Early Surgery in Asymptomatic Degenerative Severe Mitral Regurgitation in Most Patients

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No conflict of interest

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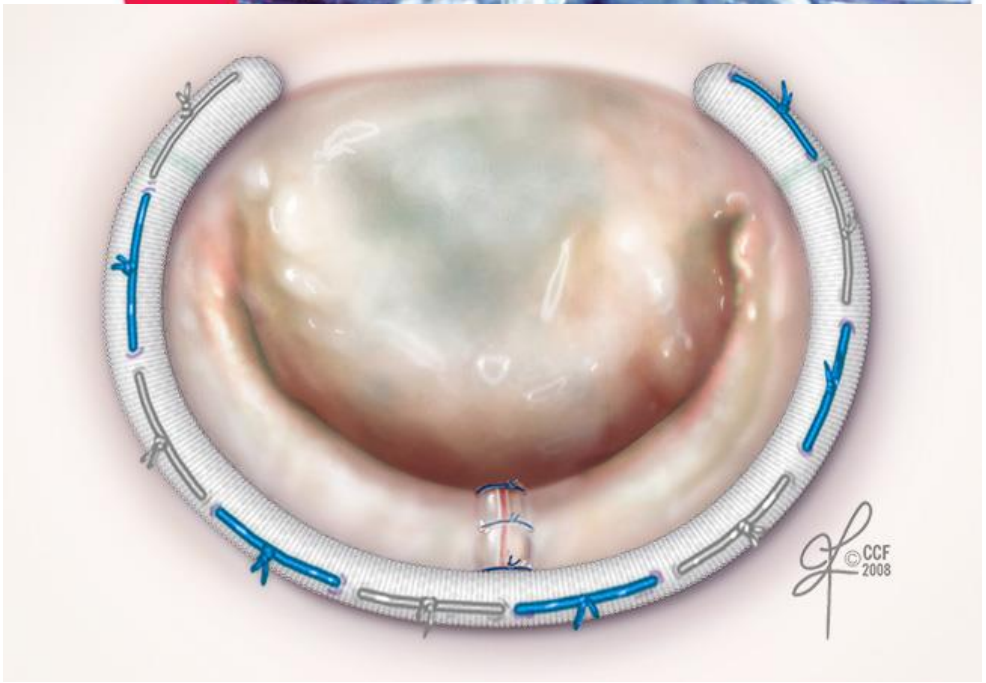
Valve repair improves the outcome of surgery for mitral regurgitation. A multivariate analysis

M Enriquez-Sarano, H V Schaff, T A Orszulak, A J Tajik, K R Bailey, R L Frye
Circulation 1995

Valve repair significantly improves postoperative outcome in patients with mitral regurgitation and should be the preferred mode of surgical correction. The low operative mortality is an incentive for early surgery before ventricular dysfunction occurs.



Early surgery in patients with mitral regurgitation due to flail leaflets: a long-term outcome study

Circulation 1997

In patients with mitral regurgitation due to flail leaflets, the strategy of early surgery versus conservative management is associated with an improved long-term survival rate, decreased cardiac mortality, and decreased morbidity

Decreased Risk of Aortic Valve Surgery

DWIGHT C. McGOON, MD; CARLOS PESTANA, MD; AND EMERSON A. MOFFITT, MD, ROCHESTER, MINN

SINCE FEBRUARY 1963, when the Starr-Edwards aortic ball-valve prosthesis [1] was introduced into our practice, 100 consecutive operations for the replacement of the aortic valve have been accomplished without any hospital mortality. A detailed analysis of this experience may be of value in defining the reasons for this decrease in risk.

Operative Series

This consecutive series of 100 operations included all operations for replacement of the aortic valve except those in which another valve was also replaced. However, in seven of the operations of this series, repair of associated mitral valve disease short of valve replacement was also performed. The series of 100 operations was completed by December 1964.

No patient was denied operation for aortic valve disease because of disability and failure which were too far advanced. Thus, several patients included in this experience were in advanced failure which had responded only partially to prolonged medical treatment. This is evidenced by the fact that left atrial pressures measured at operation and before repair often showed most remarkable increases. In 42% of the 93 patients who had no evidence of associated mitral valve disease, the peak left atrial pressure was 40 mm Hg or more, and in 14% of the 93 patients it was 60 mm Hg or more.

It was our policy during the time this series of operations was being performed to defer surgical treatment in the minimally symptomatic patient. Nearly all of the patients were thus experiencing what was believed to be serious, significant, and progressive disability secondary to their aortic valve disease. None were operated on in the absence of disability simply because of the presence of signs of aortic valve disease alone no matter how advanced such changes appeared to be. In nine instances the disability was less advanced and less definite than in the others (class 2), and operation was advised for these patients largely because of uncertainty of the availability of surgical help for them at a future time.

The ages of the patients in this series ranged between 14 and 67 years and averaged 48 years. In our experience, aortic valve replacement was not required for congenital aortic stenosis in any patient in the absence of extensive superimposed calcification of the valve. Thus, in both patients less than 20 years of age, aortic insufficiency was the indication for operation. Eighty percent of the patients were men.

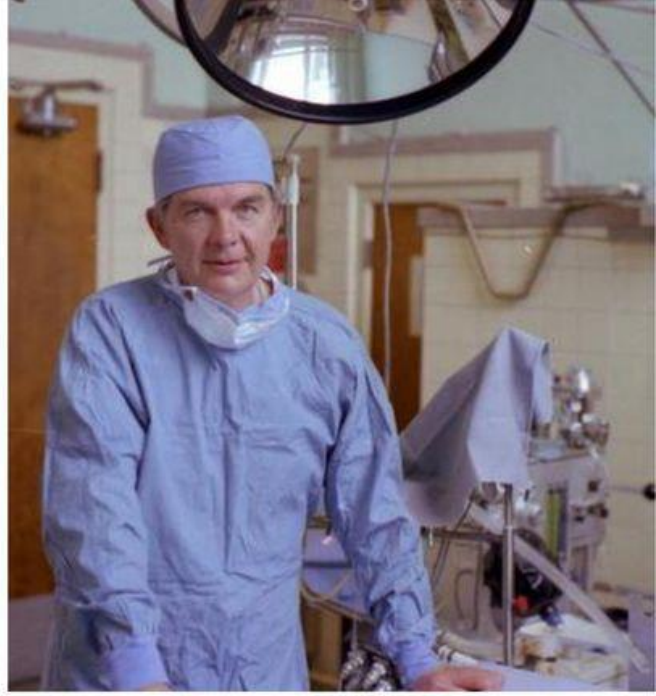
The diagnosis at operation was pure aortic stenosis in 27%, pure aortic insufficiency in 30%, a combination in 29%, recurrent aortic disease in 9% (after previous insertion of Teflon valve prosthesis or valve debridement), and aortic insufficiency plus an associated aneurysm of the ascending aorta in 5%.

Surgical Procedures

No unusual preoperative preparation was given these patients except that all cardiac drugs were discontinued 48 hours prior to operation. Since digoxin had been the digitalis preparation of choice preoperatively, this policy resulted in the patient being only approximately 50% digitalized at operation and thus gave a margin of safety should changes occur which might predispose the patient to digitalis intoxication.

The anesthesia and perfusion were conducted by techniques previously described.[2] Induction was with thiopental sodium (200 to 300 mg) given intravenously. Endotracheal intubation was accomplished after the intravenous injection of succinylcholine (100 mg). A light level of anesthesia was main-

Submitted for publication July 10, 1965.
Read before the Annual Meeting of the North American Chapter of the International Cardiovascular Society, New York, June 19, 1965.
From the Mayo Clinic, Mayo Foundation, and the Mayo Graduate School of Medicine.
Reprint requests to Mayo Clinic, Section of Publications, Rochester, Minn 55902.



Dwight C. McGoon, MD
1925-1999
Mayo Clinic

"McGoon was an accomplished pianist and sailor. He loved philosophy and was an avid essayist on diverse topics."

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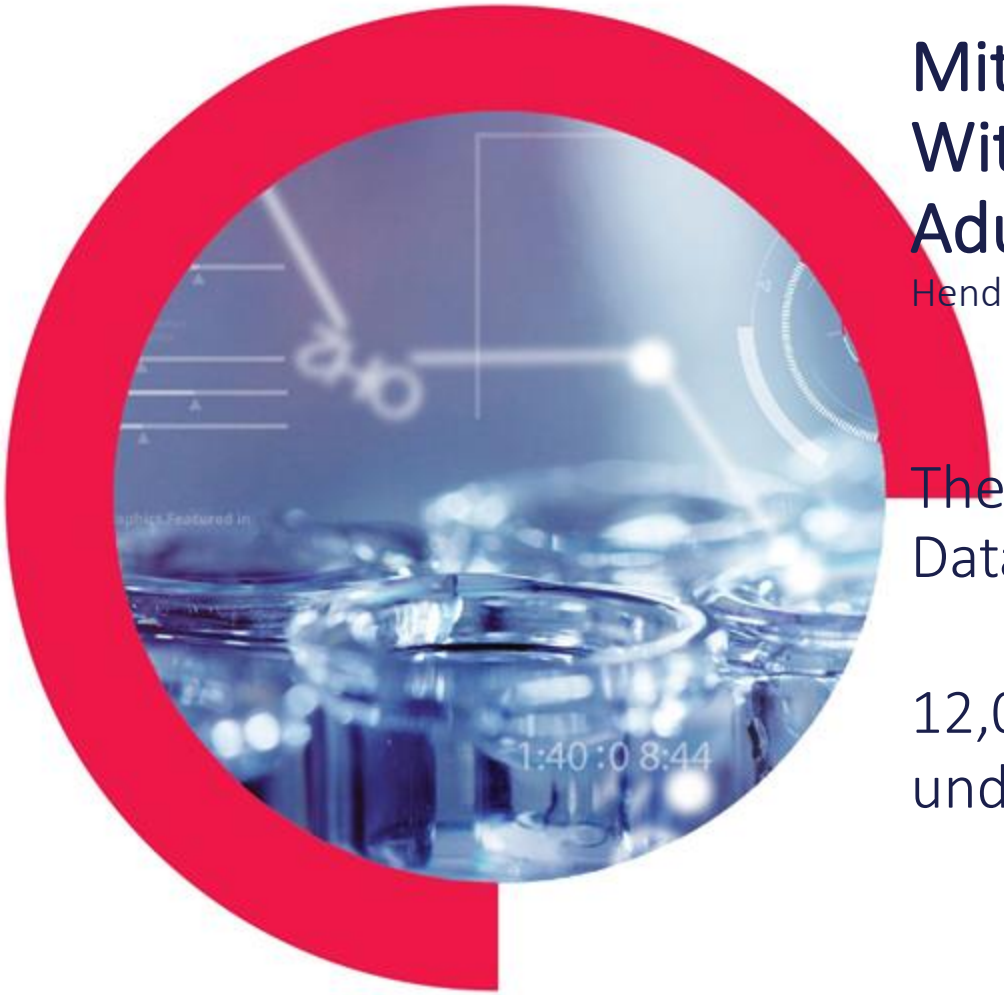
McGoon D C. Repair of mitral insufficiency due to ruptured chordae tendineae. J Thorac Cardiovasc Surg 1960



Mitral Valve Repair Versus Replacement in Elderly With Degenerative Disease: Analysis of the STS Adult Cardiac Surgery Database.

Hendrix RJ et al — Ann Thorac Surg. 2018 Oct

The Society of Thoracic Surgeons Adult Cardiac Surgery Database (**all patients and hospitals, not referral centers**)

12,043 patients **aged 70 or more**, of whom 71% underwent mitral valve repair and 29% mitral replacement

30-day mortality - 2.2% (repair)

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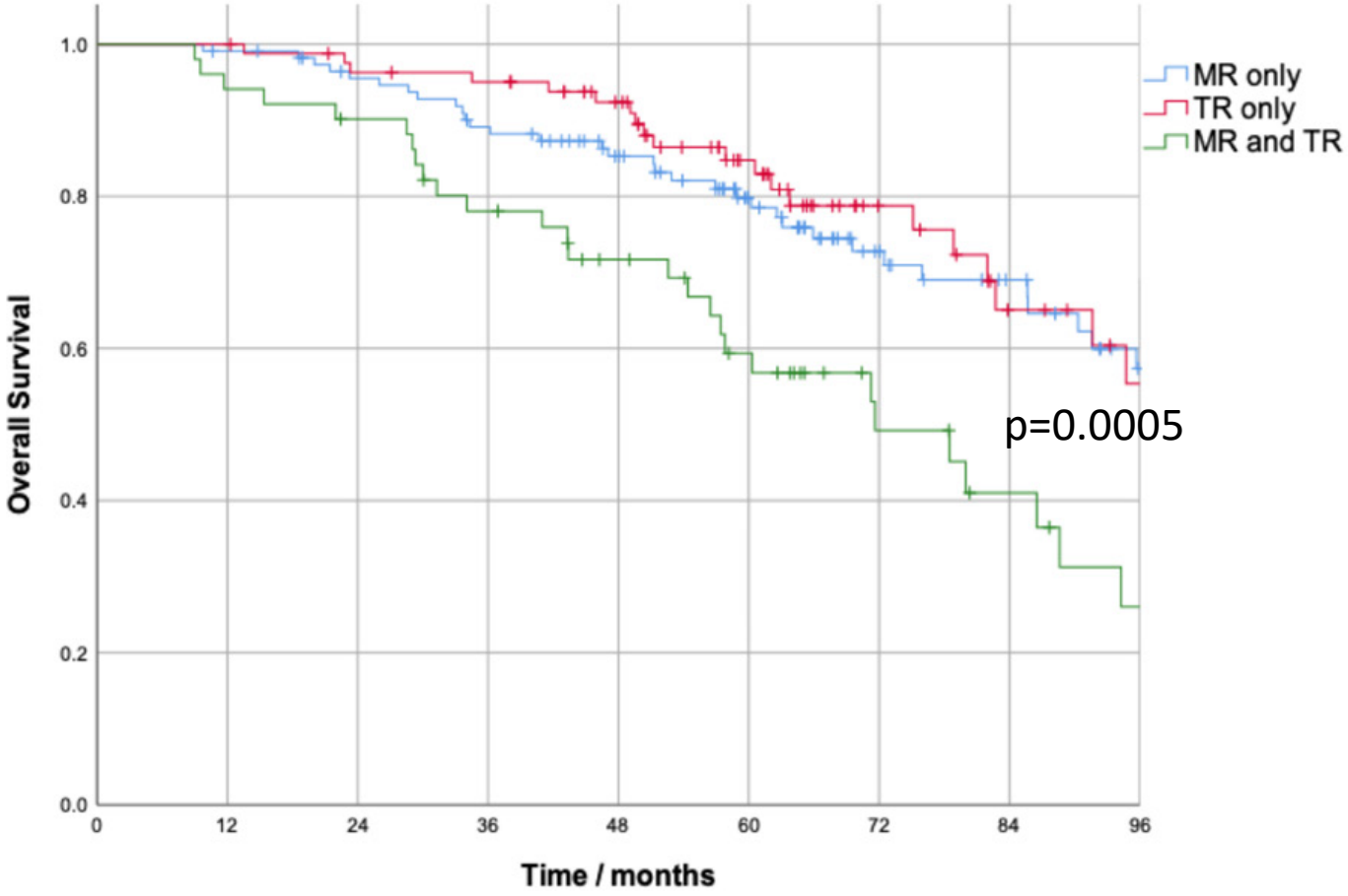
n	592
Age	55.10
NYHA I-II	468 (79.1%)
NYHA III-IV	124 (20.9%)
EF	59.90
EUROSCORE_STANDART	3.57
Elective	529 (89.4%)
In-hospital mortality	**0**
CVA 5 (0.8)	**5 (0.8%)**
PACEMAKER	AVB 3(0.5%), sick sinus 6(1%)
Freedom from MV Reoperations	546 (92.2%)
Moderate MR in follow up Severe MR	100 (20.0%) 19 (3.8%)

ALL Patients with Degenerative MR repair surgery
± MAZE or Tricuspid repair.
Sheba Database. 2005-2018

Community prevalence, mechanisms and outcome of mitral or tricuspid regurgitation

Cahill TJ, et al. Heart 2021



Number at risk

MR only	116	114	106	98	84	64	42	33	22
TR only	83	83	78	76	66	46	25	16	11
MR and TR	50	47	44	37	30	22	12	8	4

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European Heart Journal (2020)

Timing of intervention in asymptomatic patients with valvular heart disease

Helmut Baumgartner[1]*, Bernard Iung[2], and Catherine M. Otto[3]

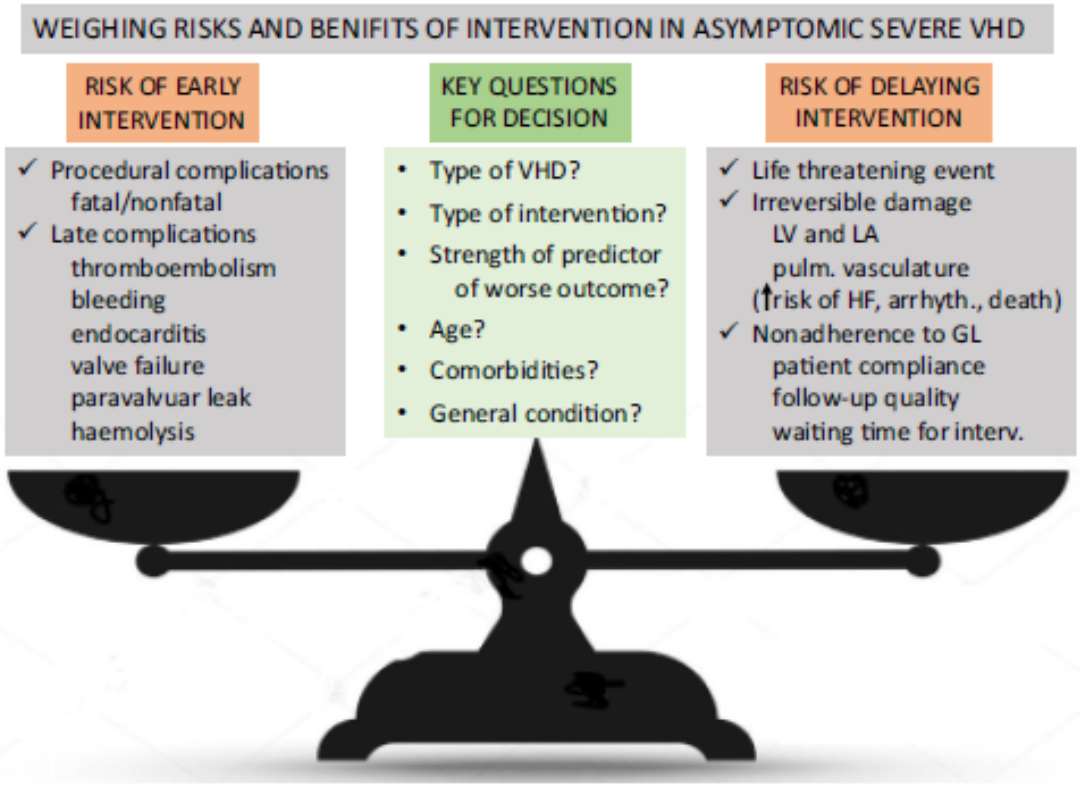

Figure 1 Weighing of risks and benefits of intervention in asymptomatic valvular heart disease. Aspects that need to be considered and key questions for decision-making. Arrhyth., arrhythmias; GL, guidelines; HF, heart failure; interv., intervention; LA, left atrium; LV, left ventricle; pulm., pulmonary; VHD, valvular heat disease.

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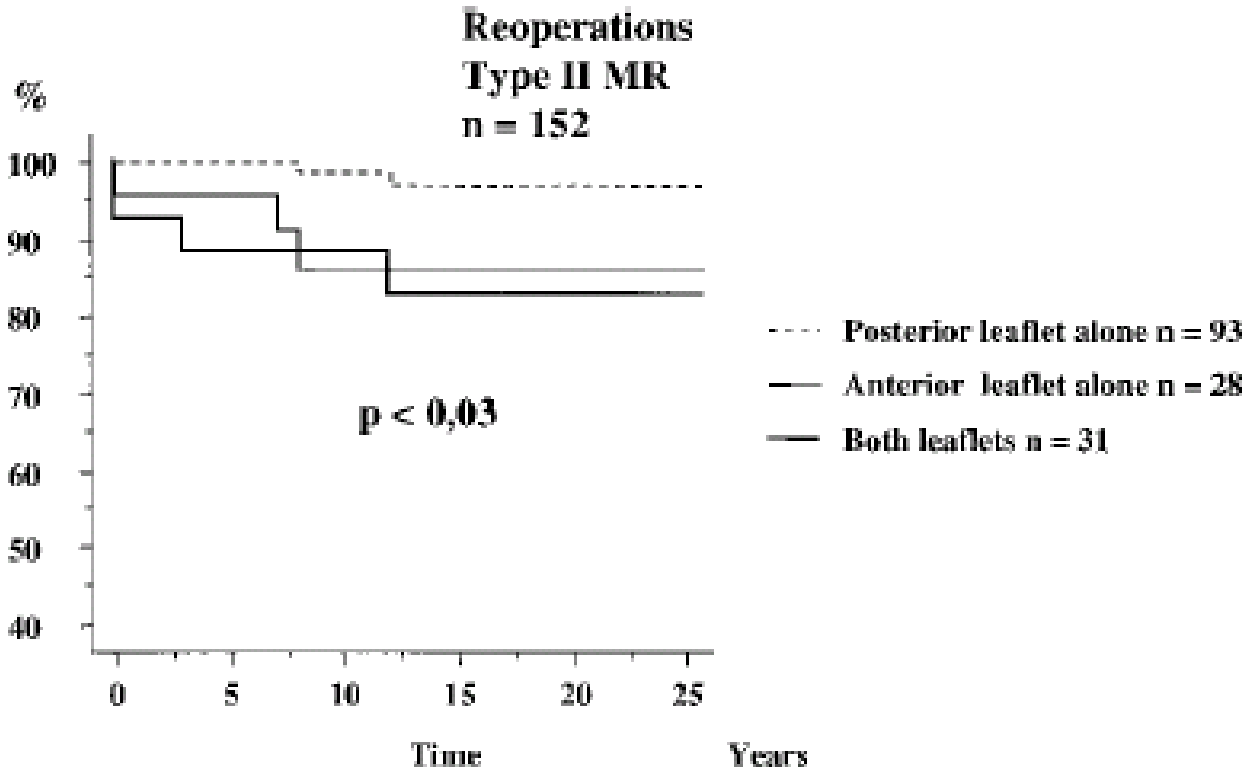
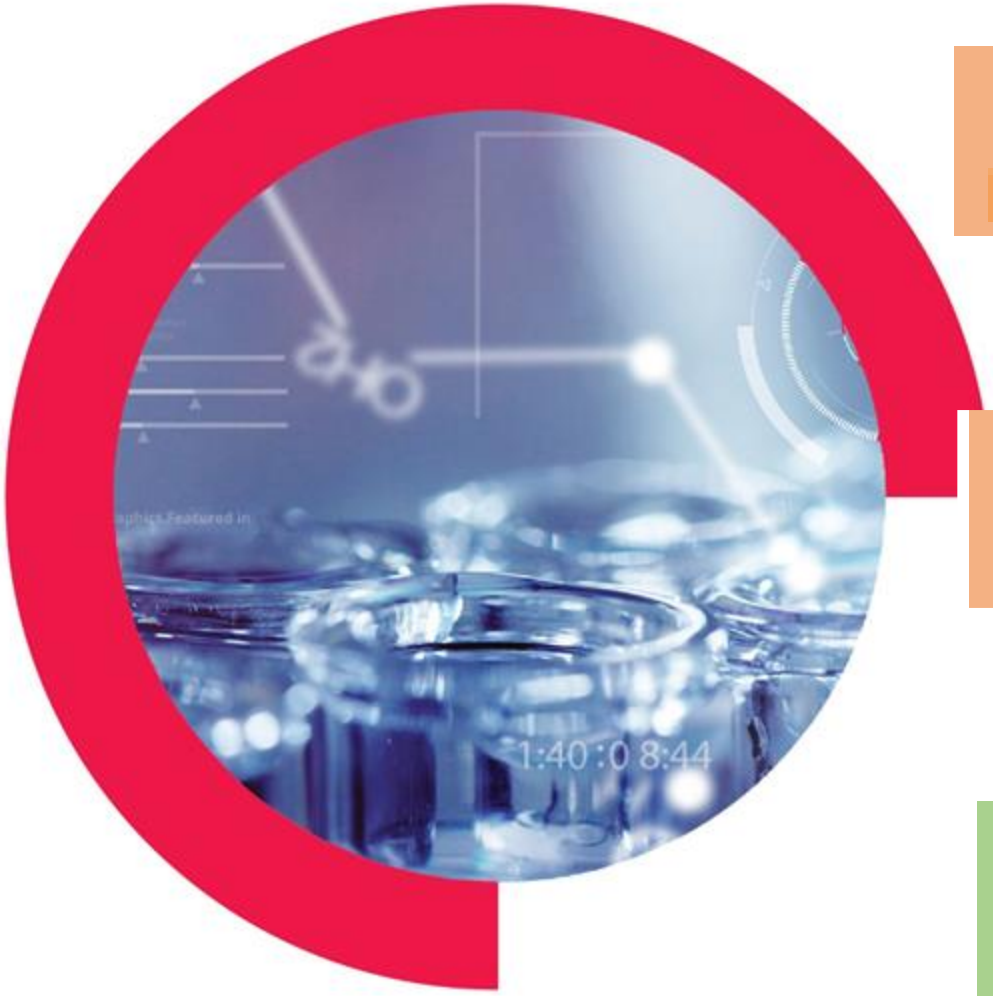
Very Long-Term Results (More Than 20 Years) of Valve Repair With Carpentier's Techniques in Nonrheumatic Mitral Valve Insufficiency

E. Braunberger, MD; A. Deloche, MD; A. Berrebi, MD; F. Abdallah, MD; J.A Celestin, MD; P. Meimoun, MD; G. Chatellier, MD; S. Chauvaud, MD; J.N. Fabiani, MD; A. Carpentier, MD



Carpentier A. Cardiac valve surgery: the "French correction. "
J Thorac Cardiovasc Surg 1983



RISK OF EARLY INTERVENTION

mortality 0.1%

RISK OF DELAYING INTERVENTION

mortality >2.0%

KEY QUESTIONS FOR DECISION

Operate early
in low risk patients
with repairable valves

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

Surgery is recommended in symptomatic patients who are operable and not high risk [293–296].	I	B
Surgery is recommended in asymptomatic patients with LV dysfunction (LVESD ≥40 mm and/or LVEF ≤60%) [277, 286, 292].	I	B
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[c] (SPAP at rest >50 mmHg) [285, 289].	IIa	B
Surgical mitral valve repair should be considered in low-risk asymptomatic patients with LVEF >60%, LVESD <40 mm[d] 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 [285, 288].	IIa	B

Why we have to wait for symptoms, LV dysfunction, AF/LA enlargement???

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2020 ACC/AHA Guideline for the Management of Patients With Valvular Heart Disease

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.[1,2]
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.[3–10]
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.[11–15]
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.[4,13,16]

Almost ALL patients

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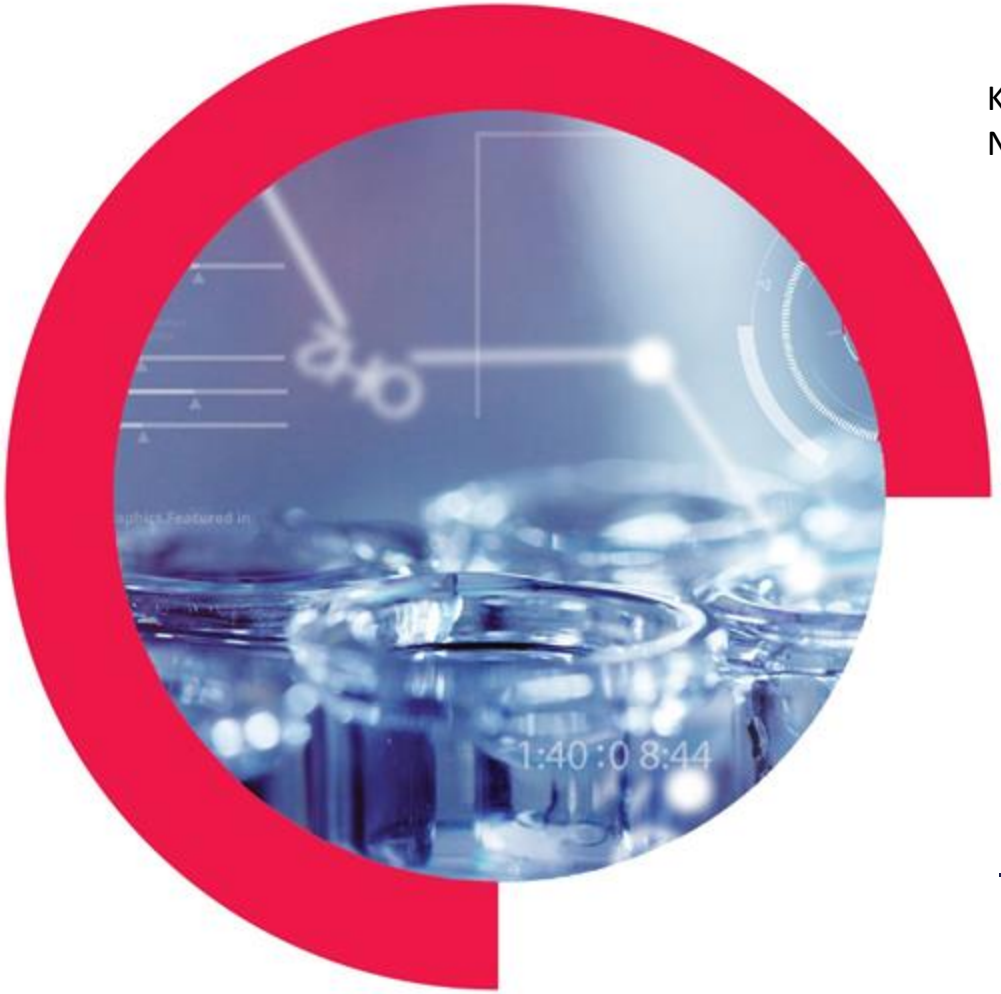
Asymptomatic Sev MR: <1% mortality, >95% durable repair



Kang DH et al Early surgery or conservative care for asymptomatic aortic stenosis. N Engl J Med 2020;382:111–119.

First randomized controlled trial (RCT)
South Korean multicentre trial
145 asymptomatic patients with severe AS
(valve area <_ 0.75 cm2 and mean gradient >_50mmHg),
normal LVEF and low surgical risk (EuroSCORE II 0.9± 0.3)
were randomly assigned to
early surgery (within 2months) or **conservative care**.
During a median follow-up of 6 years (min 4),
the primary endpoint—
a composite of
death during or within 30 days after surgery or death from cardiovascular causes during entire follow-up –
occurred in 1% vs. 15%
(P= 0.003).

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Sheba DATABASE
Low-risk patients aged 70-80 (2004-2018) - Euroscore <=5

	All patients
n	78
TIA	**0**
STROKE	**0**
PACEMAKER = AVB	**1**
A_FIB	(30.8) 24
RENAL_FAILURE = 1	(6.4) 5
AKI	(6.4) 5
PPS	0
IABP	0
In Hospital Mortality	**0**
HOSP_DAYS	(4.48) 6.59

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תודה רבה!

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