OPERACE MITRÁLNÍ CHLOPNĚ VE SVĚTLE GUIDELINES ESC 2017 - KDY A JAK ?

Štěpán ČERNÝ

Kardiochirurgické oddělení
Nemocnice Na Homolce
Praha

OPERACE MITRÁLNÍ CHLOPNĚ VE SVĚTLE GUIDELINES ESC 2017 - KDY A JAK ? A KDE???

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MITRÁLNÍ REGURGITACE - 2017 ESC/EACTS GUIDELINES

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2017 ESC/EACTS Guidelines for the management of valvular heart disease

The Task Force for the Management of Valvular Heart Disease of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

Falk V et al: *Eur J Cardiothor Surg 2017*;52:616-664

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Třídy doporučení

Classes of recommendations	Definition	Suggested wording to use
Class I	Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, effective.	Is recommended/is indicated
Class II	Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure.	
Class IIa	*Weight of evidence/opinion is in favour of usefulness/efficacy.*	Should be considered
Class IIb	*Usefulness/efficacy is less well established by evidence/opinion.*	May be considered
Class III	Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases may be harmful.	Is not recommended

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Úroveň důkazů

Level of evidence A	Data derived from multiple randomized clinical trials or meta-analyses.
Level of evidence B	Data derived from a single randomized clinical trial or large non-randomized studies.
Level of evidence C	Consensus of opinion of the experts and/ or small studies, retrospective studies, registries.

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PRIMÁRNÍ MITRÁLNÍ REGURGITACE

6.1 Primary mitral regurgitation

In primary mitral regurgitation, one or several components of the mitral valve apparatus are directly affected. The most frequent aetiology is degenerative (prolapse, flail leaflet). Endocarditis as one of the causes of primary mitral regurgitation is discussed in specific ESC guidelines [28].

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PRIMÁRNÍ MITRÁLNÍ REGURGITACE

	Aortic regurgitation	Mitral regurgitation		Tricuspid regurgitation
Qualitative				
Valve morphology	Abnormal/flail/large coaptation defect	Flail leaflet/ruptured papillary muscle/ large coaptation defect		Abnormal/flail/large coaptation defect
Colour flow regurgitant jet	Large in central jets, variable in eccentric jets[a]	Very large central jet or eccentric jet adhering, swirling, and reaching the posterior wall of the LA		Very large central jet or eccentric wall impinging jet[a]
CW signal of regurgitant jet	Dense	Dense/triangular		Dense/triangular with early peaking (peak <2 m/s in massive TR)
Other	Holodiastolic flow reversal in descending aorta (EDV >20 cm/s)	Large flow convergence zone[a]		–
Semiquantitative				
Vena contracta width (mm)	>6	≥7 (>8 for biplane)[b]		≥7[a]
Upstream vein flow[c]	–	Systolic pulmonary vein flow reversal		Systolic hepatic vein flow reversal
Inflow	–	E-wave dominant ≥1.5 m/s[d]		E-wave dominant ≥1 m/s[e]
Other	Pressure half-time <200 ms[f]	TVI mitral/TVI aortic >1.4		PISA radius >9 mm[g]
Quantitative		Primary	Secondary[h]	
EROA (mm^2)	≥30	≥40	≥20	≥40
Regurgitant volume (mL/beat)	≥60	≥60	≥30	≥45
+ enlargement of cardiac chambers/vessels	LV	LV, LA		RV, RA, inferior vena cava

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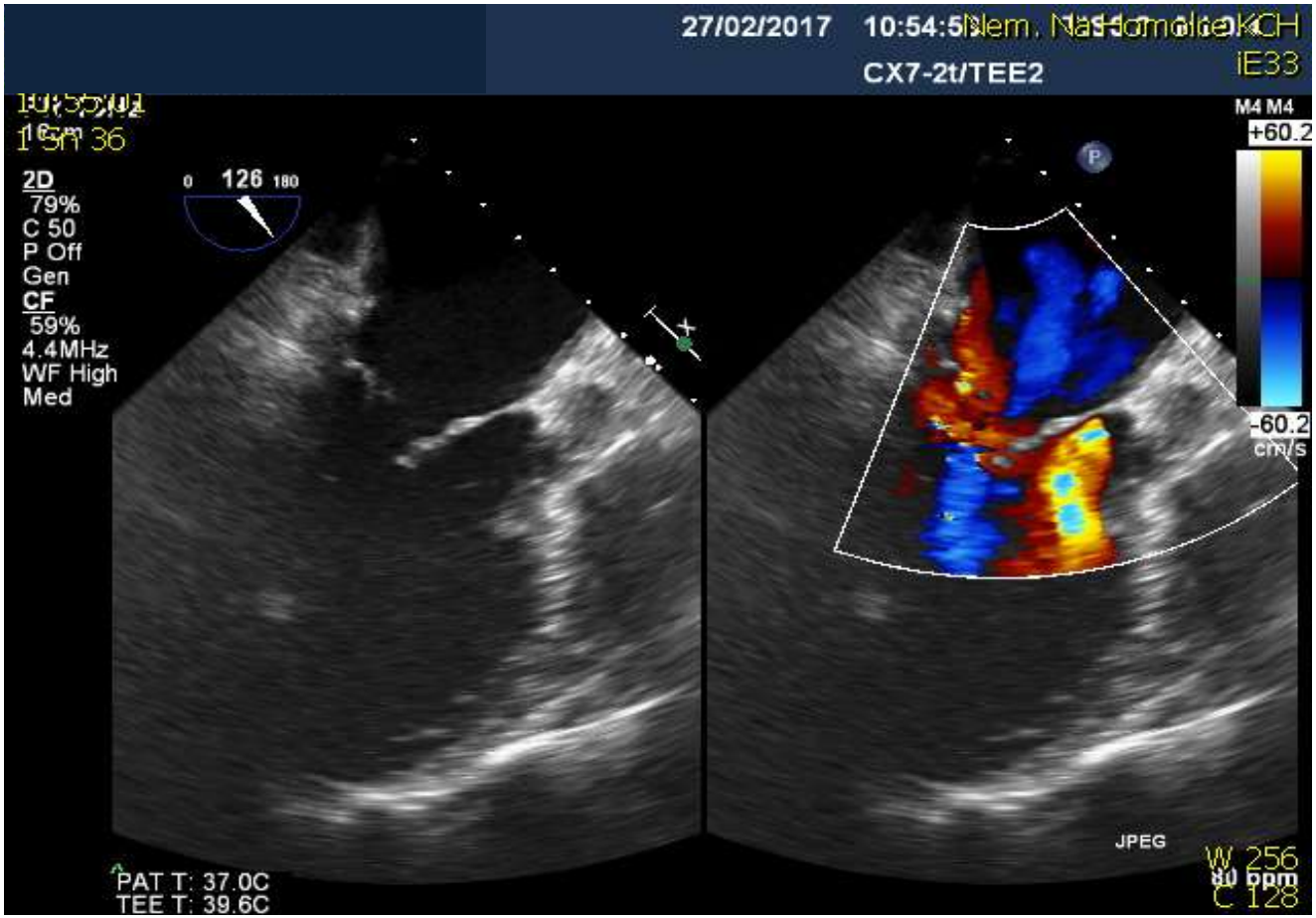
PRIMÁRNÍ MITRÁLNÍ REGURGITACE



ERO ≥ 0,4 cm² **RV ≥ 60mL**

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2012

	Class [a]	Level [b]	Ref [c]
Mitral valve repair should be the preferred technique when it is expected to be durable.	I	C	
Surgery is indicated in symptomatic patients with LVEF >30% and LVESD <55 mm.	I	B	127, 128
Surgery is indicated in asymptomatic patients with LV dysfunction (LVESD ≥45 mm and/or LVEF ≤60%).	I	C	

2017

Recommendations	Class [a]	Level [b]
Mitral valve repair should be the preferred technique when the results are expected to be durable.	I	C
Surgery is indicated in symptomatic patients with LVEF >30% [121, 131, 132].	I	B
Surgery is indicated in asymptomatic patients with LV dysfunction (LVESD ≥45 mm [c] and/or LVEF ≤60%) [122, 131].	I	B

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2012

Surgery should be considered in asymptomatic patients with preserved LV function and new onset of atrial fibrillation or pulmonary hypertension (systolic pulmonary pressure at rest >50 mmHg).	IIa	C	
Surgery should be considered in asymptomatic patients with preserved LV function, high likelihood of durable repair, low surgical risk and flail leaflet and LVESD ≥40 mm.	IIa	C	
Surgery should be considered in patients with severe LV dysfunction (LVEF <30% and/or LVESD >55 mm) refractory to medical therapy with high likelihood of durable repair and low comorbidity.	IIa	C	
Surgery may be considered in patients with severe LV dysfunction (LVEF <30% and/or LVESD >55 mm) refractory to medical therapy with low likelihood of durable repair and low comorbidity.	IIb	C	
Surgery may be considered in asymptomatic patients with preserved LV function, high likelihood of durable repair, low surgical risk, and: • left atrial dilatation (volume index ≥60 ml/m² BSA) and sinus rhythm, or • pulmonary hypertension on exercise (SPAP ≥60 mmHg at exercise).	IIb	C	

2017

Surgery should be considered in asymptomatic patients with preserved LV function (LVESD <45 mm and LVEF >60%) and atrial fibrillation secondary to mitral regurgitation or pulmonary hypertension[d] (systolic pulmonary pressure at rest >50 mmHg) [123, 124].	IIa	B
Surgery should be considered in asymptomatic patients with preserved LVEF (>60%) and LVESD 40–44 mm[c] 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: • flail leaflet or • presence of significant LA dilatation (volume index ≥60 ml/m² BSA) in sinus rhythm.	IIa	C
Mitral valve repair should be considered in symptomatic patients with severe LV dysfunction (LVEF <30% and/or LVESD >55 mm) refractory to medical therapy when the likelihood of successful repair is high and comorbidity low.	IIa	C
Mitral valve replacement may be considered in symptomatic patients with severe LV dysfunction (LVEF <30% and/or LVESD >55 mm) refractory to medical therapy when the likelihood of successful repair is low and comorbidity low.	IIb	C

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2012

2017

Percutaneous edge-to-edge procedure may be considered in patients with symptomatic severe primary mitral regurgitation who fulfil the echocardiographic criteria of eligibility and are judged inoperable or at high surgical risk by the Heart Team, avoiding futility.	IIb	C

Falk V et al: *Eur J Cardiothor Surg 2017*;52:616-664

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Changes in recommendations	
2012	**2017**
Indications for intervention in asymptomatic severe primary mitral regurgitation	
IIb C Surgery may be considered in asymptomatic patients with preserved LV function, high likelihood of durable repair, low surgical risk, and: • Left atrial dilatation (volume index ≥60 mL/m² BSA) and sinus rhythm	**IIa C (modified!)** 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 heart valve centres, and the following finding is present: presence of significant LA dilatation (volume index ≥60 mL/m² BSA) in sinus rhythm.
Pulmonary hypertension on exercise (SPAP ≥ 60 mmHg at exercise)	Taken out

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PRIMÁRNÍ MITRÁLNÍ REGURGITACE - SHRNUTÍ

- Zůstává třída doporučení I pro MVP u symptomatických nemocných se zachovanou funkcí LK a asymptomatických nemocných s dysfunkcí LK
- Nově se do třídy IIa dostávají nemocní se zachovanou funkcí LK (EF >60%, LVESD= 40-44 mm) za předpokladu vysoké predikce úspěšné plastiky
- Nově se do Guidelines dostává transkatetrová technika (MitraClip)
- Nově se zavádím pojem „Heart Valve Centre“

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HEART VALVE CENTRE

Requirements
Multidisciplinary teams with competencies in valve replacement, aortic root surgery, mitral, tricuspid and aortic valve repair, as well as transcatheter aortic and mitral valve techniques including reoperations and reinterventions. The Heart Teams must meet on a regular basis and work with standard operating procedures.
Imaging, including 3D and stress echocardiographic techniques, perioperative TOE, cardiac CT, MRI, and positron emission tomography-CT.
Regular consultation with community, other hospitals, and extracardiac departments, and between non-invasive cardiologists and surgeons and interventional cardiologists.
Back-up services including other cardiologists, cardiac surgeons, intensive care and other medical specialties.
Data review: • Robust internal audit processes including mortality and complications, repair rates, durability of repair, and reoperation rate with a minimum of 1-year follow-up. • Results available for review internally and externally. • Participation in national or European quality databases.

Falk V et al: *Eur J Cardiothor Surg 2017*;52:616-664

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SEKUNDÁRNÍ MITRÁLNÍ REGURGITACE

6.2 Secondary mitral regurgitation

In secondary mitral regurgitation (previously also referred to as 'functional mitral regurgitation'), the valve leaflets and chordae are structurally normal and mitral regurgitation results from an imbalance between closing and tethering forces on the valve secondary to alterations in LV geometry [134]. It is most commonly seen in dilated or ischaemic cardiomyopathies. Annular dilatation in patients with chronic atrial fibrillation and LA enlargement can also be an underlying mechanism.

Falk V et al: *Eur J Cardiothor Surg 2017*;52:616-664

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SEKUNDÁRNÍ MITRÁLNÍ REGURGITACE

	Aortic regurgitation	Mitral regurgitation		Tricuspid regurgitation
Qualitative				
Valve morphology	Abnormal/flail/large coaptation defect	Flail leaflet/ruptured papillary muscle/ large coaptation defect		Abnormal/flail/large coaptation defect
Colour flow regurgitant jet	Large in central jets, variable in eccentric jets[a]	Very large central jet or eccentric jet adhering, swirling, and reaching the posterior wall of the LA		Very large central jet or eccentric wall impinging jet[a]
CW signal of regurgitant jet	Dense	Dense/triangular		Dense/triangular with early peaking (peak <2 m/s in massive TR)
Other	Holodiastolic flow reversal in descending aorta (EDV >20 cm/s)	Large flow convergence zone[a]		–
Semiquantitative				
Vena contracta width (mm)	>6	≥7 (>8 for biplane)[b]		≥7[a]
Upstream vein flow[c]	–	Systolic pulmonary vein flow reversal		Systolic hepatic vein flow reversal
Inflow	–	E-wave dominant ≥1.5 m/s[d]		E-wave dominant ≥1 m/s[e]
Other	Pressure half-time <200 ms[f]	TVI mitral/TVI aortic >1.4		PISA radius >9 mm[g]
Quantitative		Primary	Secondary[h]	
EROA (mm^2)	≥30	≥40	≥20	≥40
Regurgitant volume (mL/beat)	≥60	≥60	≥30	≥45
+ enlargement of cardiac chambers/vessels	LV	LV, LA		RV, RA, inferior vena cava

Falk V et al: *Eur J Cardiothor Surg 2017*;52:616-664

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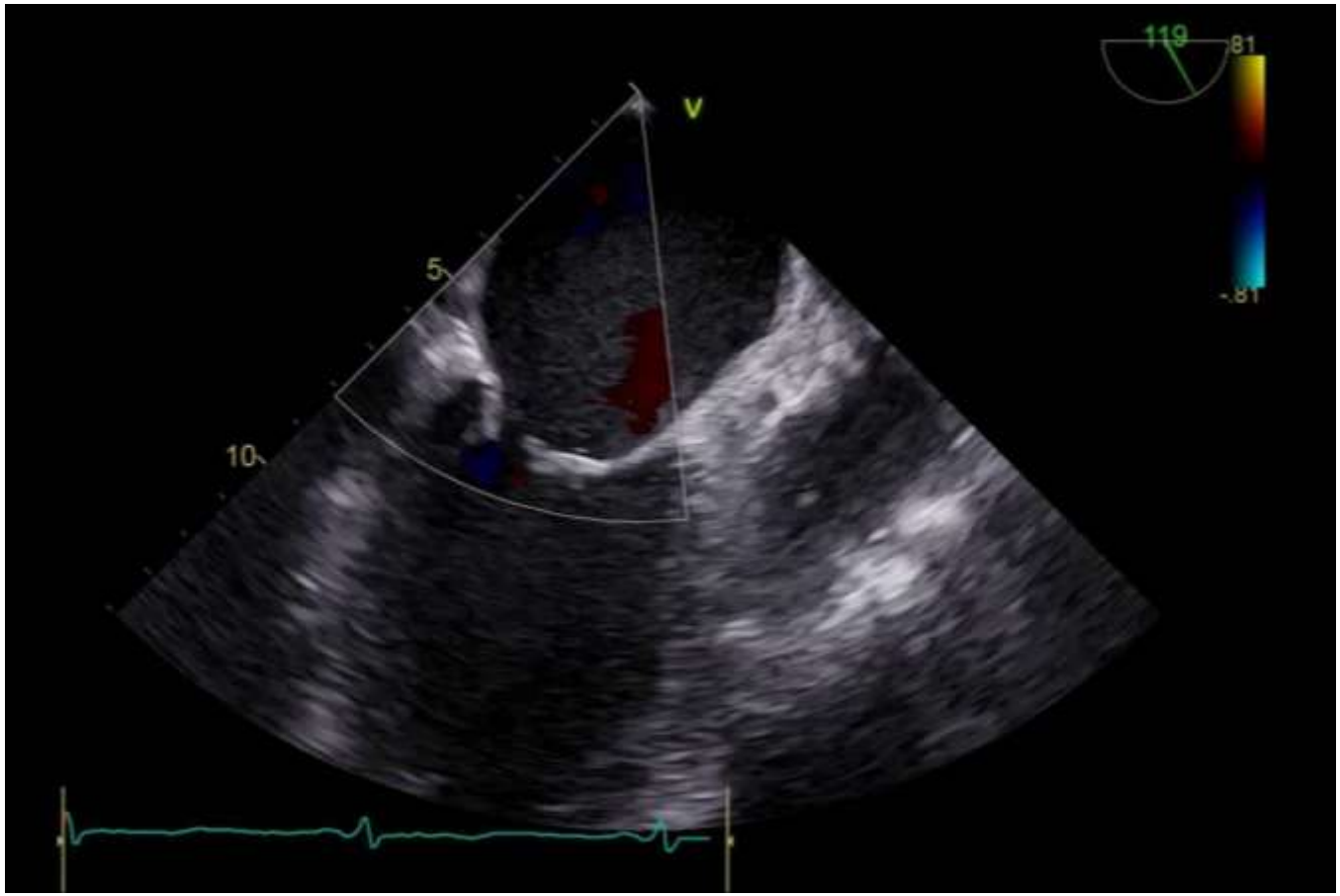

ERO ≥ 0,2 cm² **RV ≥ 30mL**

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2012

	Class [a]	Level [b]
Surgery is indicated in patients with severe MR[c] undergoing CABG, and LVEF >30%.	I	C

2017

Recommendations	Class[b]	Level[c]
Surgery is indicated in patients with severe secondary mitral regurgitation undergoing CABG and LVEF >30%.	I	C

Falk V et al: *Eur J Cardiothor Surg 2017*;52:616-664

MITRÁLNÍ REGURGITACE - 2017 ESC/EACTS GUIDELINES

2012

~~Surgery should be considered in patients with moderate MR undergoing CABG.[d]~~	IIa	C
Surgery should be considered in symptomatic patients with severe MR, LVEF <30%, option for revascularization, and evidence of viability.	IIa	C
Surgery may be considered in patients with severe MR, LVEF >30%, who remain symptomatic despite optimal medical management (including CRT if indicated) and have low comorbidity, when revascularization is not indicated.	IIb	C

2017

Surgery should be considered in symptomatic patients with severe secondary mitral regurgitation, LVEF <30% but with an option for revascularization and evidence of myocardial viability.	IIa	C
When revascularization is not indicated, surgery may be considered in patients with severe secondary mitral regurgitation and LVEF >30% who remain symptomatic despite optimal medical management (including CRT if indicated) and have a low surgical risk.	IIb	C
When revascularization is not indicated and surgical risk is not low, a percutaneous edge-to-edge procedure may be considered in patients with severe secondary mitral regurgitation and LVEF >30% who remain symptomatic despite optimal medical management (including CRT if indicated) and who have a suitable valve morphology by echocardiography, avoiding futility.	IIb	C
In patients with severe secondary mitral regurgitation and LVEF <30% who remain symptomatic despite optimal medical management (including CRT if indicated) and who have no option for revascularization, the Heart Team may consider a percutaneous edge-to-edge procedure or valve surgery after careful evaluation for a ventricular assist device or heart transplant according to individual patient characteristics.	IIb	C

Falk V et al: *Eur J Cardiothor Surg 2017*;52:616-664

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Changes in recommendations	
2012	**2017**
Indications for mitral valve intervention in secondary mitral regurgitation	
IIa C Surgery should be considered in patients with moderate secondary mitral regurgitation undergoing CABG	Taken out
IIb C When revascularization is not indicated, surgery may be considered in patients with severe secondary mitral regurgitation and LVEF >30%, who remain symptomatic despite optimal medical management (including CRT if indicated).	**IIb C (modified)** When revascularization is not indicated, surgery may be considered in patients with severe secondary mitral regurgitation and LVEF >30%, who remain symptomatic despite optimal medical management (including CRT if indicated) and have a low surgical risk. When revascularization is not indicated and surgical risk is not low, a percutaneous edge-to-edge procedure may be considered in patients with severe secondary mitral regurgitation and LVEF >30%, who remain symptomatic despite optimal medical management (including CRT if indicated) and who have a suitable valve morphology by echocardiography, avoiding futility. In patients with severe secondary mitral regurgitation and LVEF <30% who remain symptomatic despite optimal medical management (including CRT if indicated) and who have no option for revascularization, the Heart Team may consider percutaneous edge-to-edge procedure or valve surgery after careful evaluation for ventricular assist device or heart transplant according to individual patient characteristics. **Additional statement:** The lower thresholds defining severe MR compared to primary MR are based on their association with prognosis. However, it is unclear if prognosis is independently affected by MR compared to LV dysfunction. For isolated mitral valve treatment in secondary MR, thresholds of severity of MR for intervention still need to be validated in clinical trials. So far, no survival benefit has been confirmed for reduction of secondary MR.

Falk V et al: *Eur J Cardiothor Surg 2017*;52:616-664

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SEKUNDÁRNÍ MITRÁLNÍ REGURGITACE - SHRNUTÍ

- Zůstává třída doporučení I pro indikaci k MVP u nemocných s významnou sekundární MR, kteří podstupují CABG
- Byla zcela vyjmuta doporučení pro provádění MVP u nemocných se středně významnou MR, kteří podstupují CABG
- Byla upřesněna IIb doporučení u provádění MVP u sekundární MR bez indikace k revaskularizaci
- Nově se do Guidelines dostává transkatetrová technika (MitraClip)
- Evropská guidelines neřeší typ zákroku na MCH

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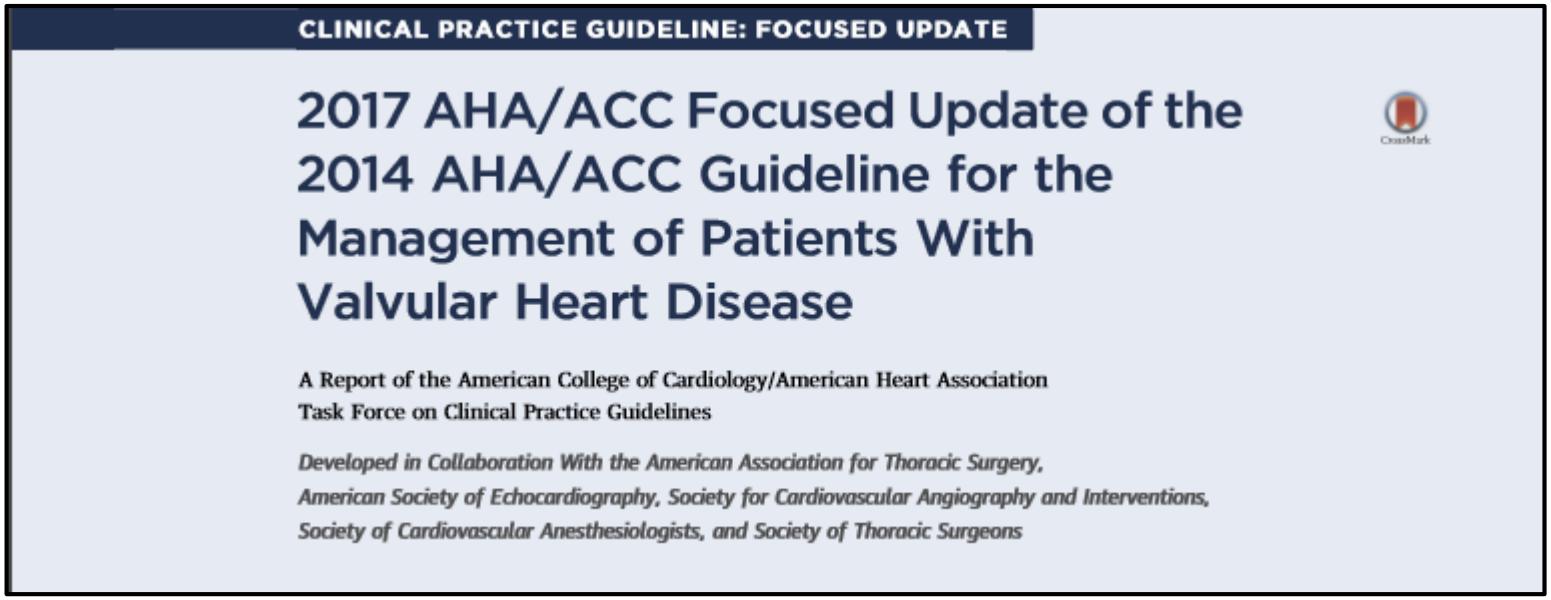
2017 AHA/ACC GUIDELINES UPDATE



Nishimura RA et al: *JACC 2017*;70:252-89

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2017 AHA/ACC GUIDELINES UPDATE

PRIMÁRNÍ MITRÁLNÍ REGURGITACE

IIa	C-LD

See Online Data Supplement 17 (Updated From 2014 VHD Guideline)

Mitral valve surgery is reasonable for asymptomatic patients with chronic severe primary MR (stage C1) and preserved LV function (LVEF >60% and LVESD <40 mm) with a progressive increase in LV size or decrease in ejection fraction (EF) on serial imaging studies (112–115). (Figure 2)

NEW: Patients with severe MR who reach an EF ≤60% or LVESD ≥40 have already developed LV systolic dysfunction, so operating before reaching these parameters, particularly with a progressive increase in LV size or decrease in EF on serial studies, is reasonable.

There is concern that the presence of MR leads to progressively more severe MR ("mitral regurgitation begets mitral regurgitation"). The concept is that the initial level of MR causes LV dilatation, which increases stress on the mitral apparatus, causing further damage to the valve apparatus, more severe MR and further LV dilatation, thus initiating a perpetual cycle of ever-increasing LV volumes and MR. Longstanding volume overload leads to irreversible LV dysfunction and a poorer prognosis. Patients with severe MR who develop an EF ≤60% or LVESD ≥40 have already developed LV systolic dysfunction (112–115). One study has suggested that for LV function and size to return to normal after mitral valve repair, the left ventricular ejection fraction (LVEF) should be >64% and LVESD <37 mm (112). Thus, when longitudinal follow-up demonstrates a progressive decrease of EF toward 60% or a progressive increase in LVESD approaching 40 mm, it is reasonable to consider intervention. Nonetheless, the asymptomatic patient with stable LV dimensions and excellent exercise capacity can be safely observed (116).

Nishimura RA et al: *JACC 2017*;70:252-89

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Predikce pooperační dysfunkce LK na základě předoperačních parametrů (LVEF, LVESD)

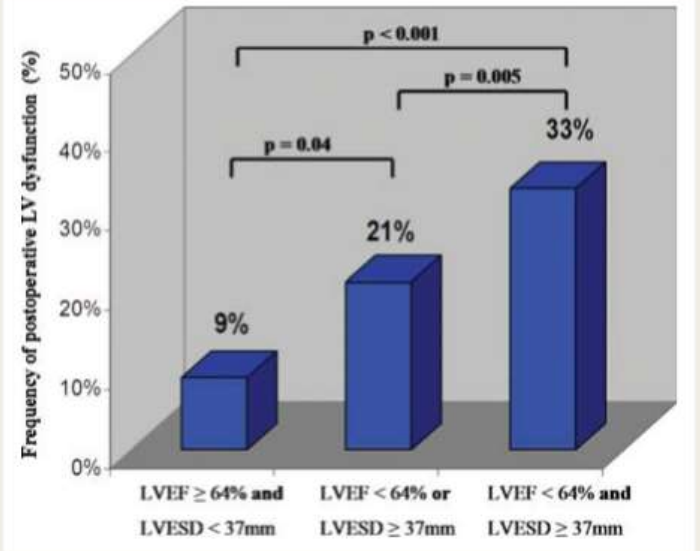

Figure 4 Frequency of post-operative left ventricular dysfunction according to preoperative LVEF and LVESD. Cut-off values were identified by receiver operating characteristic curve analysis. LVEF, left ventricular ejection fraction; LVESD, left ventricular end-systolic diameter.

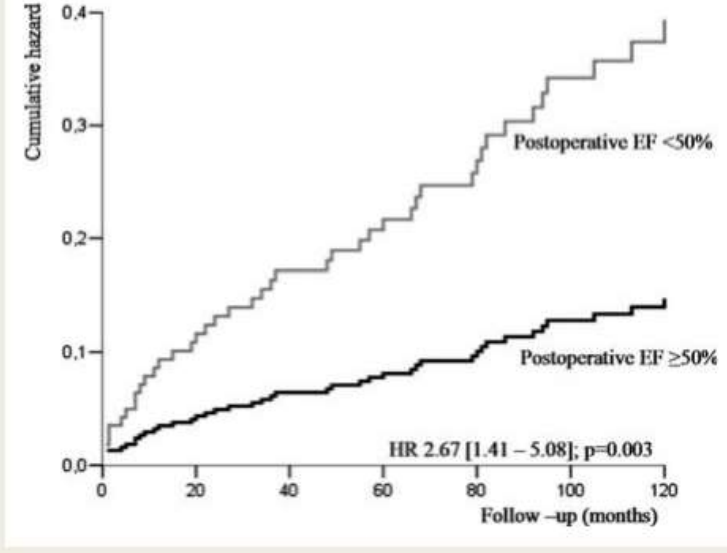

Figure 5 Cumulative hazard of cardiac death and hospital admission for heart failure during follow-up according to post-operative left ventricular dysfunction. Results of the Cox proportional analysis with post-operative EF <50% and ≥50%. EF, left ventricular ejection fraction.

Tribouilloy C et al: Eur J Echocardiogr *2011*; 12: 702-10

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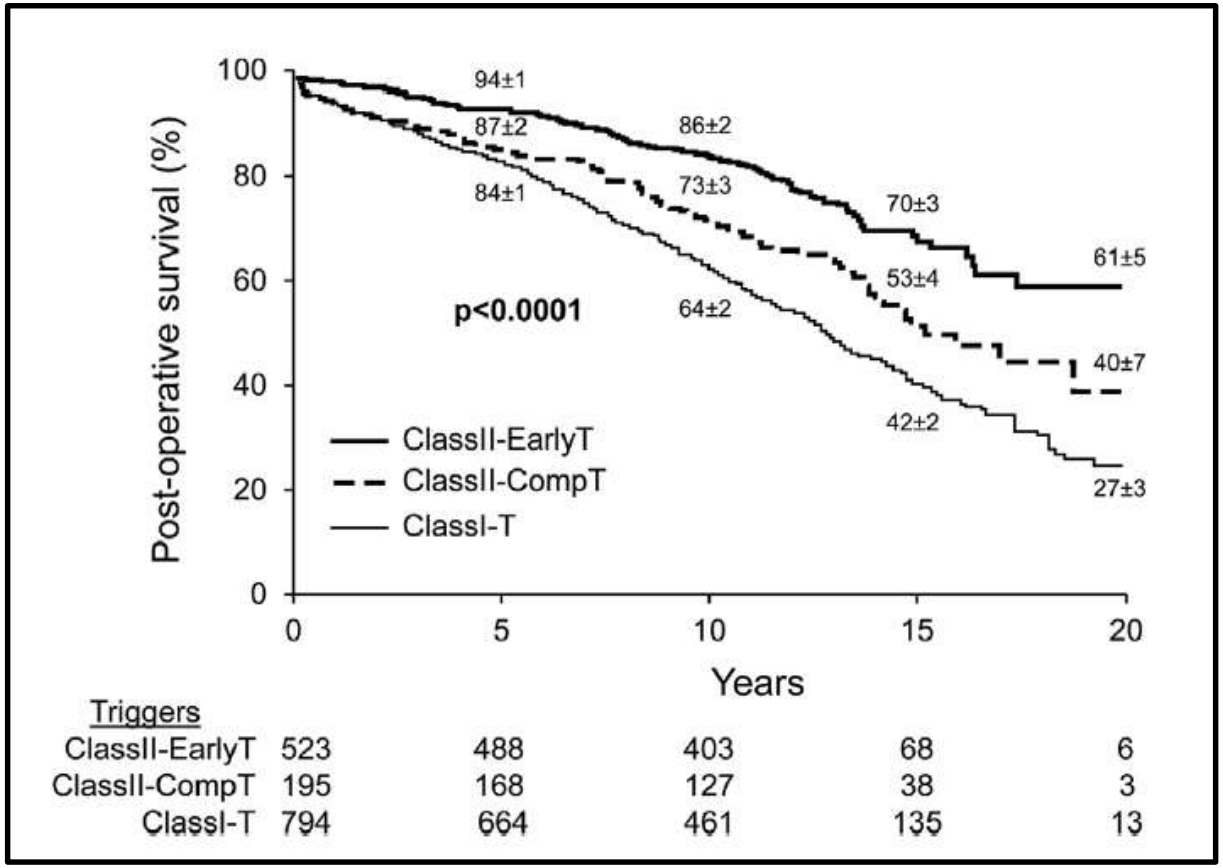
Plastika mitrální chlopně – Class I trigery vs. Class II trigery



Enriquez-Sarano M et al: *J Thorac Cardiovasc Surg 2015; in press*

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Velmi nízká mortalita u izolované plastiky mitrální chlopně

Increasing Disadvantage of "Watchful Waiting" for Repairing Degenerative Mitral Valve Disease

Farhang Yazdchi, MD, MS, Colleen G. Koch, MD, MS, Tomislav Mihaljevic, MD, Rory Hachamovitch, MD, Ashley M. Lowry, MS, Jiayan He, ScD, A. Marc Gillinov, MD, Eugene H. Blackstone, MD, and Joseph F. Sabik, III, MD

Departments of Thoracic and Cardiovascular Surgery, Cardiothoracic Anesthesia, and Cardiovascular Medicine, Heart and Vascular Institute; and Department of Quantitative Health Sciences, Research Institute, Cleveland Clinic, Cleveland, Ohio

Background. Successful durable repair of severe degenerative mitral regurgitation with low operative mortality encourages intervention in asymptomatic patients rather than "watchful waiting." Our objectives were to assess trends in patient characteristics, timing of intervention, and evolving surgical techniques at a high-volume center, and determine effects of these changes on outcomes after mitral valve (MV) repair over a 25-year period.

Methods. From January 1, 1985, to January 1, 2011, 5,902 patients underwent isolated repair (with or without tricuspid repair for functional regurgitation) for degenerative MV disease at Cleveland Clinic. For illustration, the experience is presented in 3 eras: 1985 to 1997 (era 1, n = 1,184), 1997 to 2005 (era 2, n = 2,400), and 2005 to 2011 (era 3, n = 2,318).

Results. In era 3, more patients were asymptomatic on presentation (44% in New York Heart Association [NYHA] class I vs 25% in era 1), with less heart failure [illegible]% vs 2[illegible]) and atrial fibrillation (9.9% vs 23%). Full sternotomy decreased from era 1 (n = 1,100/93%) to era 2 (n = 602/[illegible]%), era 3 (n = 717/31%), and robotic surgery emerged (n = 57/25%) in era 3. Median length of stay shortened (era 1 = 7 days, era 2 = 5.9 days, era 3 = 5.2 days, $p < 0.0001$), and in-hospital mortality remained low (era 1 = 5/0.42%, era 2 = 5/0.21%, era 3 = 1/0.043%); 0.73% overall required reoperation on the repaired valve before discharge, and 97% had 0 to 1+ regurgitation at discharge.

Conclusions. Treatment trends over 25 years reveal that rather than watchful waiting, a more aggressive approach to degenerative MV disease, with earlier intervention for severe regurgitation in asymptomatic patients and less invasive operative techniques, is successful, safe, and effective.

(Ann Thorac Surg 2015;■:■–■)

0,18 %

Yazdich F et al: *Ann Thorac Surg 2015*; in press

MITRÁLNÍ REGURGITACE - 2017 ESC/EACTS GUIDELINES

Reparabilita mitrální chlopně se liší mezi jednotlivými chirurgickými centry

A near 100% repair rate for mitral valve prolapse is achievable in a reference center: Implications for future guidelines

Javier G. Castillo, MD, Anelechi C. Anyanwu, MD, Valentin Fuster, MD, PhD, and David H. Adams, MD

Background: Although mitral valve repair is the recommended treatment for severe mitral regurgitation of degenerative etiology, valve replacement remains common, particularly for complex lesions or anterior leaflet involvement. We sought to characterize the feasibility and outcomes of an "all comers" repair strategy applied systematically in all cases of degenerative mitral valve disease, regardless of age, complexity, or leaflet involvement.

Methods: From January 2002 to December 2010, 744 consecutive patients (mean age, 58 ± 13 years [range, 12-90]; mean LVEF, 55% ± 9%) with degenerative mitral valve regurgitation and prolapse (anterior leaflet: n = 42, 6%; posterior leaflet: n = 556, 75%; bileaflet: n = 146, 19%) underwent mitral valve surgery. Annular, leaflet or chordal calcification was present in 27% of cases.

Results: All patients underwent mitral valve repair and received a concomitant annuloplasty with a median ring size of 32 mm (interquartile range, 30-36). There was 1 early valve replacement (99.9% repair rate) due to atrioventricular groove bleeding and 5 late re-repairs (0.7%) due to disease progression or infective endocarditis. In-hospital mortality and major stroke rates were 0.8% and 0.5%, respectively. Survival rates at 1 and 5 years were 99.2% ± 0.3% and 97.4% ± 0.8%, respectively. Seven-year freedom from reoperation was 97.1% ± 0.6%. The estimate of patients with <3+ mitral regurgitation at 4 and 7 years was 98% and 96%, respectively, and 95% and 91%, respectively, for <2+ mitral regurgitation.

Conclusions: A systematic strategy of mitral valve repair that uses a variety of techniques allows repair of all degenerative valves in a reference center, with good short-term outcomes and mid-term durability. Further study is required to document the long-term efficacy of an "all comers" mitral valve repair strategy in degenerative subgroups with very complex valve morphology. (J Thorac Cardiovasc Surg 2012;144:308-12)

Castilo JG et al: *J Thorac Cardiovasc Surg 2012*;144:318-12

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Minimálně invazivní plastika mitrální chlopně

Cerny S, Nemocnice Na Homolce

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Minimálně invazivní plastika mitrální chlopně – dlouhodobé výsledky

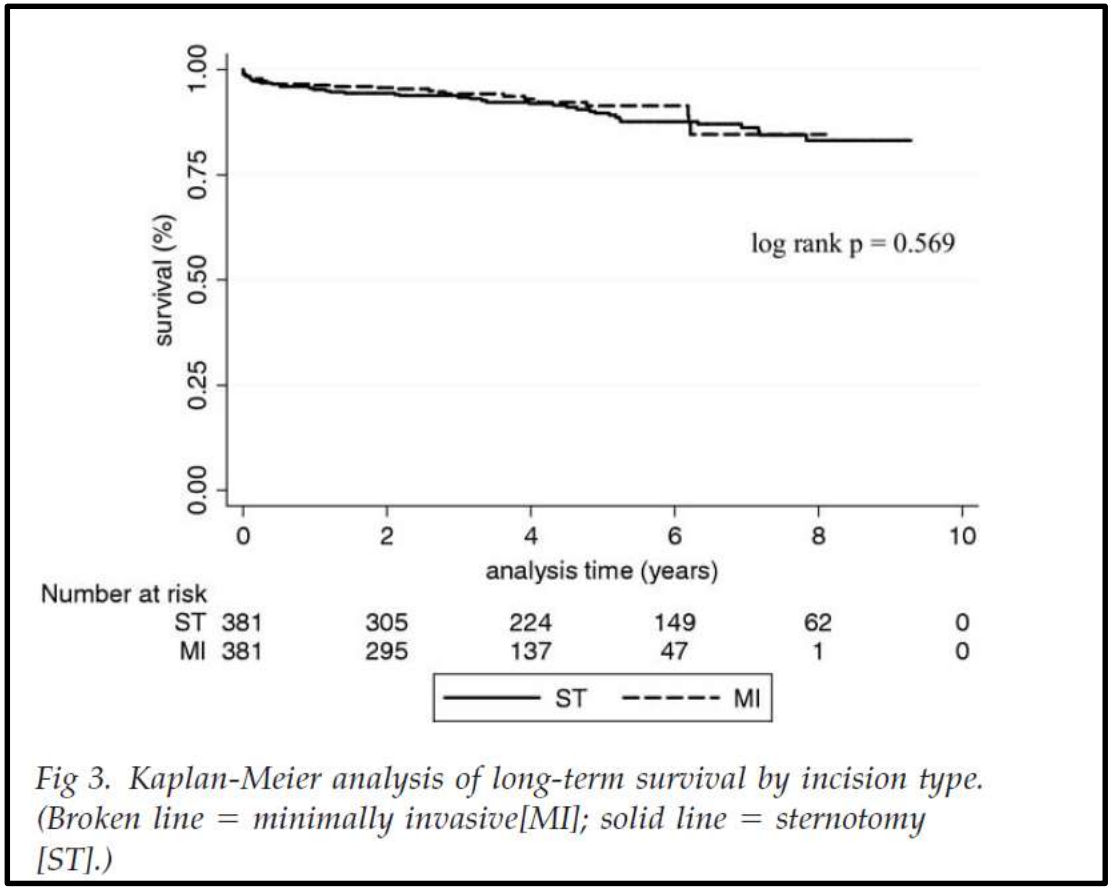

Fig 3. Kaplan-Meier analysis of long-term survival by incision type. (Broken line = minimally invasive[MI]; solid line = sternotomy [ST].)

Irbarne A et al: *Ann Thorac Surg 2010;90*:1471-8

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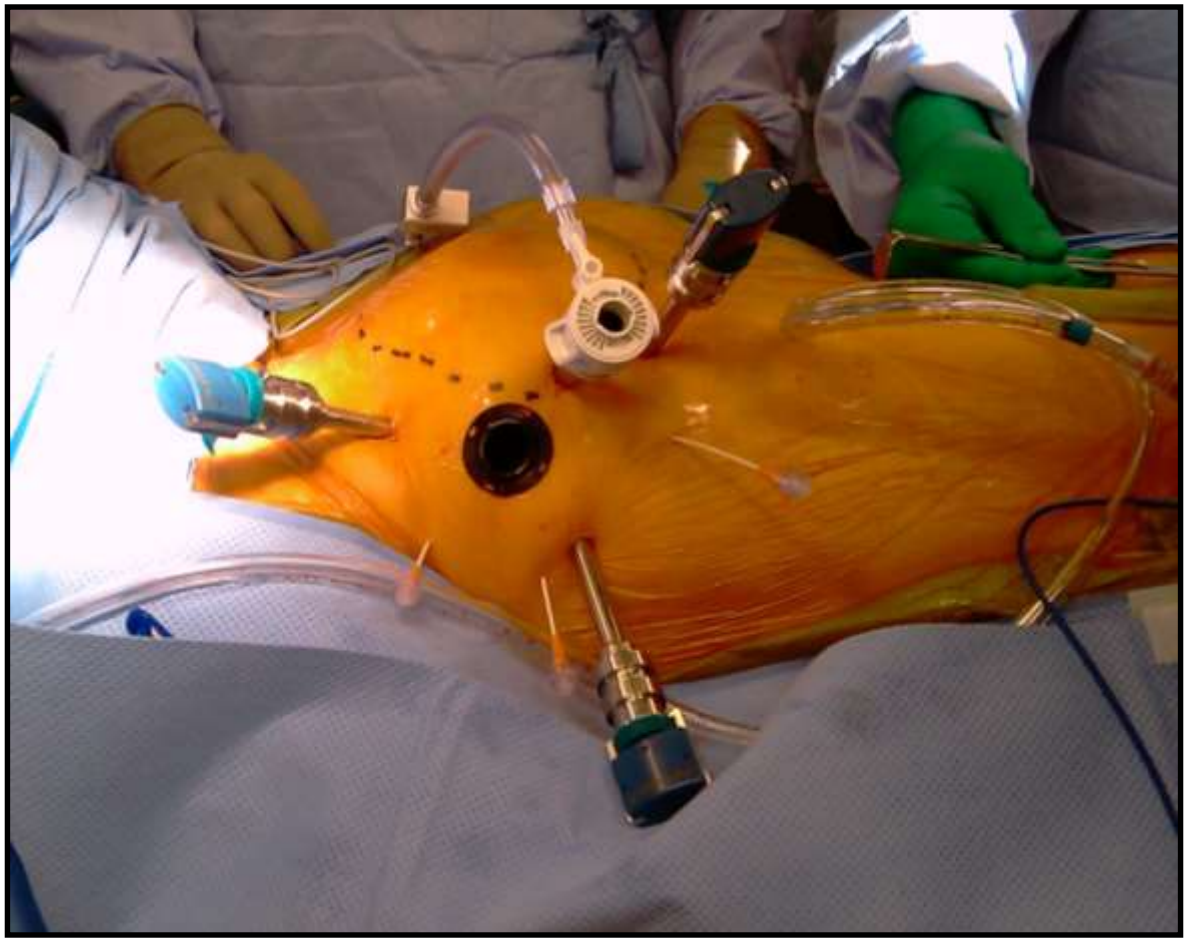
Robotická plastika mitrální chlopně



Murphy DA, Saint Joseph´s Hospital, Atlanta, GA, USA

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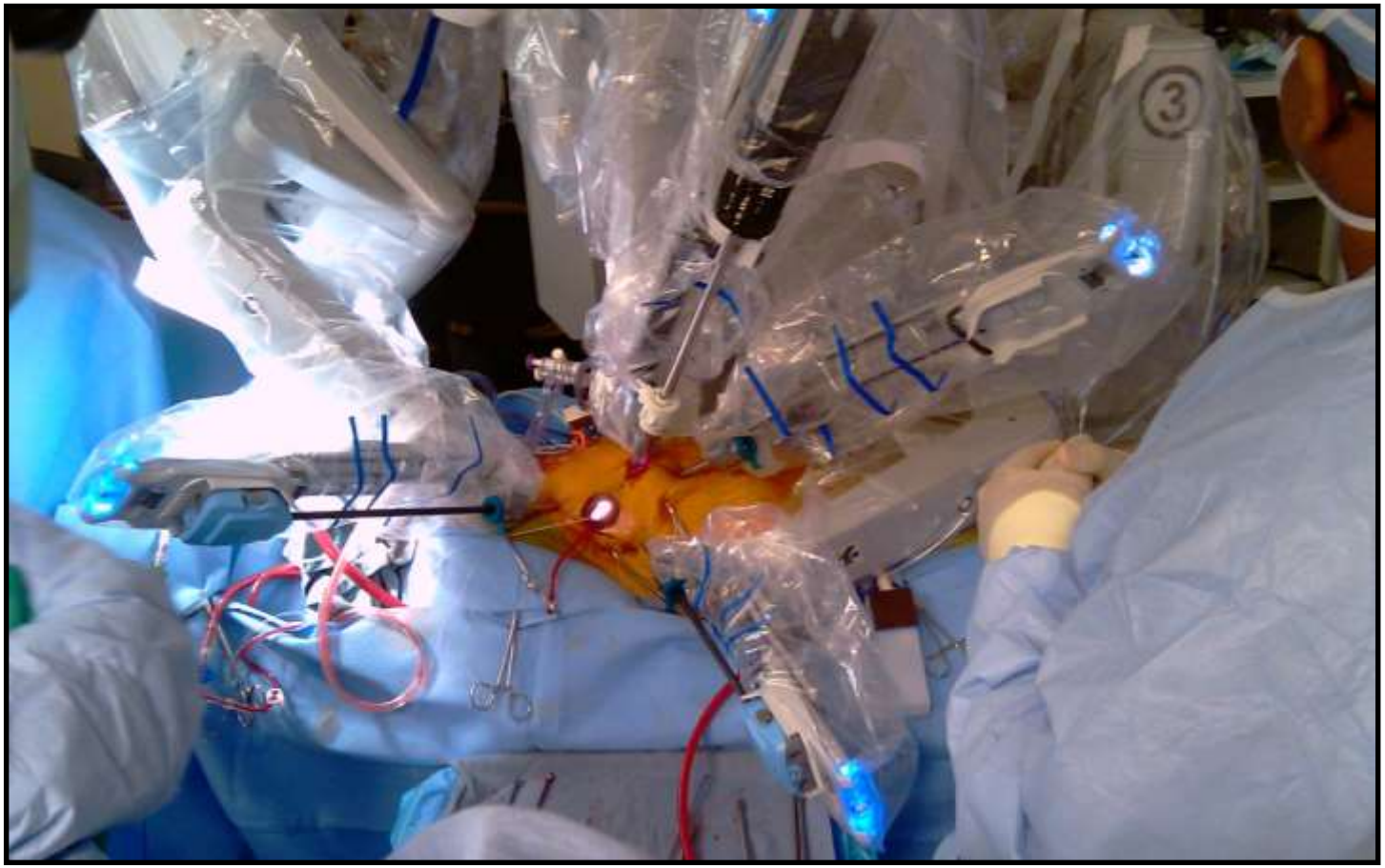
Robotická plastika mitrální chlopně



Murphy DA, Saint Joseph´s Hospital, Atlanta, GA, USA

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Minimálně invazivní plastika mitrální chlopně – dlouhodobé výsledky

The Expanding Role of Endoscopic Robotics in Mitral Valve Surgery: 1,257 Consecutive Procedures

Douglas A. Murphy, MD, Emmanuel Moss, MDCM, MS, Jose Binongo, PhD, Jeffrey S. Miller, MD, Steven K. Macheers, MD, Eric L. Sarin, MD, Alexander M. Herzog, BS, Vinod H. Thourani, MD, Robert A. Guyton, MD, and Michael E. Halkos, MD, MS

Division of Cardiothoracic Surgery, Emory University School of Medicine, and Rollins School of Public Health, Emory University, Atlanta, Georgia

Background. The role of robotic instruments in mitral valve (MV) surgery continues to evolve. The purpose of this study was to assess the safety, efficacy, and scope of MV surgery using a lateral endoscopic approach with robotics (LEAR) technique.

Methods. From 2006 to 2013, a dedicated LEAR team performed 1,257 consecutive isolated MV procedures with or without tricuspid valve repair or atrial ablation. The procedures were performed robotically through five right-side chest ports with femoral artery or ascending aortic perfusion and balloon occlusion. Operative videos and data were recorded on all procedures and reviewed retrospectively.

Results. The mean age of all patients was 59.3 ± 20.5 years, and 8.4% (n = 105) had previous cardiac surgery. The MV repair was performed in 1,167 patients (93%). The MV replacement was performed in 88 patients (7%), and paravalvular leak repair in 2 patients. Concomitant atrial ablation was performed in 226 patients (18%), and tricuspid valve repair in 138 patients (11%). Operative mortality occurred in 11 patients (0.9%) and stroke in 9 patients (0.7%). Predischarge echocardiograms demonstrated mild or less mitral regurgitation in 98.3% of MV repair patients. At mean follow-up of 50 ± 26 months, 44 patients (3.8%) required MV reoperation. Application of the LEAR technique to all institutional isolated MV procedures increased from 46% in the first year to more than 90% in the last 3 years.

Conclusions. Mitral valve repair or replacement, including concomitant procedures, can be performed safely and effectively using the LEAR technique. With a dedicated robotic team, the vast majority of patients with MV disorders, either isolated or with concomitant problems, can be treated using the LEAR technique.

(Ann Thorac Surg 2015;100:1675–82)

Murphy DA et al: *Ann Thorac Surg 2015;100*:1675-82

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„HEART VALVE CENTRES“

MITRÁLNÍ REGURGITACE - 2017 ESC/EACTS GUIDELINES

2017 AHA/ACC GUIDELINES UPDATE

SEKUNDÁRNÍ MITRÁLNÍ REGURGITACE

IIa / B-R See Online Data Supplement 18 (Updated From 2014 VHD Guideline)	It is reasonable to choose chordal-sparing MVR over downsized annuloplasty repair if operation is considered for severely symptomatic patients (NYHA class III to IV) with chronic severe ischemic MR (stage D) and persistent symptoms despite GDMT for HF (69,70,125,127,130–139).	NEW: An RCT has shown that mitral valve repair is associated with a higher rate of recurrence of moderate or severe MR than that associated with mitral valve replacement (MVR) in patients with severe, symptomatic, ischemic MR, without a difference in mortality rate at 2 years' follow-up.

In an RCT of mitral valve repair versus MVR in 251 patients with severe ischemic MR, mortality rate at 2 years was 19.0% in the repair group and 23.2% in the replacement group ($p=0.39$) (70). There was no difference between repair and MVR in LV remodeling. The rate of recurrence of moderate or severe MR over 2 years was higher in the repair group than in the replacement group (58.8% versus 3.8%, $p<0.001$), leading to a higher incidence of HF and repeat hospitalizations in the repair group (70). The high mortality rate at 2 years in both groups emphasizes the poor prognosis of secondary MR. The lack of apparent benefit of valve repair over valve replacement in secondary MR versus primary MR highlights that primary and secondary MR are 2 different diseases (69,125,127,130–139).

Nishimura RA et al: *JACC 2017*;70:252-89

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MVP vs. MVR u IMR

Prospektivní randomizovaná studie (n=251)

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Mitral-Valve Repair versus Replacement for Severe Ischemic Mitral Regurgitation

Michael A. Acker, M.D., Michael K. Parides, Ph.D., Louis P. Perrault, M.D., Alan J. Moskowitz, M.D., Annetine C. Gelijns, Ph.D., Pierre Voisine, M.D., Peter K. Smith, M.D., Judy W. Hung, M.D., Eugene H. Blackstone, M.D., John D. Puskas, M.D., Michael Argenziano, M.D., James S. Gammie, M.D., Michael Mack, M.D., Deborah D. Ascheim, M.D., Emilia Bagiella, Ph.D., Ellen G. Moquete, R.N., T. Bruce Ferguson, M.D., Keith A. Horvath, M.D., Nancy L. Geller, Ph.D., Marissa A. Miller, D.V.M., Y. Joseph Woo, M.D., David A. D'Alessandro, M.D., Gorav Ailawadi, M.D., Francois Dagenais, M.D., Timothy J. Gardner, M.D., Patrick T. O'Gara, M.D., Robert E. Michler, M.D., and Irving L. Kron, M.D., for the CTSN*

Acker MA et al:*N Engl J Med 2014*; 370: 23 -32

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MVP vs. MVR u IMR – 1 leté výsledky

Prospektivní randomizovaná studie (n=251)

TABLE 3 Selected 1-Year Outcomes of MV Repair Versus Replacement for Severe Ischemic MR (From the Cardiothoracic Surgical Trials Network)

	MV Repair (n = 126)	MV Replacement (n = 125)	p Value
LVESVI (ml/m^2; primary endpoint)	54.6 ± 25.0	60.7 ± 31.5	0.18*
Recurrent moderate/severe MR	32.6%	2.3%	<0.001
Moderate	28.4%	2.3%	–
Severe	4.2%	0%	–
Death	14.3%	17.6%	0.45
MV reoperation	2.4%	0%	0.25
Major adverse cardiac events†	32.5%	33.6%	0.86
New York Heart Association functional class III/IV	9.0%	14.0%	0.28
Minnesota Living With Heart Failure score	24.5 ± 23.1	19.6 ± 19.4	0.12

Values are mean ± SD or %. *Adjusted for death. †Death, stroke, New York Heart Association functional class increase by ≥1 grade, heart failure rehospitalization, or mitral valve reoperation. Adapted with permission from Acker et al. (60).

LVESVI = left ventricular end-systolic volume index; MV = mitral valve.

Acker MA et al:*N Engl J Med 2014*; 370: 23 -32

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MVP vs. MVR u IMR – 2 leté výsledky

Prospektivní randomizovaná studie (n=251)

Table 1. Clinical End Points, Serious Adverse Events, and Hospitalizations at 2 Years.

Variable	Repair (N=126)	Replacement (N=125)	P Value*
	no./total no. of patients (%)		
Clinical end point			
Death	24/126 (19.0)	29/125 (23.2)	0.42
Stroke	10/126 (7.9)	7/125 (5.6)	0.46
Worsening New York Heart Association class†	5/85 (5.9)	5/84 (6.0)	1.0
Rehospitalization for heart failure	27/126 (21.4)	22/125 (17.6)	0.44
Failed index mitral-valve procedure	6/126 (4.8)	0	0.03
Mitral-valve reoperation	4/126 (3.2)	1/125 (0.8)	0.37
Moderate or severe recurrent mitral regurgitation	57/97 (58.8)	3/79 (3.8)	<0.001
MACCE‡	53/126 (42.1)	53/125 (42.4)	0.96
Canadian Cardiovascular Society class III or IV	4/82 (4.9)	0/80	0.19

Goldstein D et al: *N Engl J Med 2016*; 374: 344 - 53

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MVP vs. MVR u IMR

Prospektivní randomizovaná studie (n=251)

2.3% [all moderate]; P<0.001). In the repair group, the 12-month LVESVI was 64.1±23.9 ml per square meter in patients with recurrent mitral regurgitation versus 47.3±23.0 ml per square meter in those without recurrent mitral regurgitation (P<0.001). Within 1 year, three patients in the repair group and none in the replacement group underwent mitral-valve reoperation (P=0.25).

Acker MA et al:*N Engl J Med 2014*; 370: 23 -32

EPILOG

POHLED KARDIOCHIRURGA…

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Každá těžká primární mitrální regurgitace by v 21. století měla být operována ještě před vznikem symptomů !!!

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Proč chirurgové preferují operovat asymptomatické nemocné s MR ???

EDITORIAL COMMENT

Valve Regurgitation With LV Dysfunction

How Did We Get There?*

Maurice Enriquez-Sarano, MD

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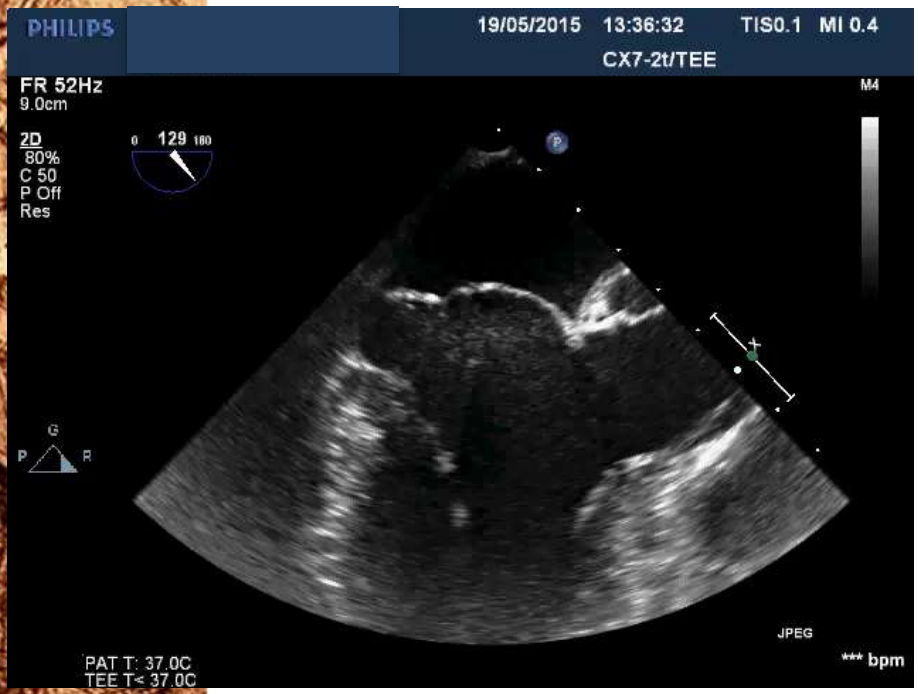
Plastika mitrální chlopně – chirurgická technika
Intraoperační TEE



Předoperační

Pooperační

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Děkuji za pozornost!