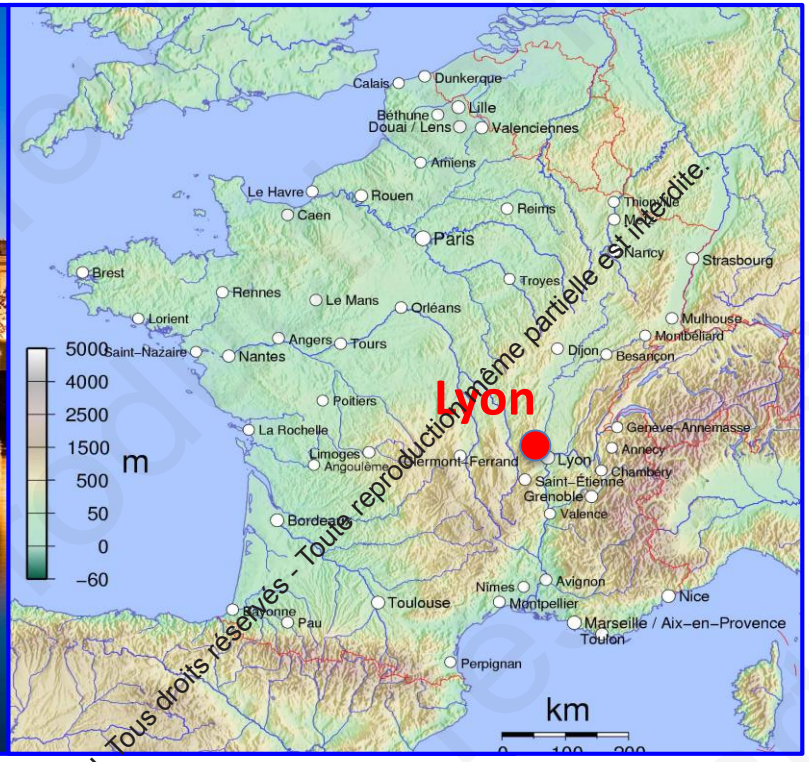
Hospices Civils de Lyon

# 2021 European Guidelines on Valvular diseases






## Cardiothoracic and Vascular Surgery Department
## Hôpital Louis Pradel
## LYON - France

# Disclosure :

**Abbott, Carmat, Delacroix Chevalier, Landanger, Medtronic**

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# 2021 Guidelines - primary MR



| New or Revised | Recommendations in 2017 version | Class | Recommendations in 2021 version | Class |
|---|---|---|---|---|
| ***Section 6. Indications for intervention in severe primary mitral regurgitation*** | | | | |
| Revised | Surgery is indicated in asymptomatic patients with LV dysfunction (LVESD≥45 mm and/or LVEF ≤60%). | I | Surgery is recommended in asymptomatic patients with LV dysfunction (LVESD ≥40 mm and/or LVEF ≤60%). | I |
| Revised | Surgery should be considered in asymptomatic patients with preserved LV function (LVESD <45 mm and LVEF >60%) and AF secondary to mitral regurgitation or pulmonary hypertension (SPAP at rest >50 mmHg). | IIa | Surgery should be considered in asymptomatic patients with preserved LV function (LVESD <40 mm and LVEF >60%) and AF secondary to mitral regurgitation or pulmonary hypertension (SPAP at rest >50 mmHg). | IIa |
| Revised | Surgery should be considered in asymptomatic patients with preserved LVEF (>60%) and LVESD 40–44 mm when a durable repair is likely, surgical risk is low, the repair is performed in a Heart Valve Centre and at least one of the following findings is present:<br>• flail leaflet or;<br>• presence of significant LA dilatation (volume index ≥60 mL/m$^2$ BSA) in sinus rhythm. | IIa | Surgical mitral valve repair should be considered in low-risk asymptomatic patients with LVEF >60%, LVESD <40 mm and significant LA dilatation (volume index ≥60 mL/m$^2$ or diameter ≥55 mm) when performed in a Heart Valve Centre and a durable repair is likely. | IIa |

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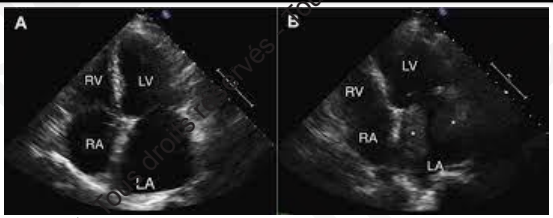
# 2020 Guidelines - primary MR

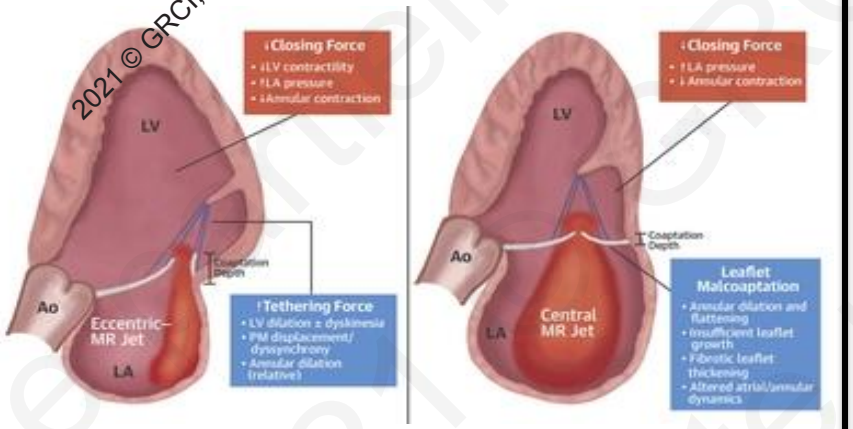
**Recommendations for Intervention for Chronic Primary MR**
**Referenced studies that support the recommendations are summarized in Online Data Supplement 30.**

| COR | LOE | RECOMMENDATIONS |
|---|---|---|
| 1 | B-NR | 1. In symptomatic patients with severe primary MR (Stage D), mitral valve intervention is recommended irrespective of LV systolic function (269,302). |
| 1 | B-NR | 2. In asymptomatic patients with severe primary MR and LV systolic dysfunction (LVEF ≤60%, LVESD ≥40 mm) (Stage C2), mitral valve surgery is recommended (261,262,272,273,275,303-305). |
| 1 | B-NR | 3. In patients with severe primary MR for whom surgery is indicated, mitral valve repair is recommended in preference to mitral valve replacement when the anatomic cause of MR is degenerative disease, if a successful and durable repair is possible (276,306-309). |
| 2a | B-NR | 4. In asymptomatic patients with severe primary MR and normal LV systolic function (LVEF ≥60% and LVESD ≤40 mm) (Stage C1), mitral valve repair is reasonable when the likelihood of a successful and durable repair without residual MR is >95% with an expected mortality rate of <1%, when it can be performed at a Primary or Comprehensive Valve Center (273,308,310). |
| 2b | C-LD | 5. In asymptomatic patients with severe primary MR and normal LV systolic function (LVEF >60% and LVESD <40 mm) (Stage C1) but with a progressive increase in LV size or decrease in EF on ≥3 serial imaging studies, mitral valve surgery may be considered irrespective of the probability of a successful and durable repair (310). |
| 2a | B-NR | 6. In severely symptomatic patients (NYHA class III or IV) with primary severe MR and high or prohibitive surgical risk, transcatheter edge-to-edge repair (TEER) is reasonable if mitral valve anatomy is favorable for the repair procedure and patient life expectancy is at least 1 year (311,312). |

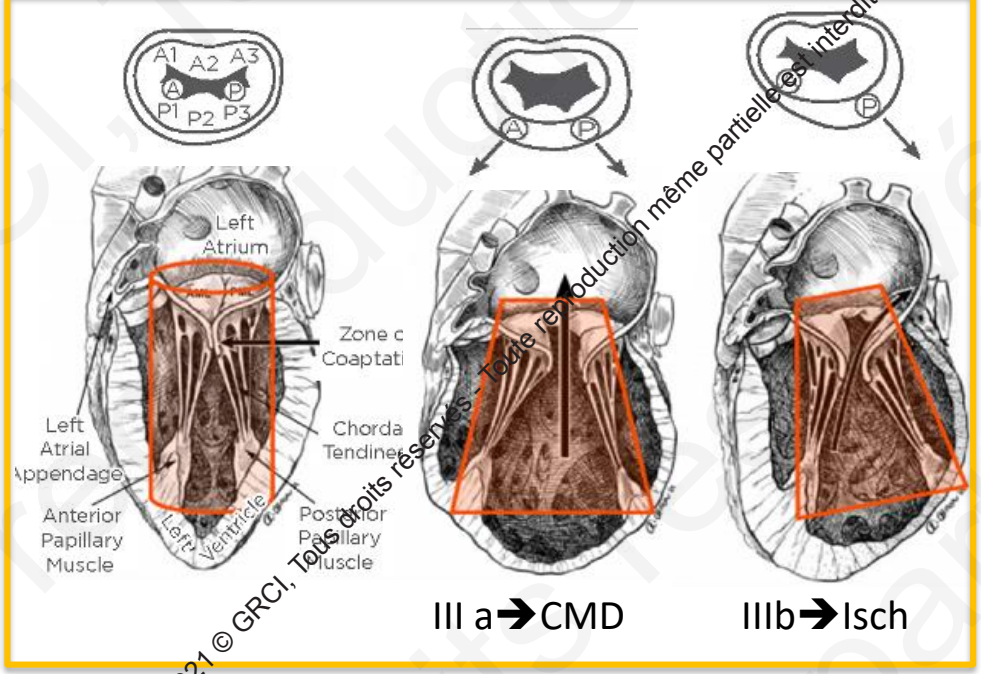
# Functional ➔ Secondary

## Atrial Secondary MR




## Ventricular Secondary MR



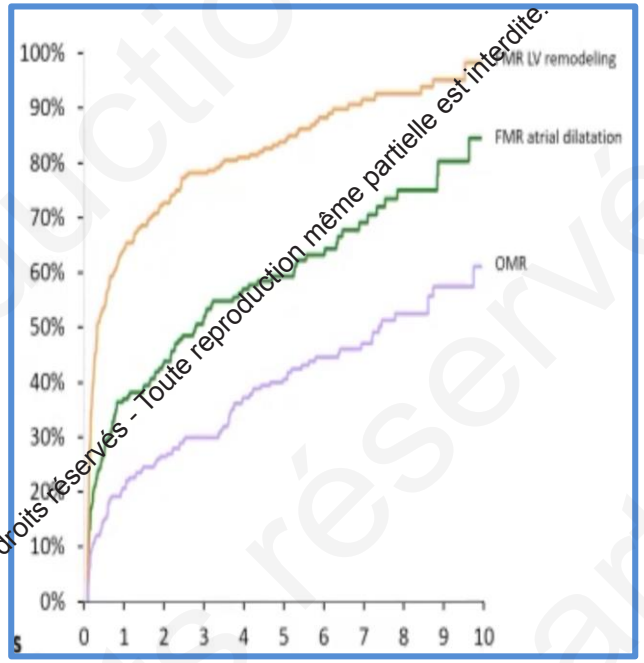

Carpentier type IIIa restriction in systole and diastole.
Carpentier type IIIb restriction in systole.

***Causes and mechanisms of isolated mitral regurgitation in the community: clinical context and outcome. Dziadzko et al. Eur Heart J. 2019***

| MR ≥ Moderate Olmsted County | FMR ventricular remodeling | FMR isolated atrial dilatation | OMR | p-value |
|---|---|---|---|---|
| Total number of cases (%) | 278 (38) | 194 (27) | 233 (32) | |
| Age at diagnosis, years | 73±14 | 80±10 | 68±21 | <.0001 |
| Sex, male, % | 59 | 32 | 51 | <.0001 |
| Dyspnea, % | 74 | 66 | 49 | <.0001 |
| Atrial fibrillation/flutter,% | 28 | 54 | 13 | <.0001 |
| History of Heart failure,% | 49 | 32 | 12 | <.0001 |
| LA volume, ml | 102±33 | 94±30 | 91±35 | 0.005 |
| MV RVol, ml | 38±13 | 37±11 | 51±24 | <.0001 |
| MV ERO, cm² | 0.24±0.10 | 0.20±0.08 | 0.31±0.19 | <.0001 |
| LVEF, % | 33±14 | 57±11 | 61±10 | <.0001 |

***Causes and mechanisms of isolated mitral regurgitation in the community: clinical context and outcome. Dziadzko et al. Eur Heart J. 2019***

| MR ≥ Moderate Olmsted County | FMR ventricular remodeling | FMR isolated atrial dilatation | OMR | p-value |
|---|---|---|---|---|
| LV EDD, mm | 59±8 | 48±5 | 51±8 | <.0001 |
| LV ESD, mm | 49±10 | 32±6 | 32±7 | <.0001 |
| LV mass index, g/m² | 135±34 | 106±30 | 108±29 | <.0001 |
| PASP, mmHg | 52±14 | 48±14 | 44±18 | <.0001 |
| MV repair/ replacement, (%) | 10(4%) | 6(3%) | 86(37%) | 102(14%) |



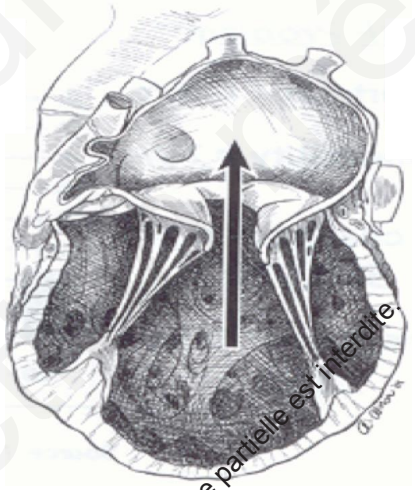
***Causes and mechanisms of isolated mitral regurgitation in the community: clinical context and outcome. Dziadzko et al. Eur Heart J. 2019***

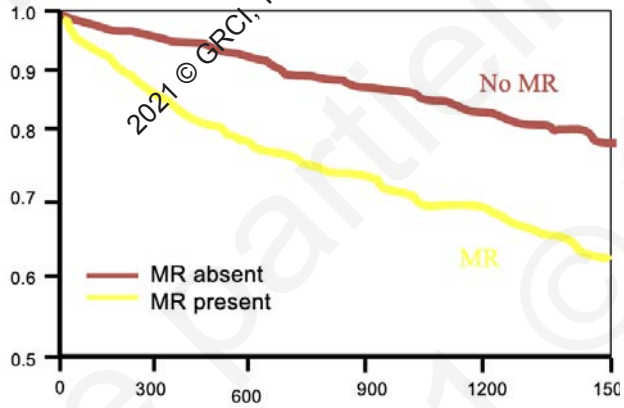


## MR and surgery

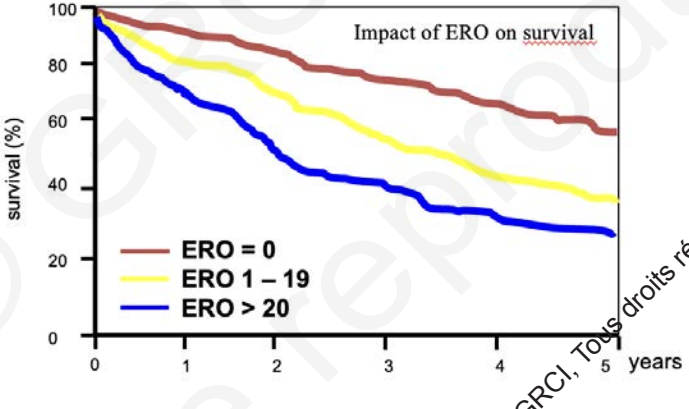
| | FMR isolated atrial dilatation (n=194) | OMR (n=233) | Total (n=705) |
|---|---|---|---|
| MV repair/ replacement, (%) | 6(3%) | 86(37%) | 102(14%) |
| Any cardiac surgery, n(%) | 12(6%) | 86(37%) | 123(17%) |
| MV repair/ replacement by MR severity | | | |
| Moderate MR, n(%) in subset | 5(3%) (n=175) | 22(18%) n=124 | 31(6%) (n=491) |
| Severe MR, n(%) in subset | 1(5%) (n=19) | 64(59%) (n=109) | 71(33%) (n=214) |

# Vent-SMR : the more the poorer

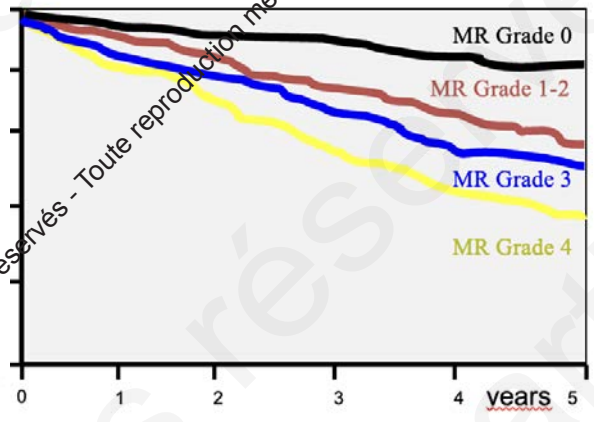





*Survival and Ventricular Enlargement Investigators; Lamas, et al Circulation. 1997;96:827-833*




*Grigioni F; Enriquez-Sarano M et al. Circulation. 2001;103:1759-1764*




*Ellis SG et al. Am J Cardiol; 2002, 89, 315-318*

# vent-SMR : the more the poorer

469 pts, mean age 59.6+13.3, isch. 36%. 9.6% NYHA I, **57.8% II, 30.3% III**, 2.3% IV, LVEF 29.7+7.9%

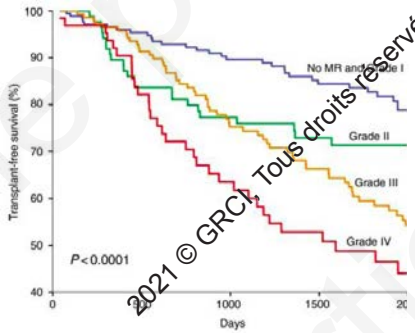



**Table 2** Multivariable regression model for death or heart transplant in the entire population

| | Adjusted HR | 95% CI | P |
|---|---|---|---|
| No FMR or Grade I (referent group) | 1 | | |
| FMR Grade II | 1.32 | 0.82–2.13 | 0.247 |
| FMR Grade III | 2.02 | 1.36–3.01 | 0.0005 |
| FMR Grade IV | 2.56 | 1.59–4.10 | 0.0001 |

Bursi F. EJHF (2010) 12, 382

Retrospective, 1256 pts, mean age 67, 27% no FMR, 49% mild-moderate FMR, 24% severe FMR

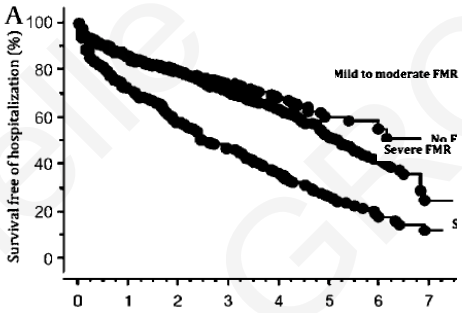
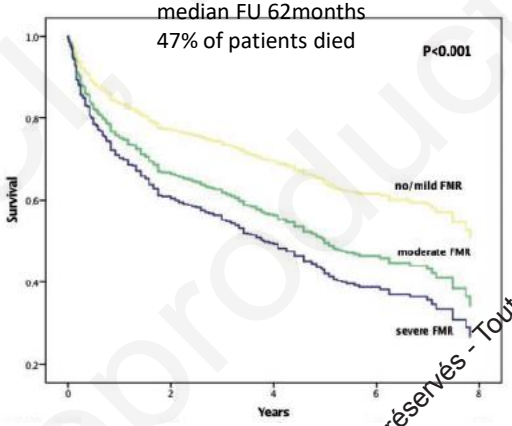



**Table 3** Cox proportional hazard model (multivariate analysis) considering both primary and secondary end points

| Primary end point (death or hospitalisation) | $\chi^2$ | HR (95% CI) | p Value |
|---|---|---|---|
| Age >65 (yes-no) | 16 | 1.6 (1.3 to 2.1) | <0.0001 |
| NYHA class III-IV vs I-II | 39 | 2.1 (1.7 to 2.7) | <0.0001 |
| Severe FMR (yes-no) | 11 | 1.5 (1.2 to 1.9) | 0.001 |

Rosi A. Heart 2011;97:1675e1680

576 pts, mean age 58, med NT-proBNP 2360 pg/mL
LV function significantly reduced in 84%
41% NYHA III / 21% IV
median FU 62months
47% of patients died

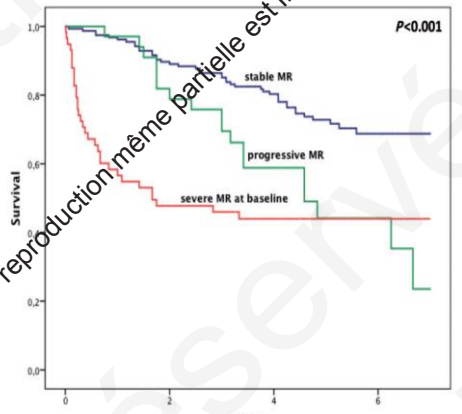



Survival curves of long term mortality according to the severity of FMR adjusted for the clinical confounder model: age, sex, isch. etiology, serum creat, and NT proBNP

Goliash G. EHJ (2018) 39, 39–46

**Evolution of secondary mitral regurgitation**

Philipp E. Bartko[1,2], Noemi Pavo[1], Ana Pérez-Serradilla[1], Henrike Arfsten[1], Stephanie Neuhold[3], Raphael Wurm[1], Irene M. Lang[1], Gerhard Strunk[4], Jacob P. Dal-Bianco[2], Robert A. Levine[2], Martin Hülsmann[1], and Georg Goliasch[1]*




| | | | | |
|---|---|---|---|---|
| Stable MR | 157 | 138 | 108 | 34 |
| Progressive MR | 34 | 27 | 16 | 6 |
| Severe MR at baseline | 58 | 27 | 19 | 9 |

E Bartko 2018EHJ Cardiov Imaging

**2003** GUIDELINES

American Society of Echocardiography:
Recommendations for Evaluation of the Severity of Native Valvular Regurgitation with Two-dimensional and Doppler Echocardiography

>40mm²

**2007**

ESC Guidelines

Guidelines on the management of valvular heart disease

The Task Force on the Management of Valvular Heart Di
of the European Society of Cardiology
methods adds important information. In isch
lower thresholds of severity, using quantitativ
have been propose >20mm² or ERO and 30 mL
tant volume).[24,110]

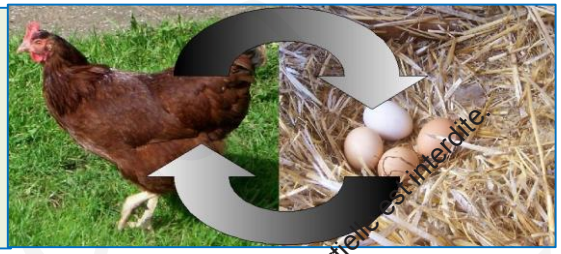
**2014 AHA/ACC Guideline for the Management of Patients With Valvular Hear**

A Report of the American College
Task Force on Practice Guidelines

Secondary MR

SOR >20mm² more sensitive
>0.40mm² more specific

**The more the poorer…**



**2017 ESC/EACTS Guidelines**

SOR >20mm²

ESC European Society of Cardiology

European Heart Journal (2017) **38**, 2739–2786
doi:10.1093/eurheartj/ehx391

# Background on SMR



**2003 GUIDELINES**

American Society of Echocardiography: Recommendations for Evaluation of the Severity of Native Valvular Regurgitation with Two-dimensional and Doppler Echocardiography

| Parameter | Mild | Moderate | Severe |
|---|---|---|---|
| Quantitative parameters** | | | |
| VC width (cm) | <0.3 | 0.3–0.69 | ≥0.7 |
| R Vol (mL/beat) | <30 | 30–44 | 45–59 ≥60 |
| RF (%) | <30 | 30–39 | |
| EROA (cm²) | <0.20 | 0.20–0.29 | |

>40mm²

**2007**

ESC Guidelines

Guidelines on the management of valvular heart disease

The Task Force on the Management of Valvular Heart Disease of the European Society of Cardiology

methods adds important information. In ischaemic MR, lower thresholds of severity, using quantitative methods, have been proposed (20 mm² for ERO and 30 mL for regurgitant volume).[24,110]

>20mm²

**2014 AHA/ACC Guideline for the Management of Patients With Valvular Heart Disea**

A Report of the American College of Cardiology/American He

Task Force on Practice Guidelines

>40mm²

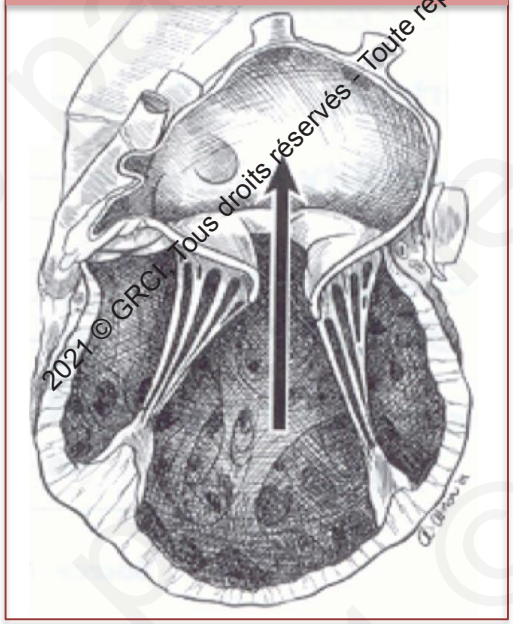
**2017 AHA/ACC Focused Update of the 2014 AHA/ACC Guideline for the Management of Patients With Valvular Heart Disease**

>20mm²

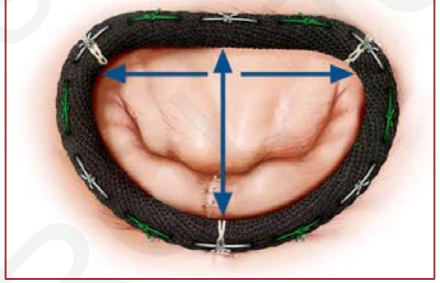
on the basis of the criteria used for determination of "severe" MR in RCTs of surgical intervention for secondary MR (69-72), the recommended definition of severe secondary MR is now the same as for primary MR (effective regurgitant orifice ≥0.4 cm² and regurgitant ≥60 mL), with the understanding that effective regurgitant orifice cutoff of >0.2 cm² is more sensitive and >0.4 cm² is more specific for severe MR. However, it

# Background

## Secondary / Functional



## Treatment



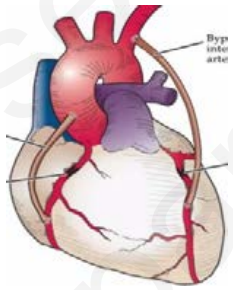
## Recommendations

**2017 ESC/EACTS Guidelines**

***……..a percutaneous edge-to-edge procedure may be considered…..***

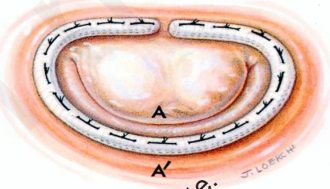

***-Grigioni et al Circulation 2001***

***-Baumgartner et al. Europ Heart J 2017***



# Coronary Artery Bypass Surgery With or Without Mitral Valve Annuloplasty in Moderate Functional Ischemic Mitral Regurgitation

## Final Results of the Randomized Ischemic Mitral Evaluation (RIME)




K.M. John Chan, FRCS CTh; Prakash P. Punjabi, FRCS CTh; Marcus Flather, MD, FRCP; Riccardo Wage, DCR (R); Karen Symmonds, DCR (R); Isabelle Roussin, MD; Shelley Rahman-Haley, MD, FRCP; Dudley J. Pennell, MD, FRCP; Philip J. Kilner, MD, PhD;

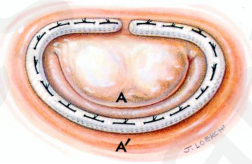


**Table 3. Study End Points at 1 Year**

*RIME Study Circulation. 2012;126:2502-2510*

| End Points | CABG (n=32) Baseline | CABG (n=32) 1 Year | CABG (n=32) Δ | CABG+MVR (n=27) Baseline | CABG+MVR (n=27) 1 Year | CABG+MVR (n=27) Δ | *P* Value* |
|---|---|---|---|---|---|---|---|
| Primary end point | | | | | | | |
| Peak $VO_2$, ml/kg/min | 15.1±3.3 | 15.9±2.5 | 0.8±2.9 | 14.8±3.2 | 18.1±2.9 | 3.3±2.3 | <0.001 |
| Secondary end points | | | | | | | |
| LV ESVI, ml/$m^2$† | 71.8±16.1 | 67.4±20.4 | −4.4±17.4 | 78.4±26.5 | 56.2±14.9 | −22.2±25.6 | 0.002 |
| MR volume, ml/beat† | 31.9±14.8 | 22.7±14.6 | −9.2±19.1 | 35.4±24.0 | 7.2±3.5 | −28.2±24.6 | 0.001 |
| BNP (pg/ml) | 681.4±197.3 | 286.7±132.0 | −394.7±213.6 | 748.1±158.3 | 190.7±117.8 | −557.4±182.9 | 0.003 |



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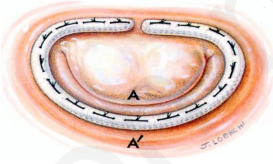
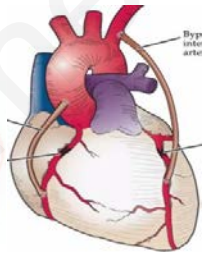
***Cardiothoracic Surgical Trials Network***

***primary end point ➔ LV ESVI***



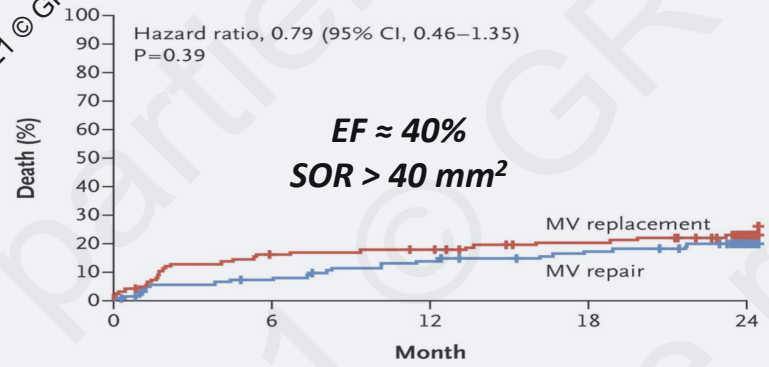


## Mitral-Valve Repair versus Replacement for Severe Ischemic Mitral Regurgitation

1 year ➔ 2014 (*MA Acker*)

2 years ➔ 2016 (*D Goldstein*)

**251 Pts with Severe SMR**




***EF ≈ 40%***

***SOR > 40 mm²***

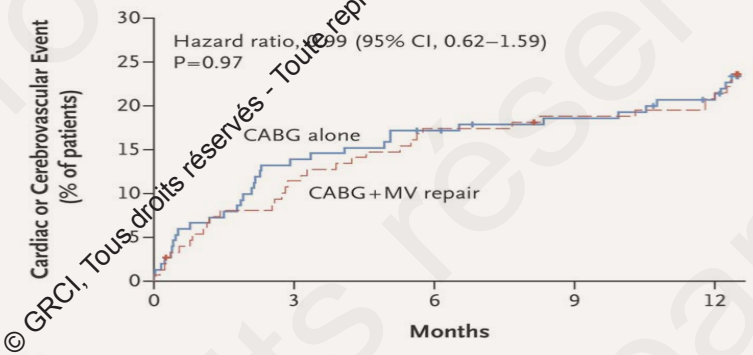
| No. at Risk | | | | | |
|---|---|---|---|---|---|
| MV repair | 126 | 113 | 104 | 97 | 64 |
| MV replacement | 125 | 103 | 100 | 92 | 65 |

## Surgical Treatment of Moderate Ischemic Mitral Regurgitation

1 year ➔ 2014 (*PK Smith*)

2 years ➔ 2016 (*RE Mischler*)

**301 Pts with moderate SMR + CABG**




| No. at Risk | | | | | |
|---|---|---|---|---|---|
| CABG alone | 151 | 130 | 124 | 120 | 114 |
| CABG+MV repair | 150 | 132 | 123 | 120 | 116 |

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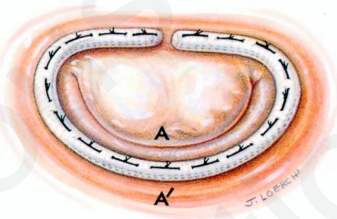
***Cardiothoracic Surgical Trials Network***

***primary end point ➔ LV ESVI***



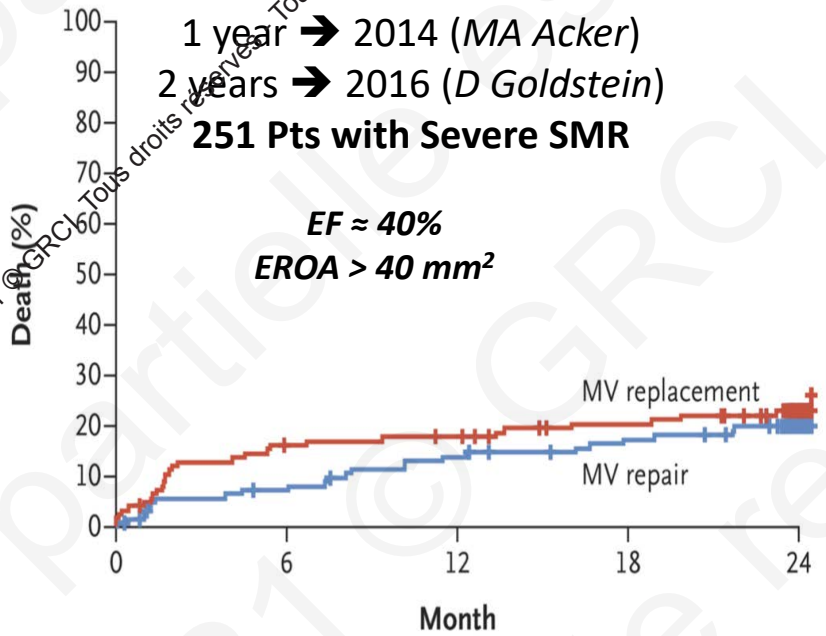

1 year ➔ 2014 (*MA Acker*)

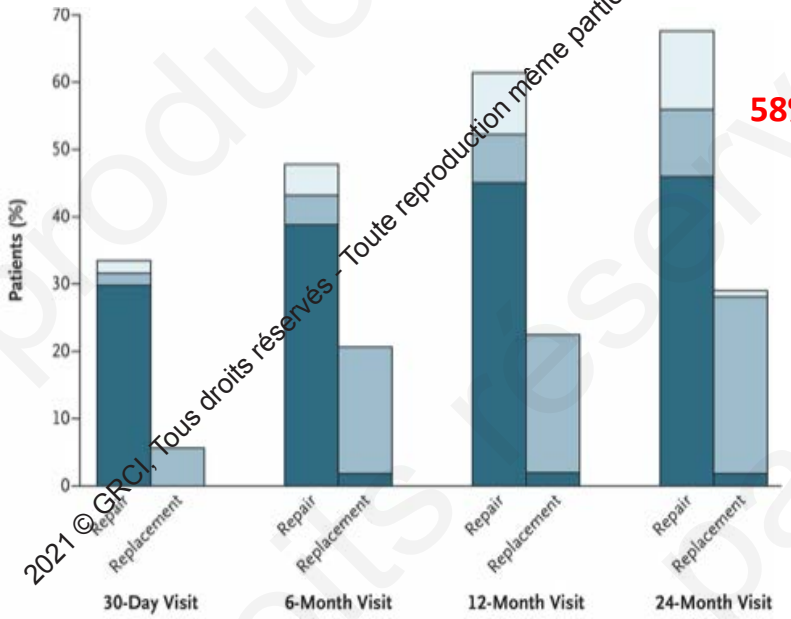
2 years ➔ 2016 (*D Goldstein*)

**251 Pts with Severe SMR**

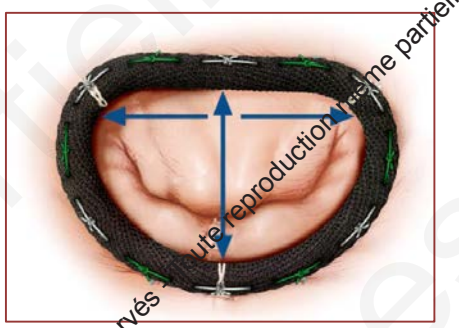
***EF ≈ 40%***

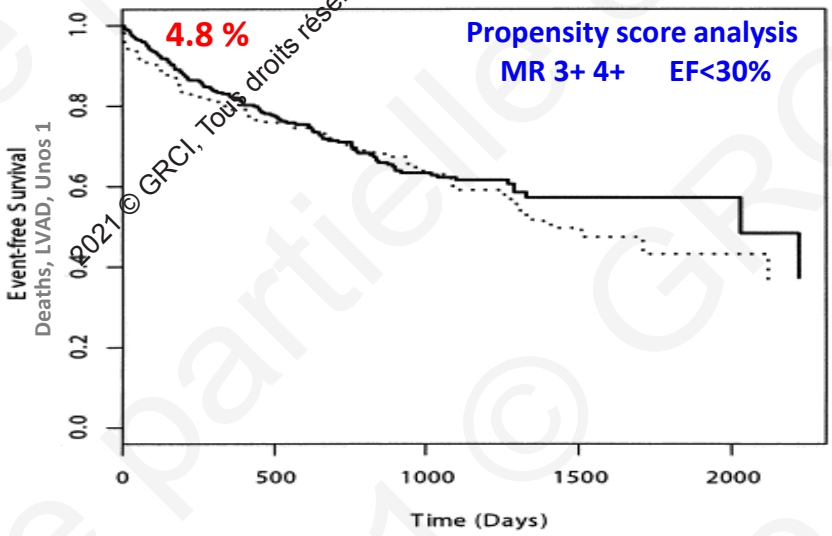
***EROA > 40 mm²***



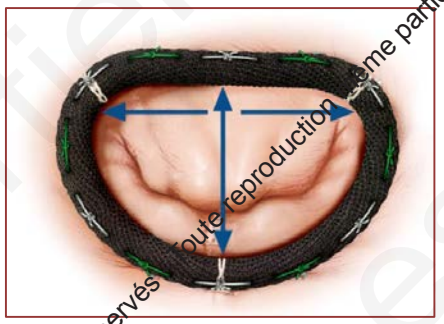




**58%**

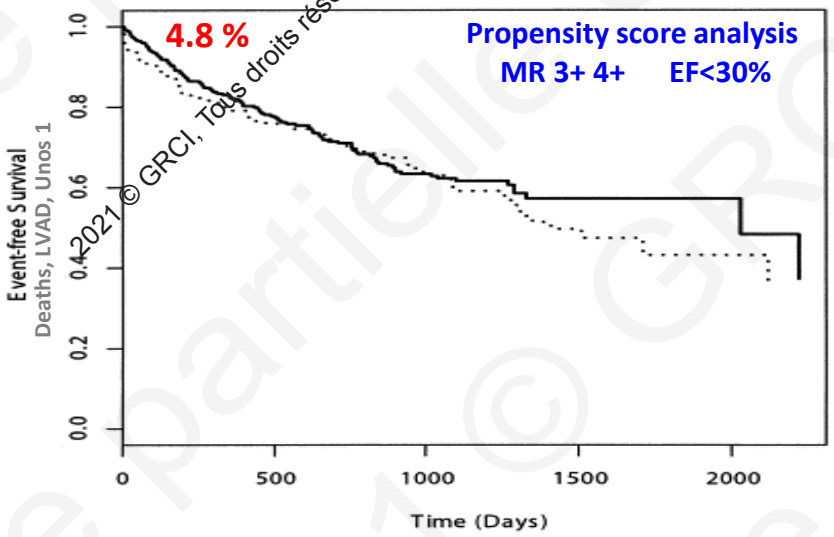




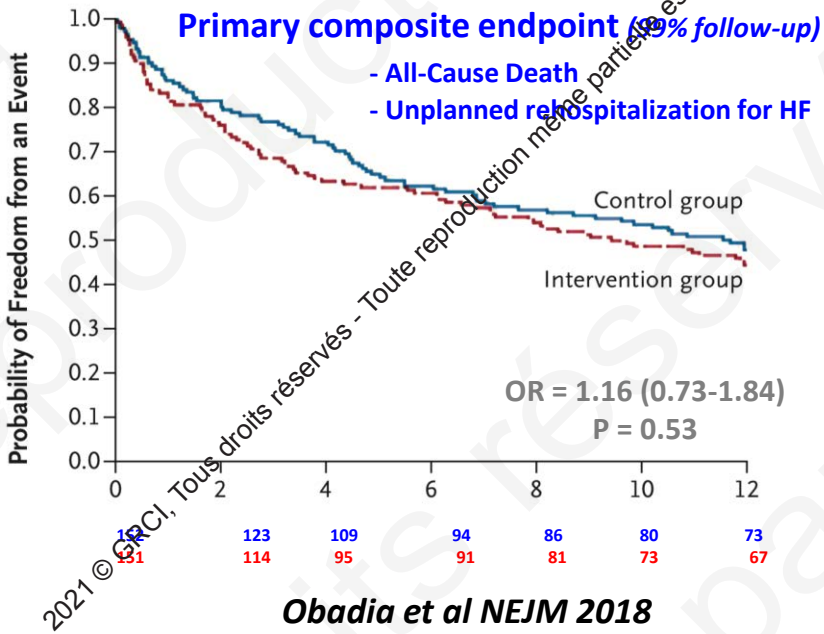

***Wu, Bolling et al JACC 2005***








*Wu, Bolling et al JACC 2005*




*Obadia et al NEJM 2018*

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The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

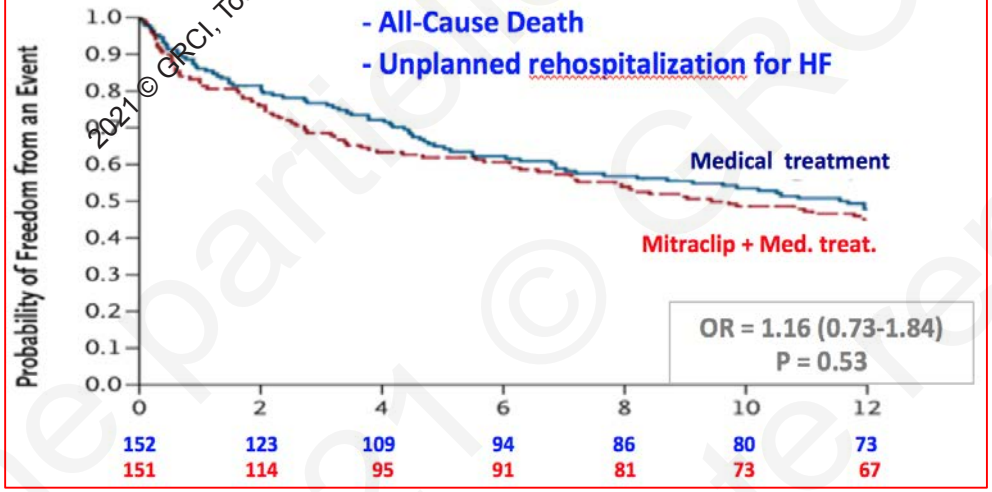
## Percutaneous Repair or Medical Treatment for Secondary Mitral Regurgitation

J.-F. Obadia, D. Messika-Zeitoun, G. Leurent, B. Iung, G. Bonnet, F. Pirio, T. Lefèvre, C. Piot, F. Rouleau, D. Carrié, M. Nejjari, P. Ohlmann, J. Leclercq, C. Saint Etienne, E. Teiger, J. Leroux, N. Karam, N. Michel, M. Willard, J. Chevalier, J.-N. Trochu, B. Cormier, V. Armoiry, F. Boutitie, D. Maucort-Boulch, H. Barnel, G. Samson, P. Guerin, A. Vahanian, and N. Mewton, for the MITRA-FR Investigators.

Mitra.fr 27-08-2018

### Primary composite endpoint *(99% follow-up)*

- All-Cause Death
- Unplanned rehospitalization for HF



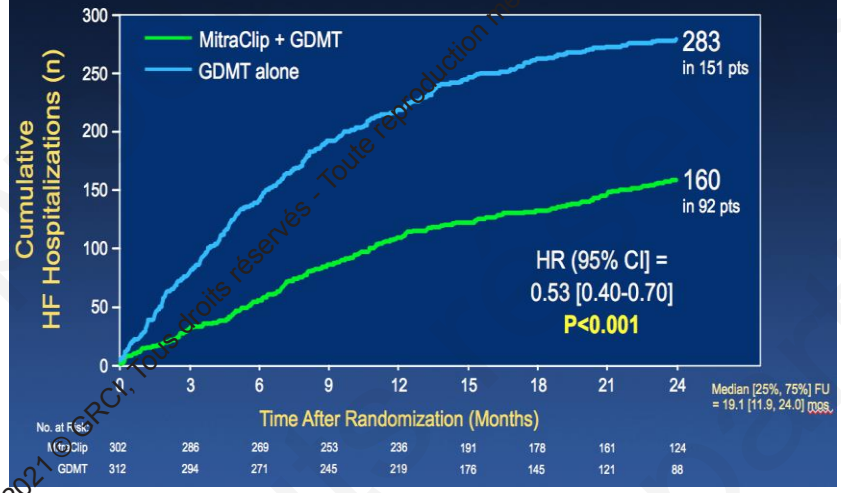

ORIGINAL ARTICLE

## Transcatheter Mitral-Valve Repair in Patients with Heart Failure

G.W. Stone, J.A. Lindenfeld, W.T. Abraham, S. Kar, J.S. Lim, D.L. Mishell, B. Whisenant, P.A. Grayburn, M. Rinaldi, S.R. Kapadia, V. Rajagopal, I.J. Sarembock, A. Brieke, S.O. Marx, D.J. Cohen, N.J. Weissman, and M.J. Mack, for the COAPT Investigators*

Coapt 23-09-2018

### All Hospitalizations for HF within 24 months



# Great Debate in SMR

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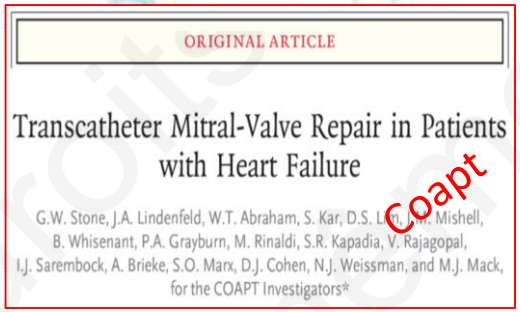
Mitra.fr COAPT TRIAL

>>> 20 Editorials
>>> 400 citations


The NEW ENGLAND JOURNAL of MEDICINE

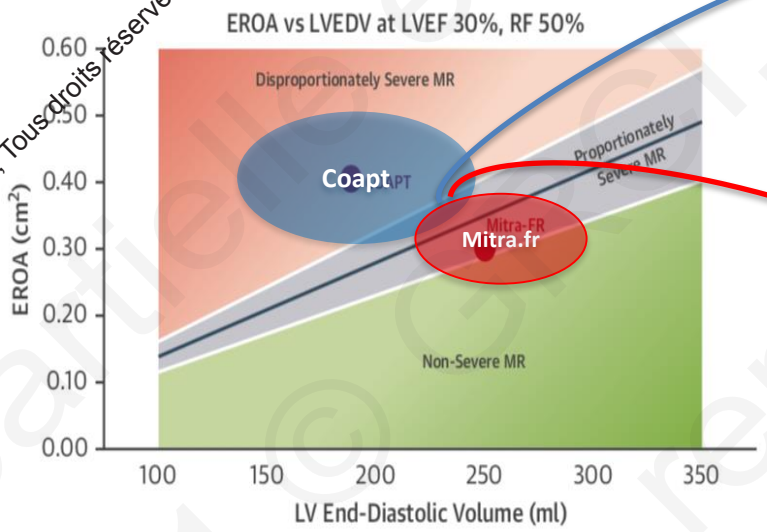




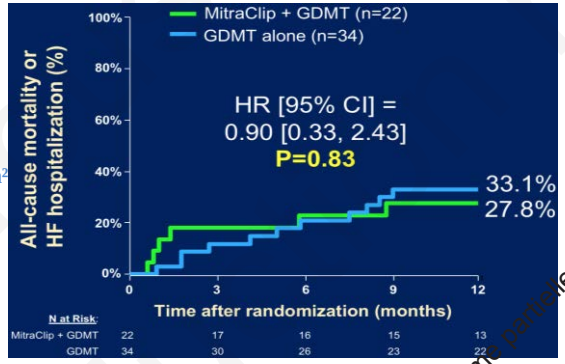

| | Mitra-fr (n=304) | COAPT (n=614) |
|---|---|---|
| Patient Selection | Each individual Center | Centralized |
| Exclusion criteria | | ESD > 70mm, PAPs > 70mmHg |
| Technical Impl. success | 96% | 98% |
| EROA (mean ± SD) | 31 ± 10 $mm^2$ | 41 ± 15 $mm^2$ |
| LVEDV (mean ± SD) | 135 ± 35 $mL/m^2$ | 101 ± 34 $mL/m^2$ |
| GDMT at baseline and FU | adjustment in each group per "real-world" practice | GDMT at baseline few major changes during FU |
| Mortality at 1y and 2y | ≈ 23% and 34% | ≈ 20% and 46%/29% |
| MR ≥ 3+ at BL → 12m → 24m | 8% → 17% → ? | 7.4% → 5% → 0.9% |

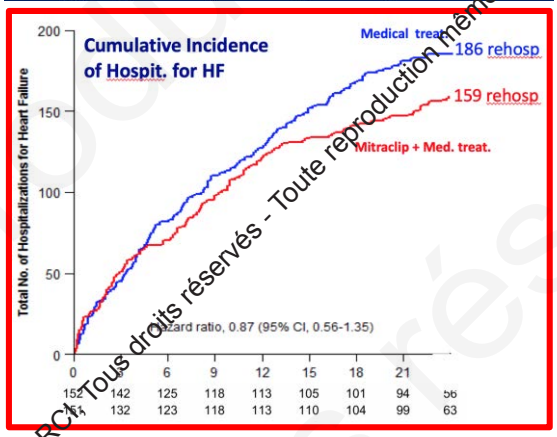
## Proportionate and Disproportionate Functional Mitral Regurgitation 2018

A New Conceptual Framework That Reconciles the Results of the MITRA-FR and COAPT Trials

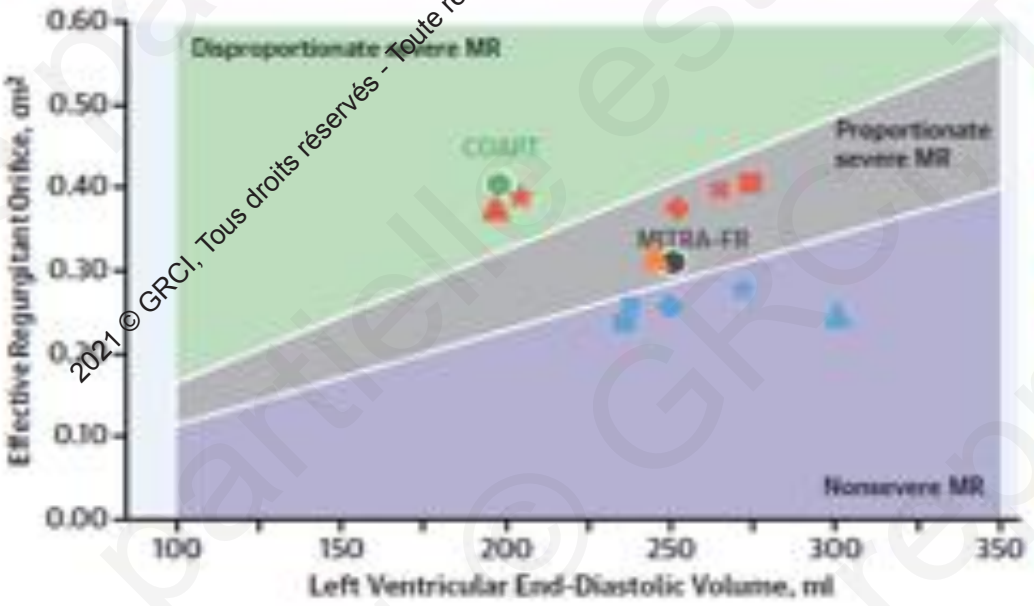


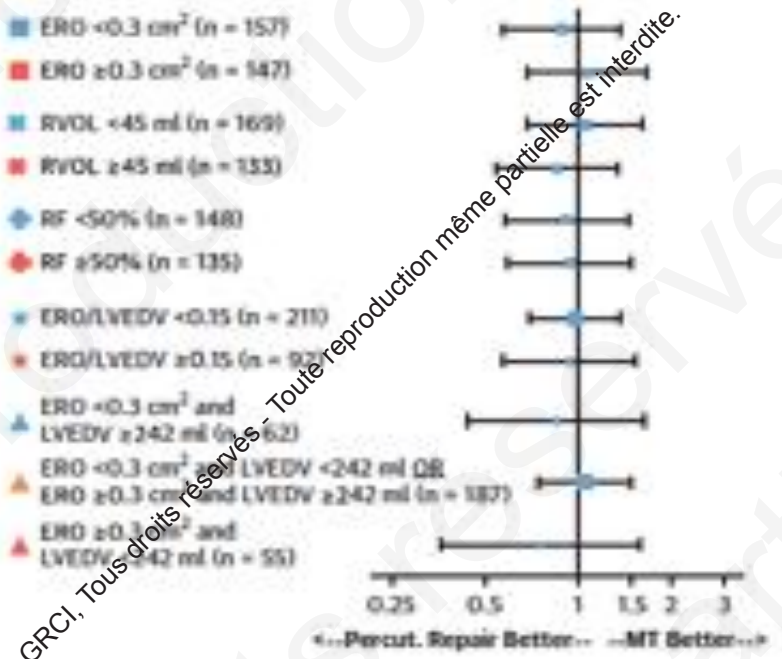

EROA < 30mm²
LVEDVI > 96 ml/m²



## LV and MR remodeling in MITRA-FR ➔ *No sub-group with improved outcome*






***"Messika-Zeitoun D et al J Am Coll Imag 2020"***




# Characteristics and Outcome of COAPT- Eligible Patients in the MITRA-FR Trial Circulation 2020 B.Iung et al

| | MITRA-FR | | | COAPT | |
|---|---|---|---|---|---|
| | COAPT-ineligible (n=77) | COAPT eligible (n=189) | *P* value* | Total (n=614) | *P* value† |
| Characteristics | | | | | |
| Age, y | 69.5±10.1 | 69.9±10.2 | 0.65 | 72.2 | NA |
| LV ejection fraction, % | 30.0±8.5 | 34.1±5.5 | 0.0002 | 31.3±9.3 | <0.0001 |
| LV end-diastolic dimension, mm | 70±10 | 68±7 | 0.03 | 62 | NA |
| LV end-diastolic volume, mL | 259.7±98.5 | 246.9±64.6 | 0.56 | 192.7±71.0 | <0.0001 |
| Effective regurgitant orifice area, cm² | 0.27±0.10 | 0.34±0.11 | <0.0001 | 0.41±0.15 | <0.0001 |
| Death or hospitalization for heart failure at 24 months | 57 (74.0) | 121 (64.0) | 0.18 | 320 (52.1) | 0.004 |
| TMVr | 30/41 (73.2) | 60/96 (62.5) | 0.23 | 129/302 (42.7) | 0.0007 |
| Medical therapy alone | 27/36 (75.0) | 61/93 (65.6) | 0.30 | 191/312 (61.2) | 0.45 |





*"IUNG B et al. Circulation 2020"*

## 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

| Secondary mitral regurgitation | | |
|---|---|---|
| Percutaneous edge-to-edge mitral valve repair should be considered in carefully selected patients with secondary mitral regurgitation, not eligible for surgery and not needing coronary revascularization, who are symptomatic[c] despite OMT and who fulfil criteria[d] for achieving a reduction in HF hospitalizations.[612] | IIa | B |
| In patients with HF, severe secondary mitral regurgitation and CAD who need revascularization, CABG and mitral valve surgery should be considered. | IIa | C |
| Percutaneous edge-to-edge mitral valve repair may be considered to improve symptoms in carefully selected patients with secondary mitral regurgitation, not eligible for surgery and not needing coronary revascularization, highly symptomatic despite OMT and who do not fulfil criteria for reducing HF hospitalization.[617] | IIb | C |

*McDonagh TA. European Heart Journal (2021) 00, 1128*

## 2021 ESC/EACTS Guidelines for the management of valvular heart disease

| Patients with concomitant coronary artery or other cardiac disease requiring treatment | | |
|---|---|---|
| Valve surgery is recommended in patients undergoing CABG or other cardiac surgery.[329,330,333] | I | B |
| In symptomatic patients, who are judged not appropriate for surgery by the Heart Team on the basis of their individual characteristics,[d] PCI (and/or TAVI) possibly followed by TEER (in case of persisting severe SMR) should be considered. | IIa | C |

*Vahanian A. European Heart Journal (2021) 00, 172*

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## 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

| Secondary mitral regurgitation | | |
|---|---|---|
| Percutaneous edge-to-edge mitral valve repair should be considered in carefully selected patients with secondary mitral regurgitation, not eligible for surgery and not needing coronary revascularization, who are symptomatic[c] despite OMT and who fulfil criteria[d] for achieving a reduction in HF hospitalizations.[612] | IIa | B |
| In patients with HF, severe secondary mitral regurgitation and CAD who need revascularization, CABG and mitral valve surgery should be considered. | IIa | C |
| Percutaneous edge-to-edge mitral valve repair may be considered to improve symptoms in carefully selected patients with secondary mitral regurgitation, not eligible for surgery and not needing coronary revascularization, highly symptomatic despite OMT and who do not fulfil criteria for reducing HF hospitalization.[617] | IIb | C |

*McDonagh TA. European Heart Journal (2021) 00, 1128*

## 2021 ESC/EACTS Guidelines for the management of valvular heart disease

| Patients without concomitant coronary artery or other cardiac disease requiring treatment | | |
|---|---|---|
| TEER should be considered in selected symptomatic patients, not eligible for surgery and fulfilling criteria suggesting an increased chance of responding to the treatment.[337,338,356,357 e] | IIa | B |
| Valve surgery may be considered in symptomatic patients judged appropriate for surgery by the Heart Team. | IIb | C |
| In high-risk symptomatic patients not eligible for surgery and not fulfilling the criteria suggesting an increased chance of responding to TEER, the Heart Team may consider in selected cases a TEER procedure or other transcatheter valve therapy if applicable after careful evaluation for ventricular assist device or heart transplant.[e] | IIb | C |

*Vahanian A. European Heart Journal (2021) 00, 172*

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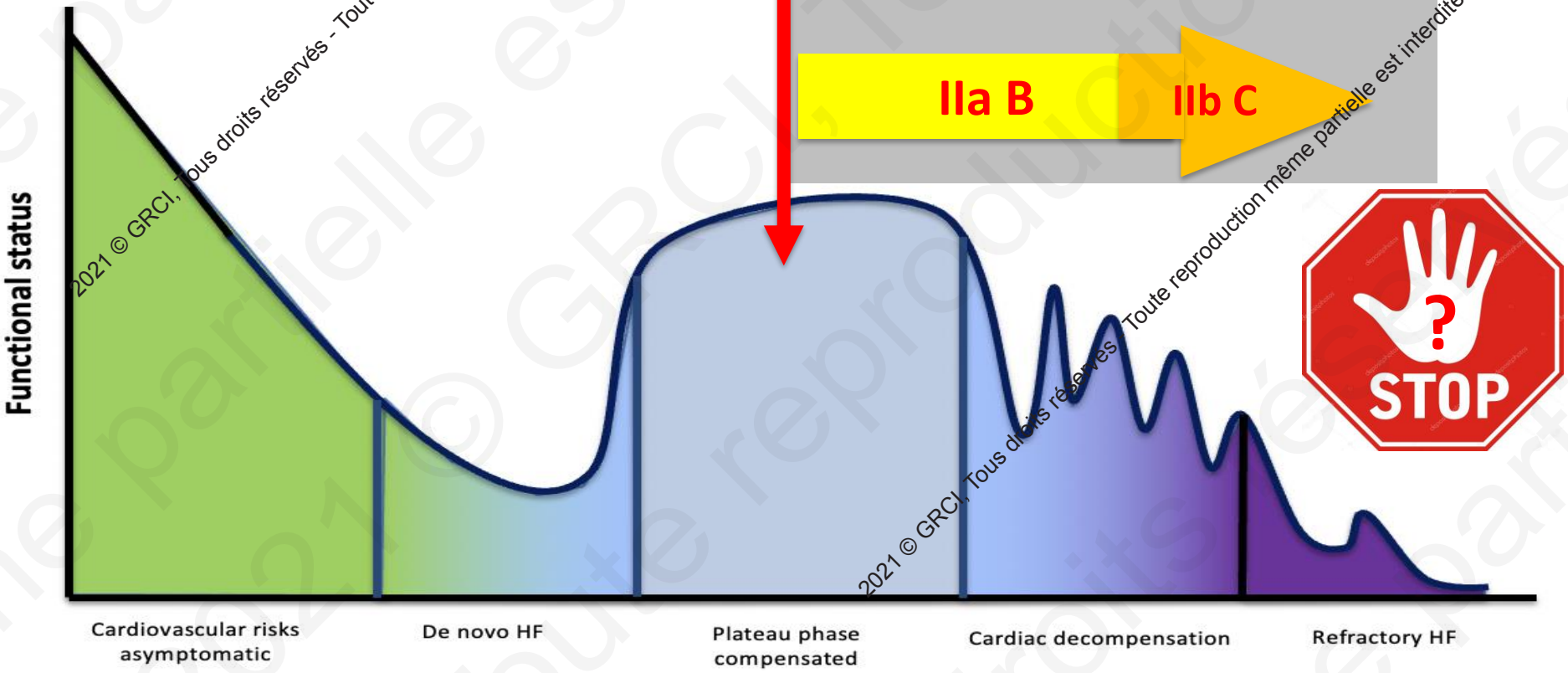
**NYHA+, GDMT, + volemia + revasc + CRT**
**EF 20-50%**
**EROA ≥30 mm**
ESD <70 mm, PAPs <70 mm Hg,
No RV dysfunction / TR / instability

**IIa B** **IIb C**




*Adapted from Meyers DE. Canadian Journal of Cardiology 32 (2016) 1148-1156. Low J. J Cardiac Fail 2011;17:231-252*

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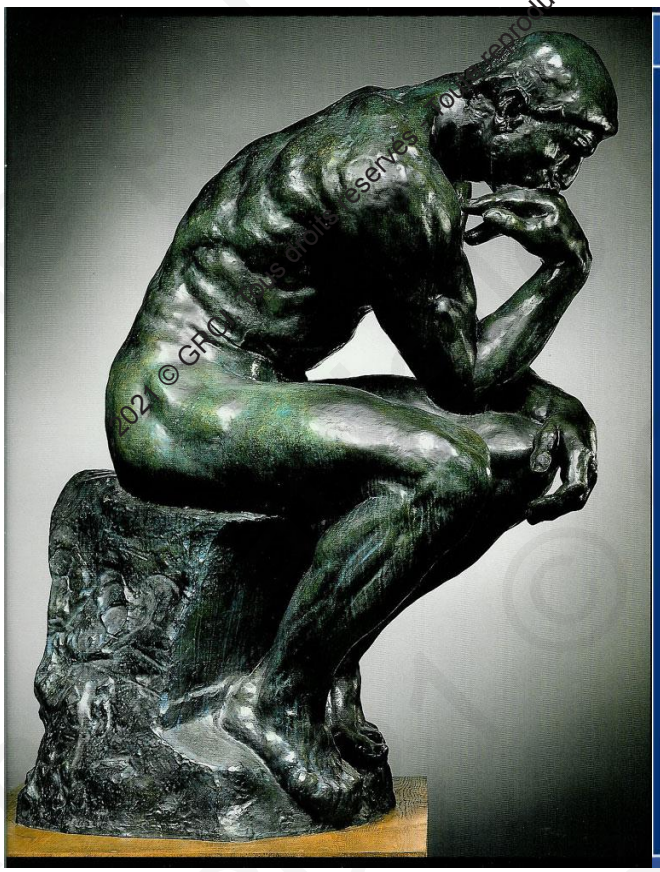
23-09-2018



ORIGINAL ARTICLE

# Transcatheter Mitral-Valve Repair in Patients with Heart Failure

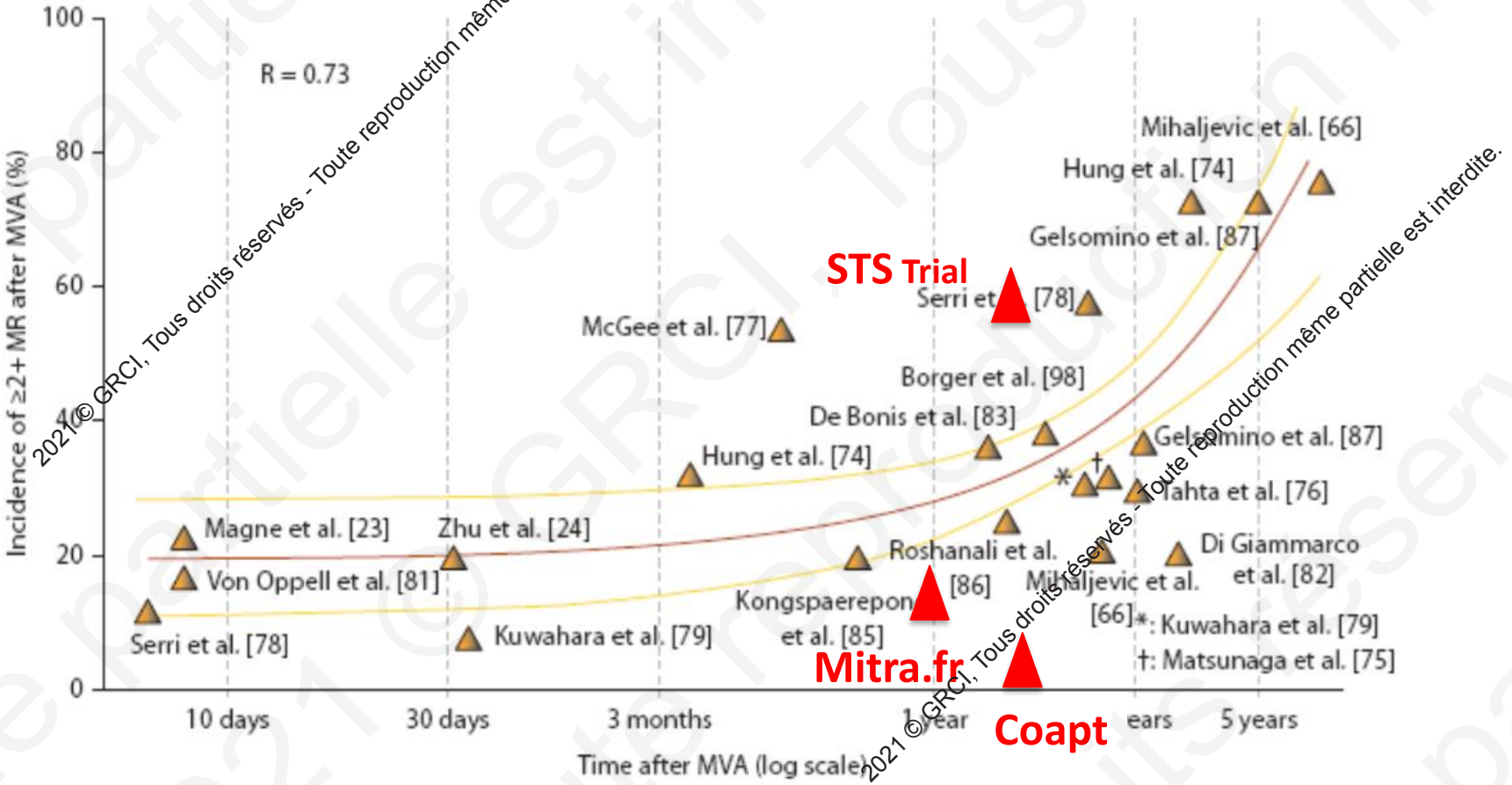
G.W. Stone, J.A. Lindenfeld, W.T. Abraham, S. Kar, D.S. Lim, J.M. Mishell, B. Whisenant, P.A. Grayburn, M. Rinaldi, S.R. Kapadia, V. Rajagopal, I.J. Sarembock, A. Brieke, S.O. Marx, D.J. Cohen, N.J. Weissman, and M.J. Mack, for the COAPT Investigators*





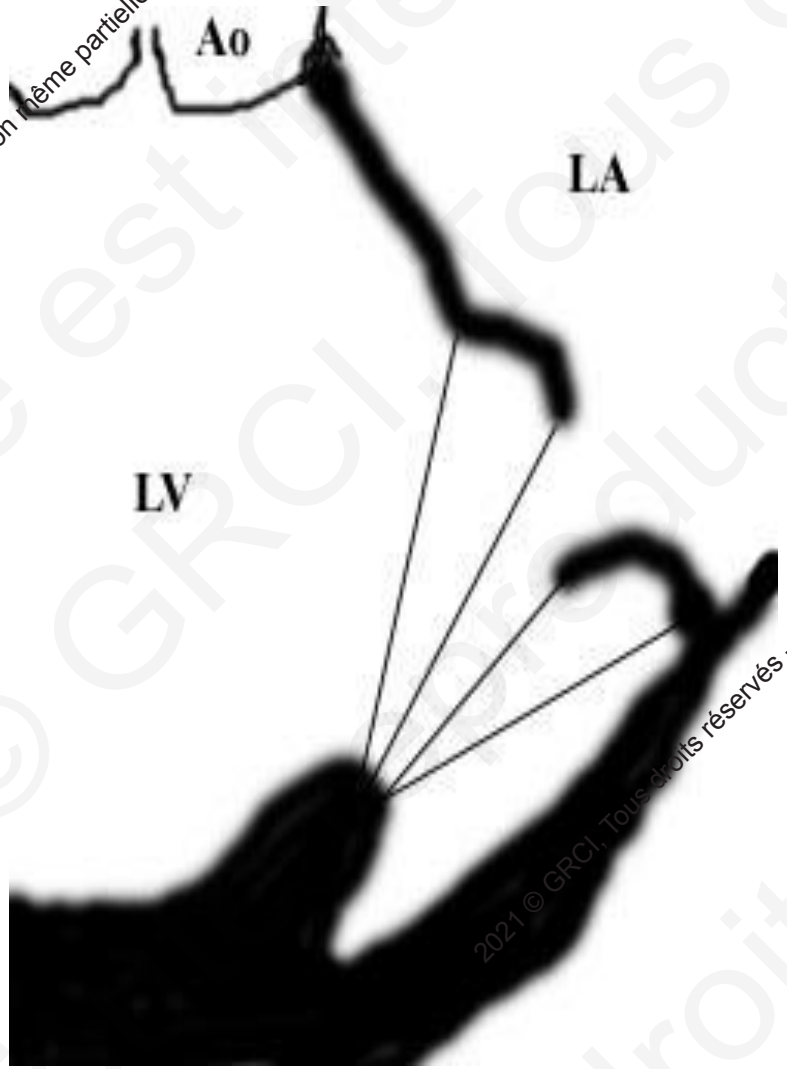
| MR COAPT | ≤1+ | 2+ | 3+ | 4+ | $P_{trend}$ | ≤2+ | P-value |
|---|---|---|---|---|---|---|---|
| Baseline | | | 3+-4+ | | | | |
| MitraClip (n=302) | - | - | 49.0% | 51.0% | - | - | - |
| GDMT (n=311) | - | - | 55.3% | 44.7% | | - | |
| 30 days | | | 7.4% | | | | |
| MitraClip (n=273) | 72.9% | 19.8% | 5.9% | 1.5% | <0.001 | 92.7% | <0.001 |
| GDMT (n=257) | 8.2% | 26.1% | 37.4% | 28.4% | | 34.2% | |
| 6 months | | | 6.3% | | | | |
| MitraClip (n=240) | 66.7% | 27.1% | 4.6% | 1.7% | <0.001 | 93.8% | <0.001 |
| GDMT (n=218) | 9.2% | 28.9% | 42.2% | 19.7% | | 38.1% | |
| 12 months | | | 5.3% | | | | |
| MitraClip (n=210) | 69.1% | 25.7% | 4.3% | 1.0% | <0.001 | 94.8% | <0.001 |
| GDMT (n=175) | 11.4% | 35.4% | 34.3% | 18.9% | | 46.9% | |
| 24 months | | | 0.9% | | | | |
| MitraClip (n=114) | 77.2% | 21.9% | 0% | 0.9% | <0.001 | 99.1% | <0.001 |
| GDMT (n=76) | 15.8% | 27.6% | 40.8% | 15.8% | | 43.4% | |

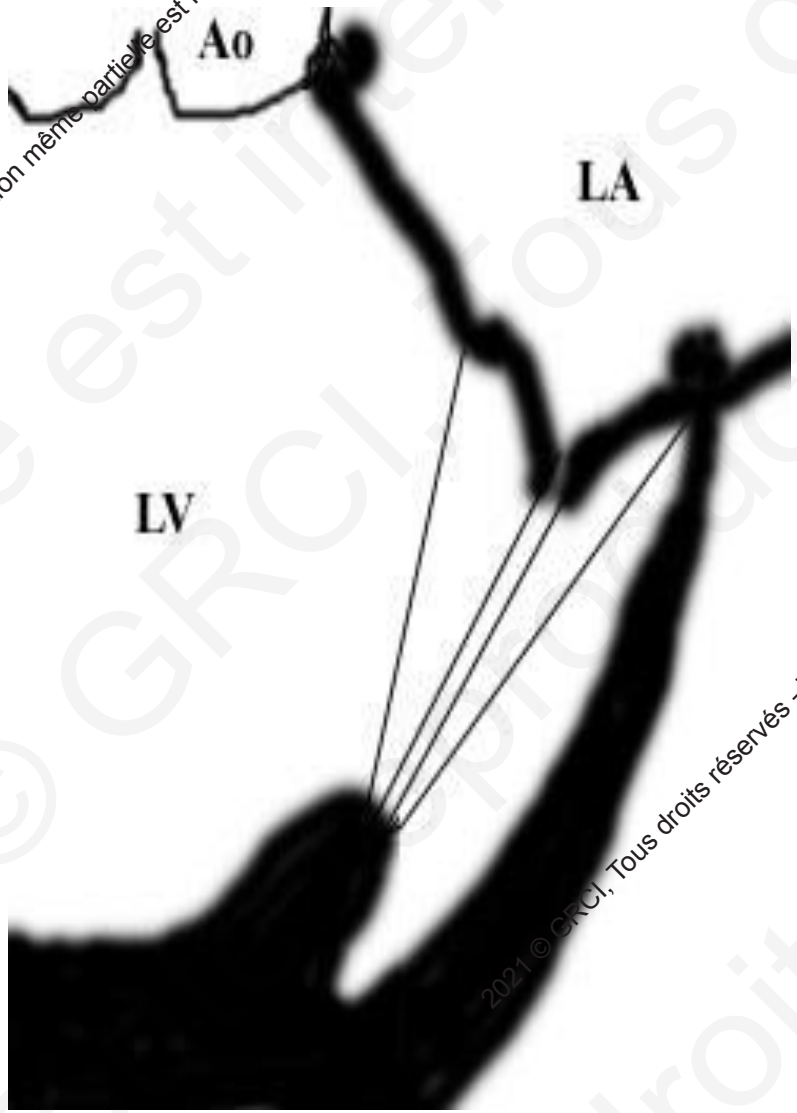
# Recurrent MR ≥ grade 2 after Downsized Annuloplasty

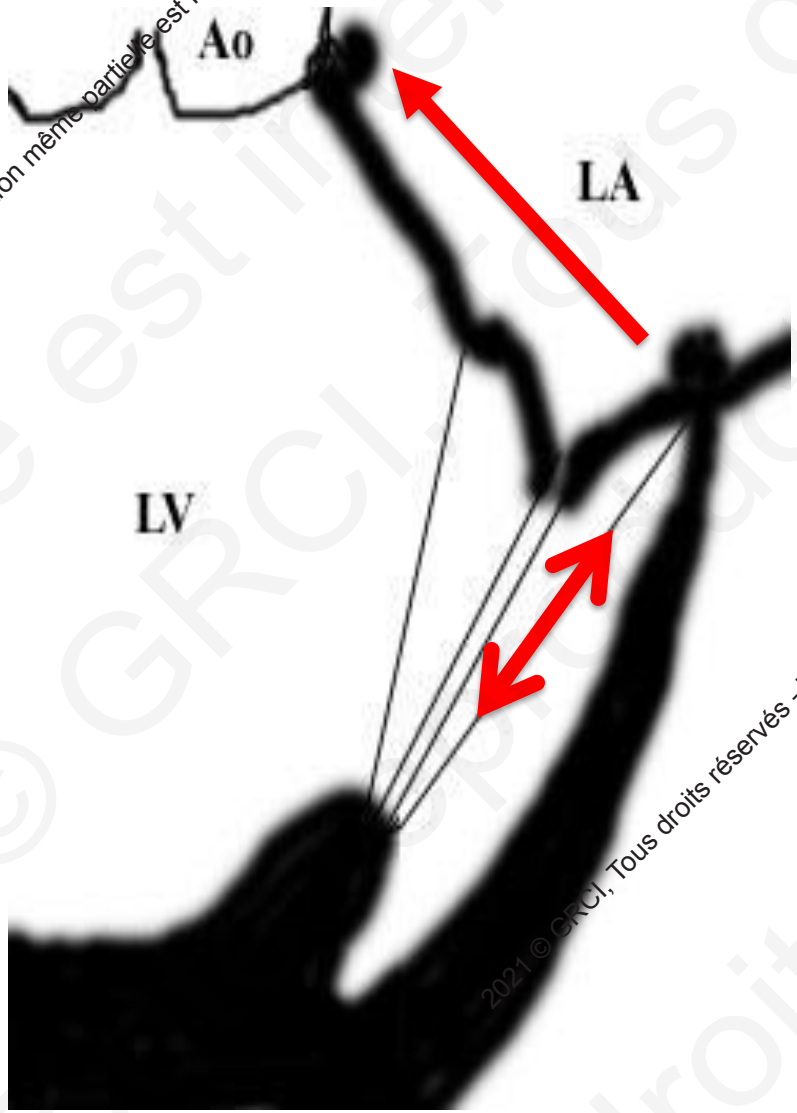


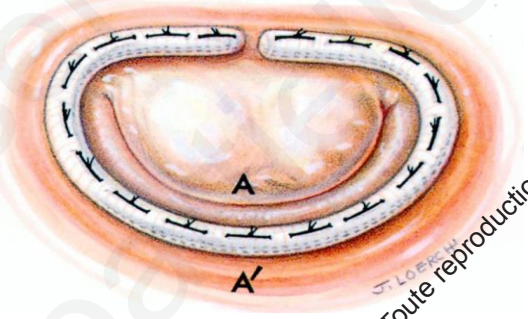



***Magne J. et al. Cardiology 2009;112:244***



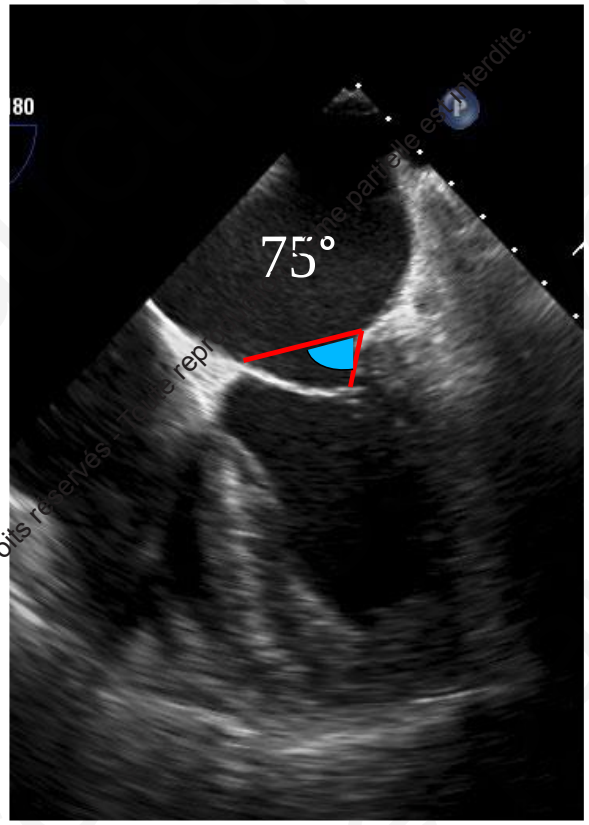







# REPAIR
# or
# REPLACEMENT

- Duration of CHF
- LVEDD > 65 mm
- LVESD > 51 mm
- Tenting Height > 10mm
- Posterior Leaflet-annulus angle > 45°
- Distal ant Leaflet-annulus angle > 25°
- End Syst interpapillary distance > 20mm
- Systolic sphericity index > 0,7
- Symetric < Asymetric



# CONCLUSION

## Severe SMR

Y

N

Appropriate for surgery on the base of individual patient characteristics[a]

N

PCI/TAVI

Persisting severe SMR and symptoms

2 A

1

2 B

2A