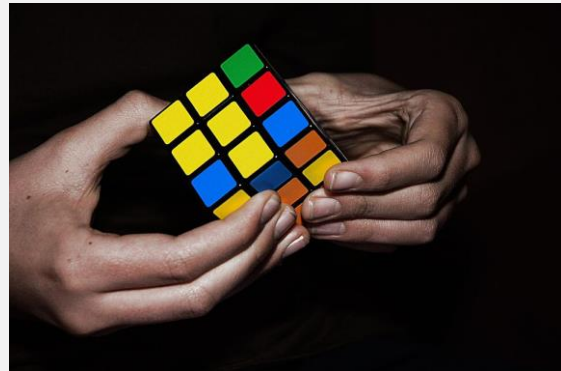
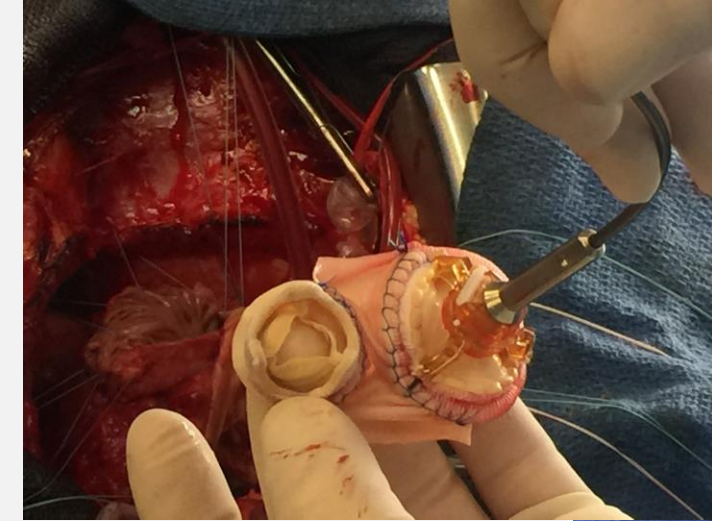
13 (33%)

41 (26%)

33 (25%)

Destructive Aorto-Mitral Endocarditis: Two Valves for One Annulus

Calixte de La Bourdonnaye Blossac¹, MD; Ian Cummings¹, MD; Amedeo Anselmi¹, MD; Erwan Flecher¹, MD



IE WITH RESISTANT OR VIRULENT ORGANISMS

Semi-Urgence

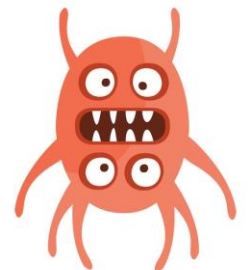


- Fungi infections
- Multiresistant bacteria: Vanco R enterococci
- Non HACEK Gram negative bacteria
- should also be included in this group (fast progression): S. Aureus, Pneumococci
- These organisms should lead to discussions within the endocarditis team and urgent surgery

Urgent^d or non-urgent surgery is recommended in IE caused by fungi or multiresistant organisms according to the haemodynamic condition of the patient.⁴²⁰

I

C



EI WITH PERSISTENT INFECTION

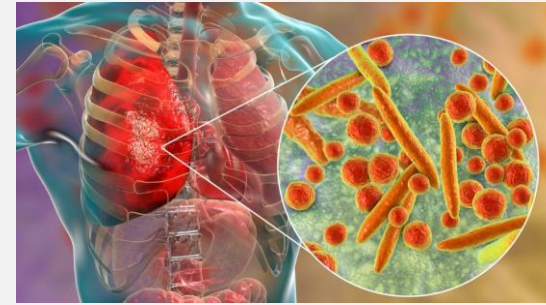
Semi-Urgence



- Blood cultures remain positive > 1 week
- Persistent clinical sepsis
- Despite appropriate antimicrobial therapy, with no other causes of sepsis
- Discussion with Endocarditis Team +++
- Reiterate Echo / TEE +++ (abcess??)
- Not performing surgery for uncontrolled infection = significantly increased mortality

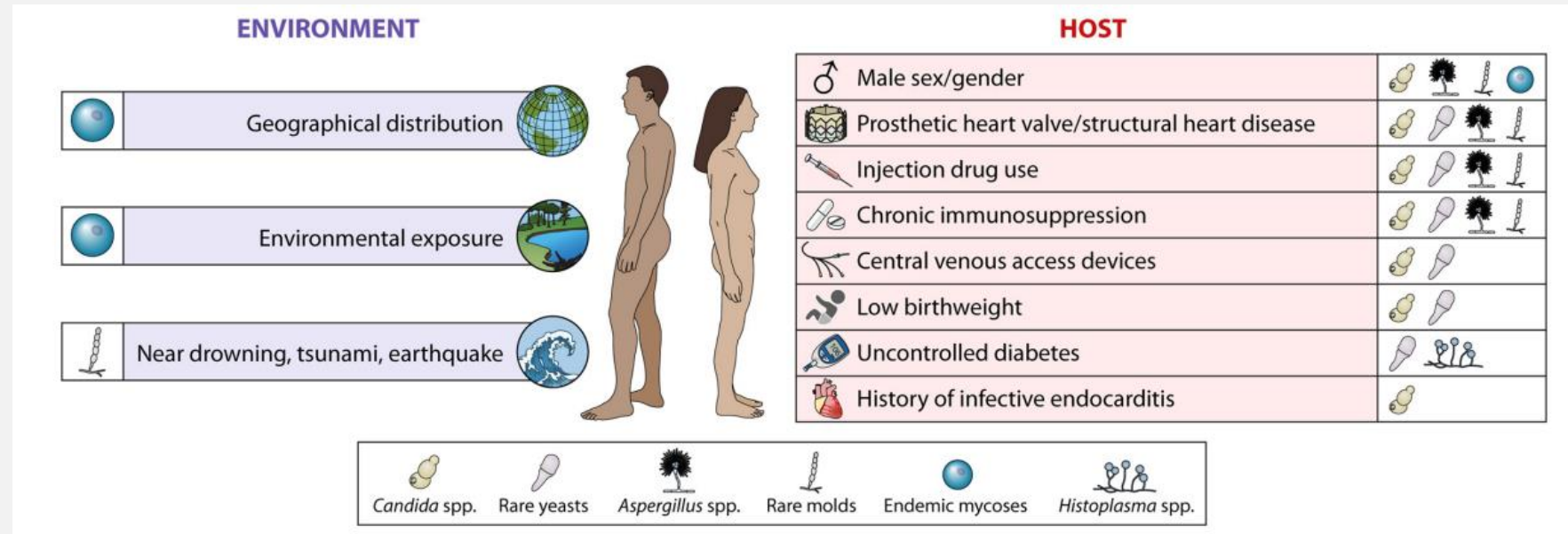
Characteristics and prognosis of pneumococcal endocarditis: a case-control study

Magalie Daudin, Pierre Tattevin, Bernard Lelong, Erwan Flécher, Sylvain Lavoué, Caroline Piau, Anne Ingels, Anthony Chapron, Jean-Claude Daubert, Matthieu Revest



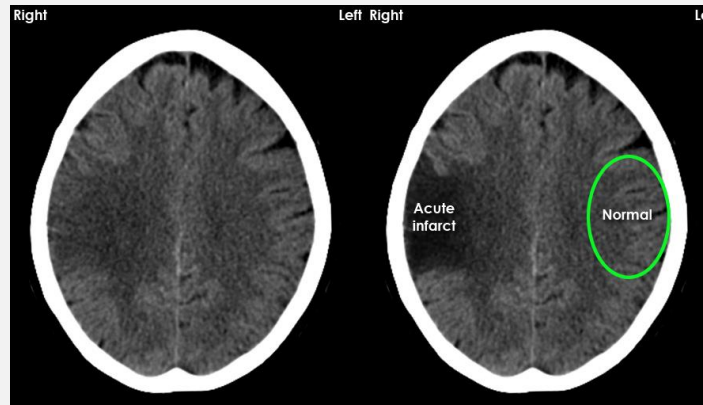
Fungal Endocarditis: Pathophysiology, Epidemiology, Clinical Presentation, Diagnosis, and Management

George R. Thompson III,^{a,b} Jeffrey D. Jenks,^{c,d} John W. Baddley,^e James S. Lewis II,^f Matthias Egger,^g Ilan S. Schwartz,^d Johannes Boyer,^g Thomas F. Patterson,^h Sharon C.-A. Chen,^{i,j} Peter G. Pappas,^k Martin Hoenigl^{g,l}



ingly being used. A multimodal treatment approach is necessary, **surgery is usually required** and should be accompanied by long-term systemic antifungal therapy, such as echinocandin

IE WITH ISCHEMIC STROKE



Semi-Urgence



- When haemodynamic disturbances are present: Surgery should not be delayed!
- Transient ischaemic attack = Surgery
- **Ischemic stroke « is not » a contra-indication** however neurological status has to be considered (coma, extensive damage...)
- Favori a non-mechanical valve!



Recommendations	Class ^a	Level ^b
After a transient ischaemic attack, cardiac surgery, if indicated, is recommended without delay. ^{454,468}	I	B
After a stroke, surgery is recommended without any delay in the presence of HF, uncontrolled infection, abscess, or persistent high embolic risk, as long as coma is absent and the presence of cerebral haemorrhage has been excluded by cranial CT or MRI. ^{451,468,473,567,568,570–578}	I	B

IE WITH LARGE VEGETATION



- Embolic risk in IE is high, with 20-50% of patients being affected
- Highest incidence: around the initial diagnosis of IE, at the time of therapy initiation!
- Significant decrease after 2 weeks of treatment
- Risk factors: Size, mobility, location (left side), increasing size, previous embolism, multivalvular involvement, particular micro-organisms (S.Aureus)
- How big is big? Guidelines > 10 mm...

(iii) Prevention of embolism

Urgent^d surgery is recommended in aortic or mitral NVE or PVE with persistent vegetations ≥ 10 mm after one or more embolic episodes despite appropriate antibiotic therapy.^{451,455,457,471,478}

Urgent^d surgery is recommended in IE with vegetation ≥ 10 mm and other indications for surgery.^{5,460,465,466,471,478}

Urgent^d surgery may be considered in aortic or mitral IE with vegetation ≥ 10 mm and without severe valve dysfunction or without clinical evidence of embolism and low surgical risk.^{460,463,465,473,478}

I	B
I	C
IIb	B

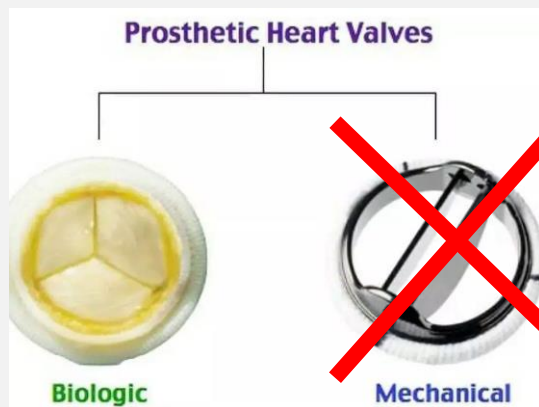
AU FINAL, QUI TEMPORISER?



EI AVEC AVC HÉMORRAGIQUE



- Decisions should be taken on a case-by-case basis by the Endocarditis Team!
- Neurological expertise is recommended: Mechanism of hemorrhage, volume measurement...
- Bioprosthesis or plasty +++
- Timing of surgery remains controversial...



Following intracranial haemorrhage, delaying cardiac surgery >1 month, if possible, with frequent re-assessment of the patient's clinical condition and imaging should be considered.⁵⁷¹

IIa

C

In patients with intracranial haemorrhage and unstable clinical status due to HF, uncontrolled infection or persistent high embolic risk, urgent or emergency surgery should be considered weighing the likelihood of a meaningful neurological outcome.^{199,581-584}

IIa

C

SEVERE VALVULAR REGURGITATION BUT:

- In fully/totally asymptomatic patient
- Excellent evolution under medical therapy, sensitive germ
- No structural cardiac consequences: no LV enlargement, no pulmonary hypertension, no AF, no left side elevated pressure, EF normal etc.
- Forget the infection and consider the patient as any valvular patient!
- Wait and see, just be careful about follow-up...



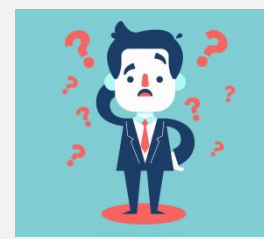
Wait and See



APPRÉCIER LE RISQUE OPÉRATOIRE



QUID DES SCORES?



EuroSCORE II underestimates mortality after cardiac surgery for infective endocarditis

Solène Patrat-Delon^a, Adrien Rouxel^b, Arnaud Gacouin^a, Matthieu Revest^a, Erwan Flécher^c, Olivier Fouquet^d, Yves Le Tulzo^a, Nicolas Lerolle^b, Pierre Tattevin^a and Jean-Marc Tadié^{a,*}

Assessment of perioperative mortality risk in patients with infective endocarditis undergoing cardiac surgery: performance of the EuroSCORE I and II logistic models

Sérgio Madeira^{a,*}, Ricardo Rodrigues^b, António Tralhão^a, Miguel Santos^a, Carla Almeida^a, Marta Marques^c, Jorge Ferreira^a, Luís Raposo^a, José Neves^c and Miguel Mendes^a

ORIGINAL RESEARCH



Simple Scoring System to Predict In-Hospital Mortality After Surgery for Infective Endocarditis

Giuseppe Gatti, MD; Andrea Perrotti, MD; Jean-François Obadia, MD, PhD; Xavier Duval, MD, PhD; Bernard Lung, MD; François Alla, MD, PhD; Catherine Chirouze, MD, PhD; Christine Selton-Suty, MD, PhD; Bruno Hoen, MD, PhD; Gianfranco Sinagra, MD, FESC; François Delahaye, MD; Pierre Tattevin, MD; Vincent Le Moing, MD; Aniello Pappalardo, MD; Sidney Chocron, MD, PhD; on behalf of The Association for the Study and Prevention of Infective Endocarditis Study Group—Association pour l'Étude et la Prévention de l'Endocardite Infectieuse (AEPEI)*

International Journal of Cardiology 202 (2016) 960

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International Journal of Cardiology

ELSEVIER journal homepage: www.elsevier.com/locate/ijcard

Risk scores for endocarditis surgery: Callout for reporting logistic models

Tom Kai Ming Wang*

Green Lane Cardiovascular Service, Auckland City Hospital, Auckland, New Zealand



EN PRATIQUE

- 1) Voir le malade
- 2) Du bon sens
- 3) En équipe

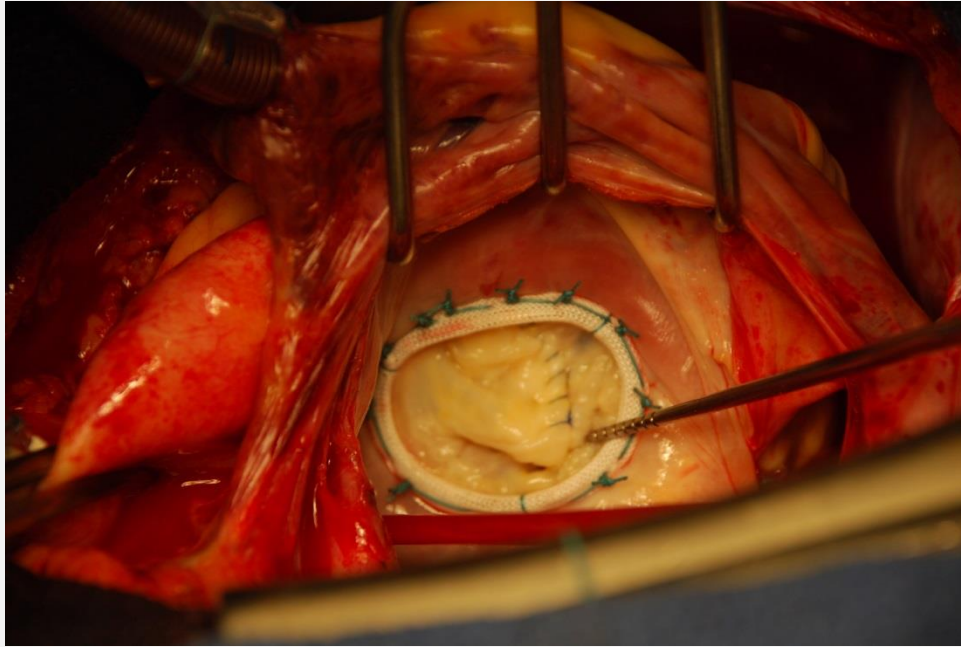


QUELLE CHIRURGIE?

- Un principe: La résection carcinologique



PLASTIE OU REMPLACEMENT?

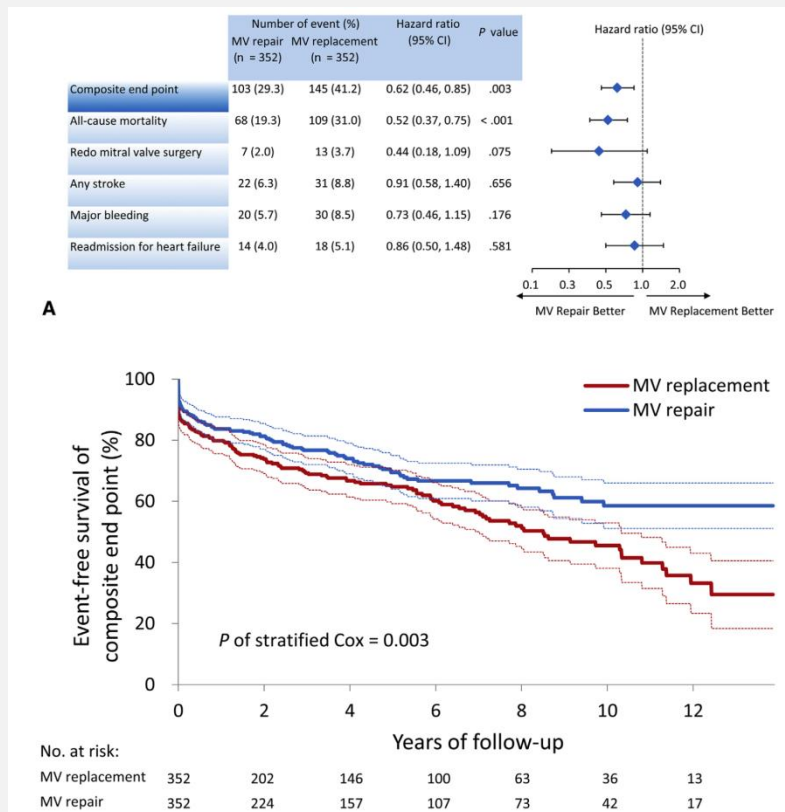


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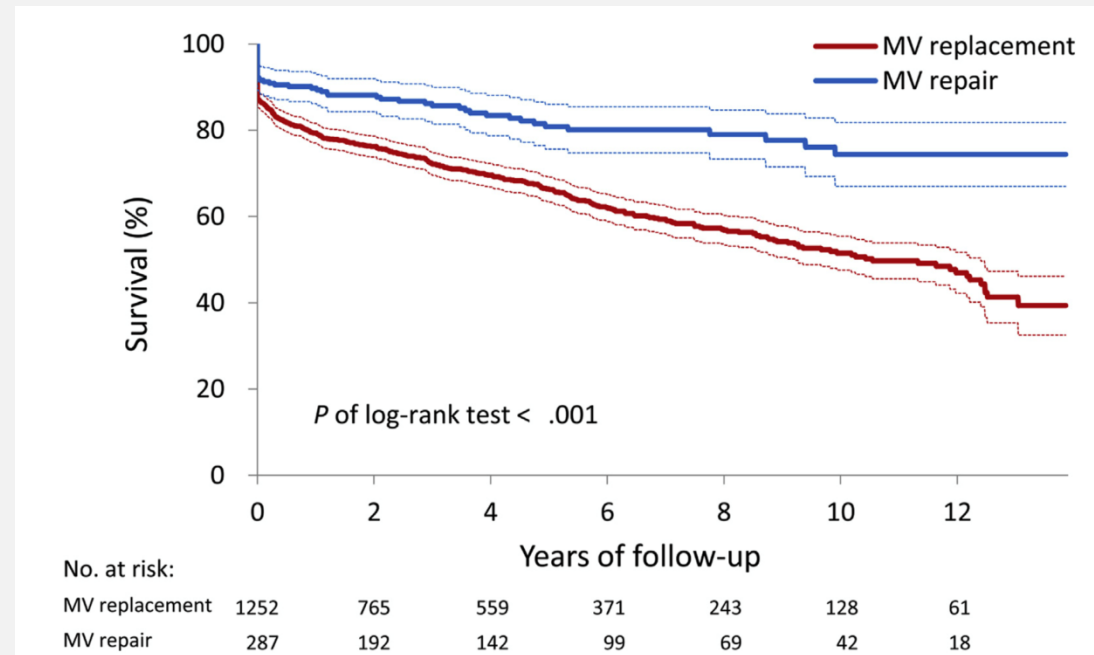
Nationwide cohort study of mitral valve repair versus replacement for infective endocarditis



Hsiu-An Lee, MD,^a Yu-Ting Cheng, MD,^a Victor Chien-Chia Wu, MD,^b An-Hsun Chou, MD, PhD,^c Pao-Hsien Chu, MD,^b Feng-Chun Tsai, MD,^a and Shao-Wei Chen, MD^{a,d}



(J Thorac Cardiovasc Surg 2018;156:1473-83)



Mitral valve repair versus replacement for infective endocarditis. What is better in the “real world”?

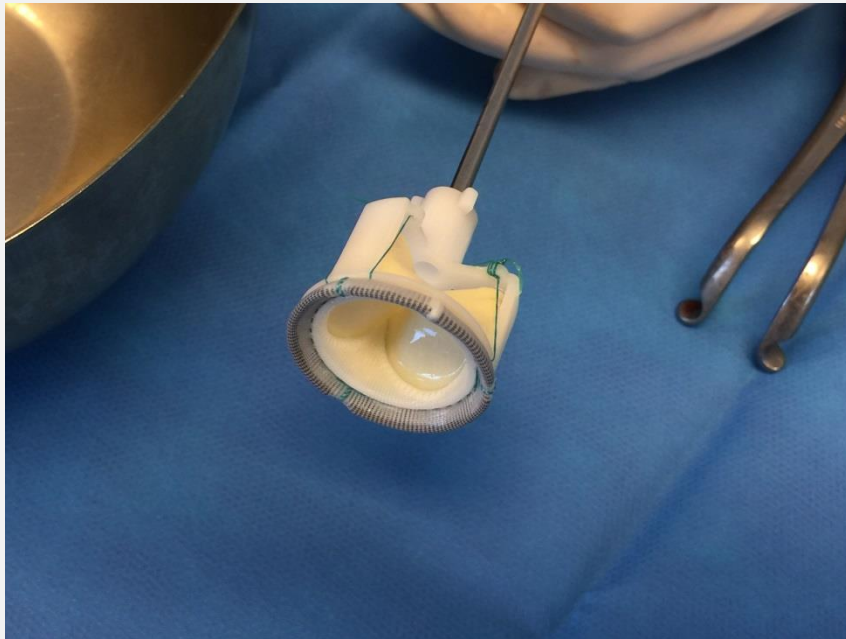


Manuel J. Antunes, MD, PhD, DSc

Central Message

Mitral valve repair is superior to replacement in patients with infective endocarditis and should be pursued, whenever feasible, by surgeons with experience in these procedures and pathology.

BIOLOGIQUE OU MÉCANIQUE?

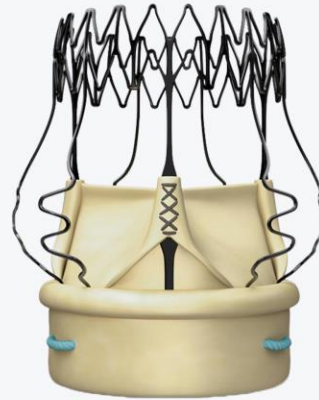
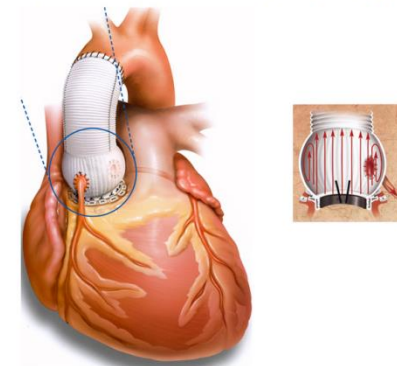


?

WHAT ELSE?

- Root replacement
- Xénogreffe
- Homogreffe
- Transplantation
- Et d'autres...

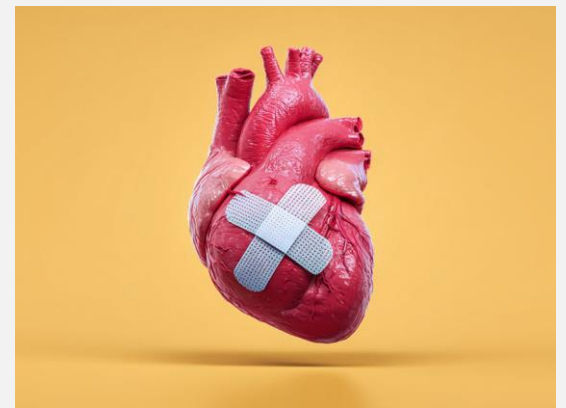
BENTALL MODIFIÉ – TUBE SINUSAL



RESEARCH NOTE

Heart transplantation as salvage treatment of intractable infective endocarditis

Marie Aymami¹, Matthieu Revest^{2,3}, Caroline Piau⁴,
Céline Chabanne¹, François Le Gall⁵, Bernard Lelong¹,
Jean-Philippe Verhoye¹, Christian Michelet^{2,3,6},
Pierre Tattevin^{2,3,7} and Erwan Flécher¹



ET EN PRATIQUE, AU BLOC...

- Installation: scarpa dans le champ opératoire
- **ETO** en place et vérification avant incision
- Canulation bi-cave (abcès, fistule, surprise per op...)
- Matériel chirurgical disponible: patch péricardique, full root, homogreffe exceptionnellement...
- **Parage chirurgical de tous les tissus infectés et ... réfléchir à la reconstruction ensuite! (oups!)**
- Prélèvements bactériologiques +++ (direct)
- Protection myocardique: chirurgie longue!
- Chirurgien senior, difficultés techniques!

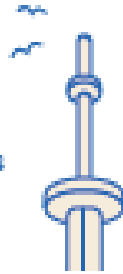


TAKE HOME MESSAGES

- IE remain a severe disease and often a surgical challenge
- Meet the patient! Do not decide only on the paper and medical file!
- Keep it as simple as possible! Biological valves +++
- **If surgery is required, why should we wait?**
- The more you wait, the more damages you got, lower the results are!
- In real life another limit should be taken account: access to the Operating Theater!

ISCVID

18th International Symposium
On Modern Concepts in Endocarditis
And Cardiovascular Infections



2026

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- Infectiologues/Cardiologues/microbios/chir cardiaque/imagerie
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