Chirurgická léčba mitrálních vad u osmdesátníků

Radka Kočková

Mitrální regurgitace u osmdesátníka

Table 1 Prevalence of comorbidities in octogenarians with cardiac valve disease

Coronary artery disease	40–60%
Obstructive lung disease	15–25%
Renal insufficiency	5–10%
Peripheral vascular disease	2–10%
Cerebrovascular disease	5–25%
Hypertension	20–50%
Diabetes	10–20%

20% prominentní ateropláty v asc.aortě

15-20% riziko malperfúze mozku během CPB

Mitrální chirurgie 30-35% ***(z chlopenních vad)***

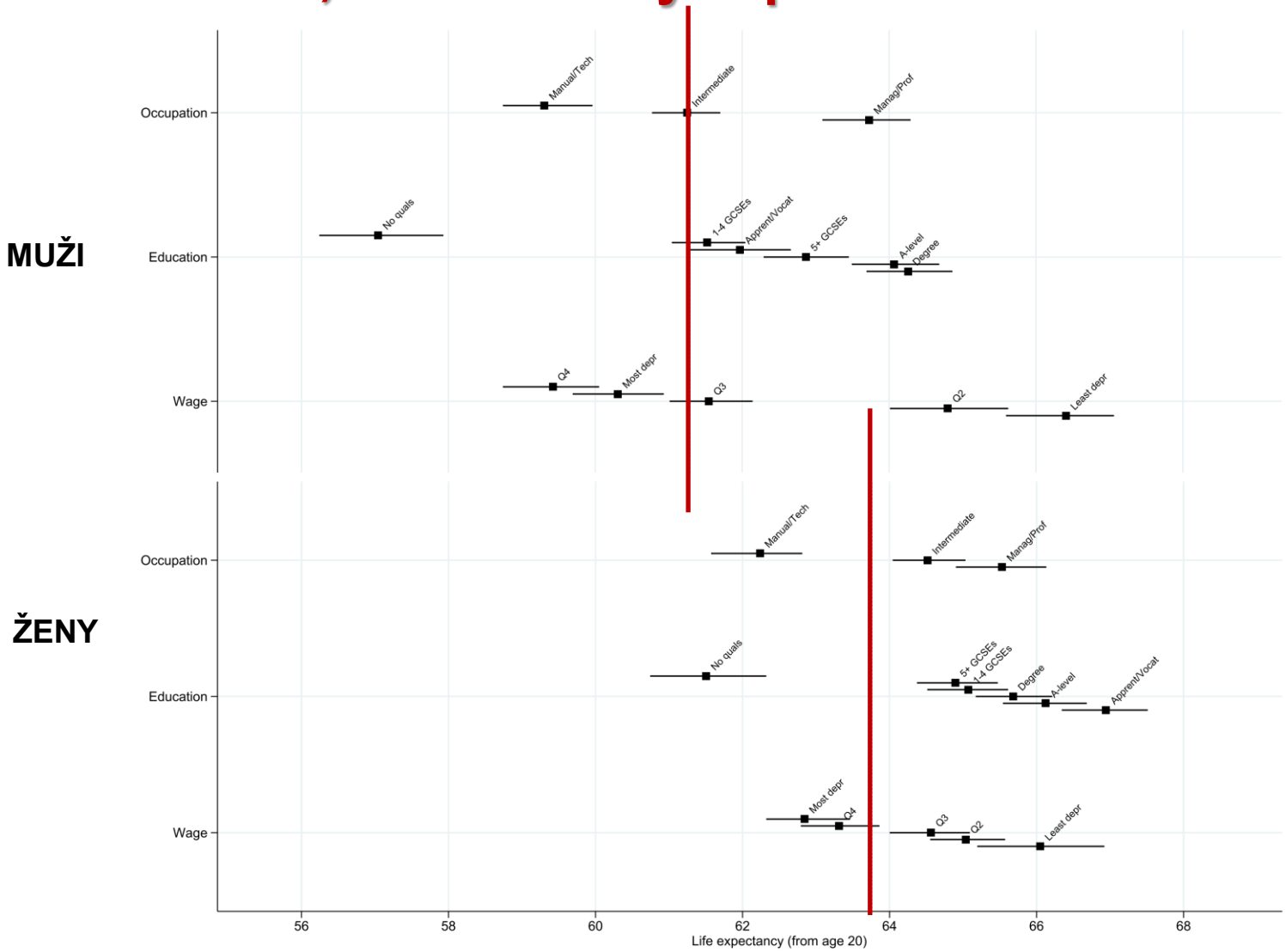
Mitrální stenóza cca 1%

Heart 2000;83:116–121

Individuální pohled na osmdesátníky

https://www.lidovky.cz/briefing/velka-slava-v-londyne-prezident-zeman-se-setka-s-kralovnou-alzbetou-ii.A170615_214303_ln_briefing_gib

Očekávaná délka života u 20-ti letých podle zaměstnání, vzdělání a výše platu ve Velké Británii



Ingleby FC et al. SSM - Population Health 14 (2021) 100815

Státníci EU a US 2021-2023

https://www.ceskapolitika.cz/2021/ceska-statni-ostuda-milos-zeman/

https://www.thestar.com.my/news/world/2023/01/06/biden-says-putin-trying-to-find-039oxygen039-with-truce-proposal

Osmdesátníci v senátu

USA

This Senate is the oldest in American history. Should we do anything about it?

By Roxanne Roberts

June 2, 2021 at 6:00 a.m. EDT

Clockwise from top left: Sens. Dianne Feinstein (D-Calif.), James Inhofe (R-Okla.), Richard Shelby (R-Ala.) and Charles Grassley (R-Iowa) are the oldest members of the Senate. (Mario Tama/Getty Images; Greg Nash/AP; J. Scott Applewhite/AP; Bill Clark/AFP/Getty Images) (Clockwise from top left: Mario Tama/Getty Images; Greg Nash/AP; J. Scott Applewhite/AP; Bill Clark/AFP/Getty Images)

Consider, for a moment, the octogenarians in office. Dianne Feinstein, the oldest sitting senator, turns 88 this month. She's served since 1992. Charles Grassley, three months younger, celebrates his 88th birthday in September. He's held the job for 40 years.

Richard Shelby is 87. James Inhofe is 86. Pat Leahy is 81. The three men have served in the senate for a total of 106 years.

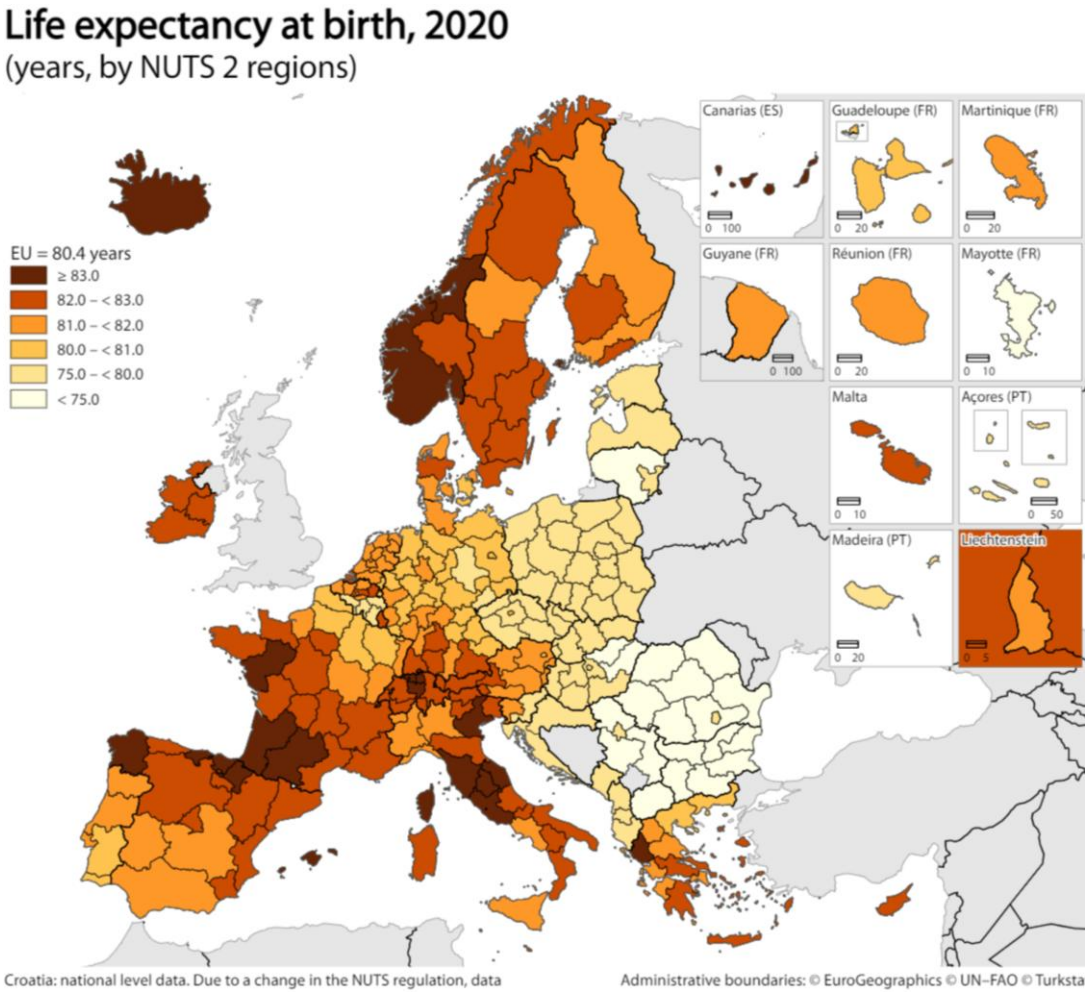
And there are plenty more right behind them: Twenty-three members of the Senate are in their 70s; only one is under 40. According to the Congressional Research Service, the average age of senators at the beginning of this year was 64.3 years — the oldest in history.

https://www.washingtonpost.com/lifestyle/2021/06/02/senate-age-term-limits/

ČR

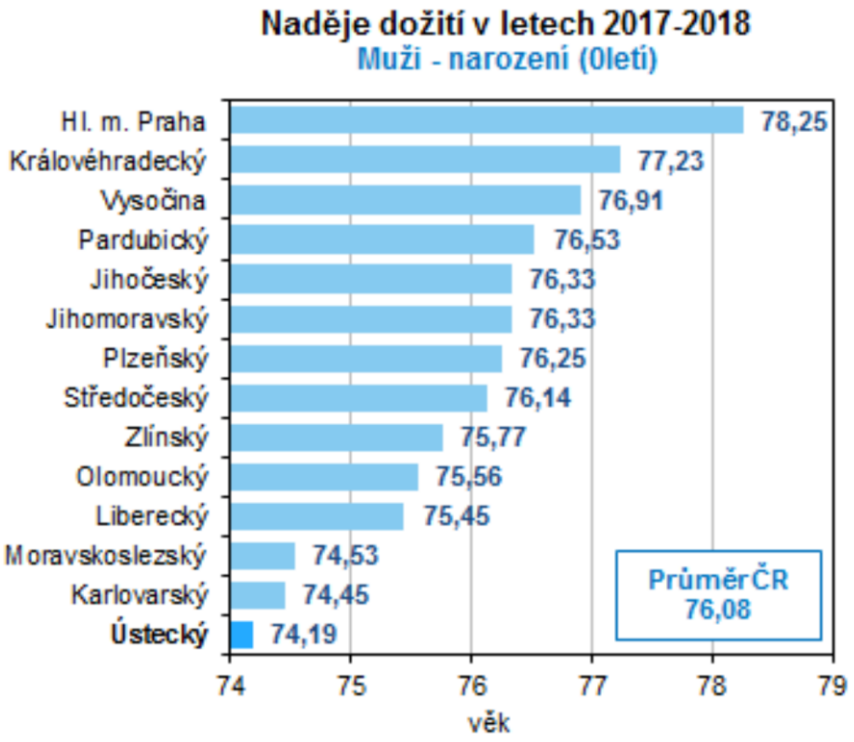
Všichni mladší 80-ti let – t.č. nejstarší Jan Pirk, Jiří Růžička

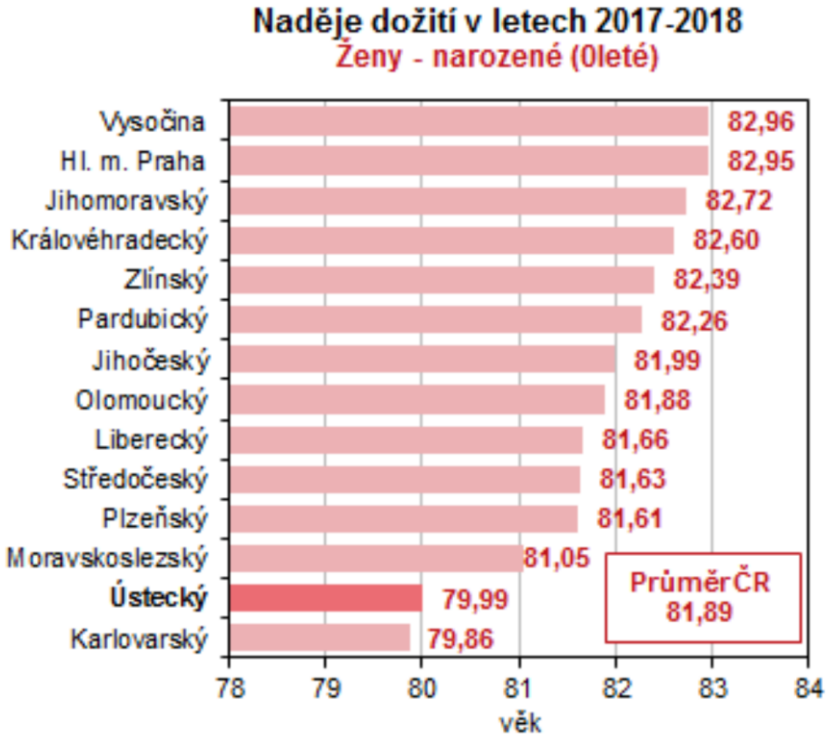
Očekávaná délka života v EU 2020



Eurostat, https://ec.europa.eu/eurostat/web/main/home

Očekávaná délka života v ČR podle kraje

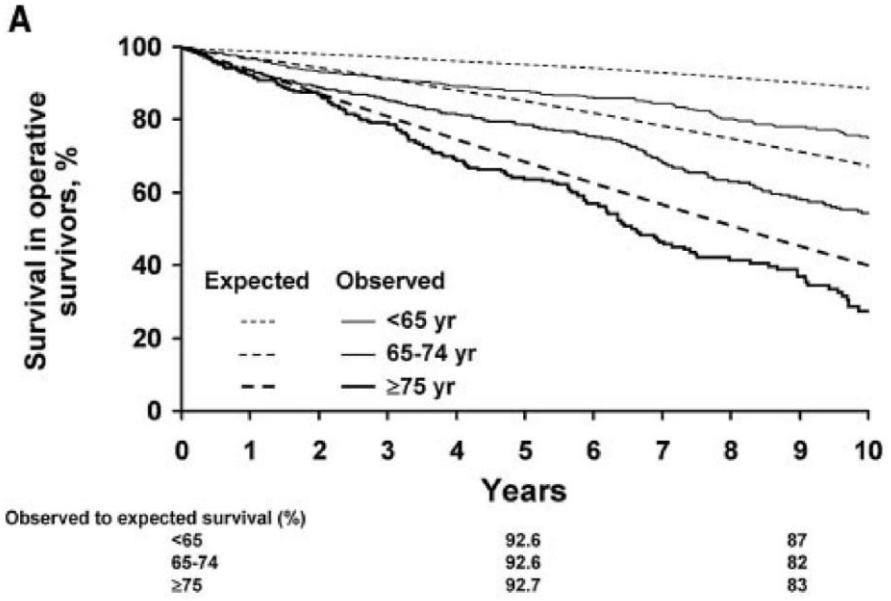




Český statistický úřad, Czso.cz

Přežití po KCH zákroku pro mitrální regurgitaci

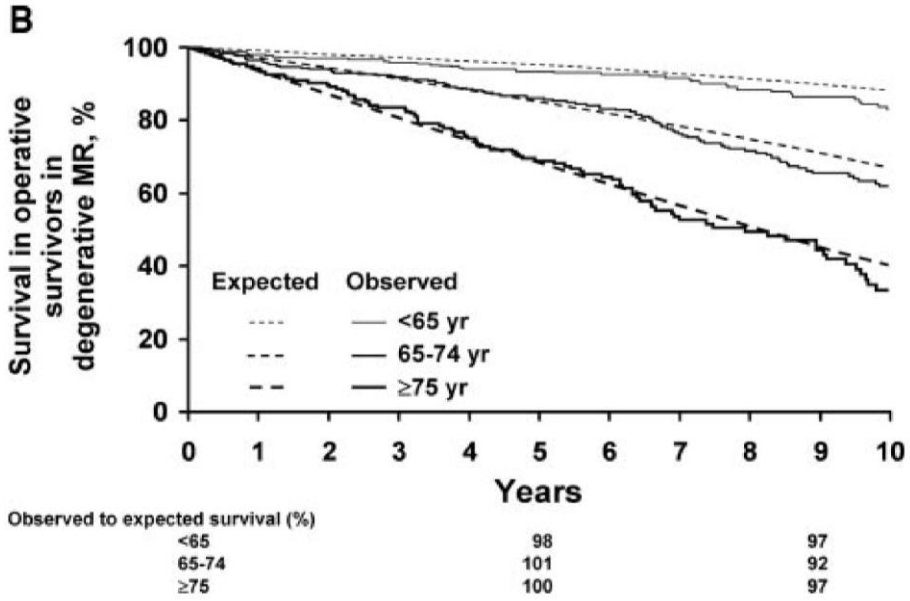
Mitrální regurgitace



Observed to expected survival (%)

<65	92.6	87
65-74	92.6	82
≥75	92.7	83

Degenerativní MR



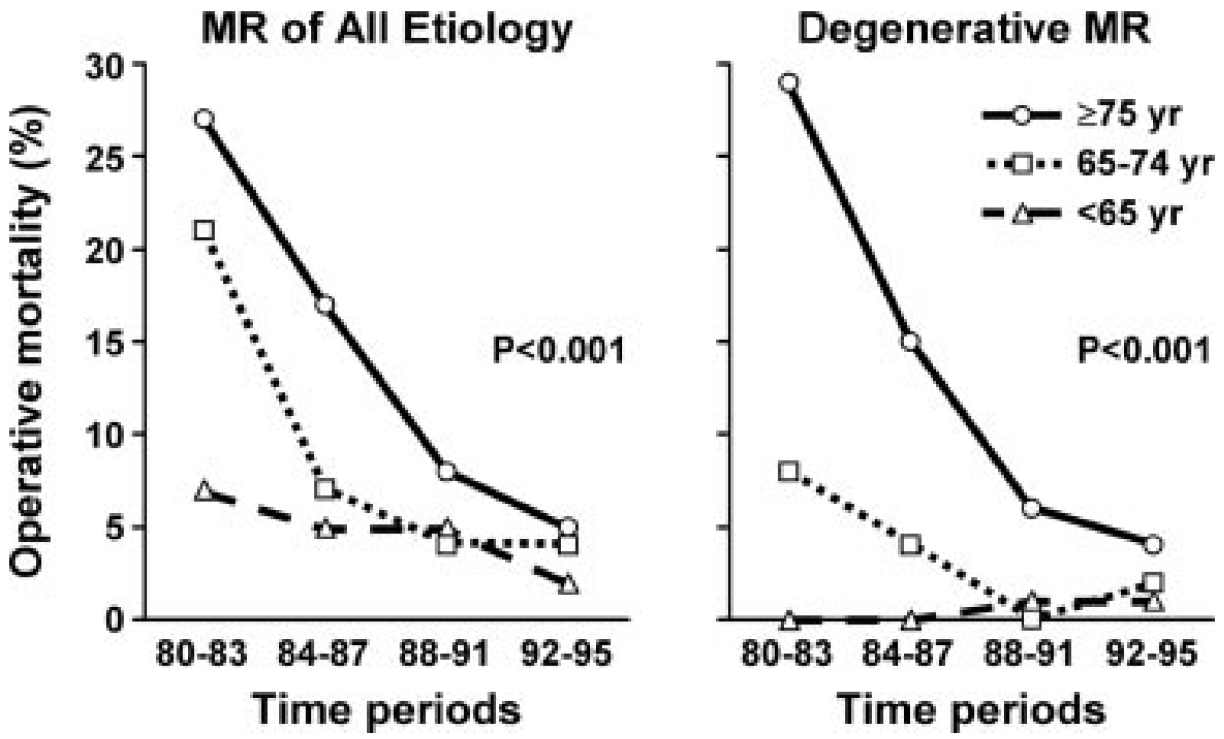
Observed to expected survival (%)

<65	98	97
65-74	101	92
≥75	100	97

Detaint et al. Circulation. 2006;114:265-272

Přežití po KCH zákroku pro mitrální regurgitaci

Pokles operační mortality v letech 1980-1995



Detaint et al. Circulation. 2006;114:265-272

Plastika vs náhrada mitrální chlopně u senior ≥ 70 let

STS Adult Cardiac Surgery

- Adult Cardiac Surgery Database – USA
- Retrospektivní data z registru
- Jen pacienti 70+

- Degenerativní etiologie mitrální regurgitace, bez hrubých kalcifikací chlopně
- Izolovaná operace mitrální chlopně ± plastika trikusp. chlopně ± MAZE

Ann Thorac Surg 2019;107:747–53

Plastika vs náhrada mitrální chlopně u senior ≥ 70 let

STS Adult Cardiac Surgery

Table 1. Baseline Characteristics of Study Cohort

Characteristics	Overall (N = 12,043)	Total Cohort (N = 12,043)		
		MVP (n = 8,523)	MVR (n = 3,520)	*p* Value
Age, years, mean (SD)	77 (4.8)	76 (4.7)	78 (4.9)	<0.0001
Male	5,587 (46)	4,163 (49)	1,424 (40)	<0.0001
White	11,054 (92)	7,861 (93)	3,193 (91)	0.002
Body mass index, mean (SD)	27 (12)	27 (13)	27 (12)	0.06
Diabetes mellitus	1,737 (14)	1,089 (13)	648 (18)	<0.0001
Last hematocrit, mean (SD)	40 (4.6)	40 (4.4)	39 (4.8)	<0.0001
Last creatinine, mean (SD)	1.0 (0.50)	1.0 (0.45)	1.1 (0.55)	<0.0001
Dyslipidemia	7,627 (63)	5,311 (62)	2,316 (66)	0.0005
Hypertension	9,134 (76)	6,317 (74)	2,817 (80)	<0.0001
Chronic lung disease	903 (7.6)	545 (6.5)	358 (10)	<0.0001
Liver disease	249 (2.1)	166 (2.0)	83 (2.4)	0.18
Immunocompromised	289 (2.4)	187 (2.2)	102 (2.9)	0.02
Peripheral vascular disease	661 (5.5)	440 (5.2)	221 (6.3)	0.02
Cerebrovascular disease	1,349 (11)	869 (10)	480 (14)	<0.0001
History of heart failure	6,907 (58)	4,722 (56)	2,185 (62)	<0.0001
EF, median (IQR)	60 (55, 64)	60 (55, 65)	60 (53, 63)	0.001
Atrial fibrillation	5,674 (47)	3,859 (45)	1,815 (52)	<0.0001
Tricuspid insufficiency	4,106 (35)	2,811 (33)	1,295 (37)	<0.0001
Preoperative IABP	24 (0.20)	14 (0.16)	10 (0.28)	0.18
Previous myocardial infarction	706 (5.9)	459 (5.4)	247 (7.0)	0.001

Values are n (%) unless otherwise indicated.

EF = ejection fraction; IABP = intraaortic balloon pump; IQR = interquartile range; MVP = mitral valve repair; MVR = mitral valve replacement.

Ann Thorac Surg 2019;107:747–53

Plastika vs náhrada mitrální chlopně u senior ≥ 70 let

STS Adult Cardiac Surgery

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Ann Thorac Surg 2019;107:747–53

Plastika vs náhrada mitrální chlopně u senior ≥ 70 let

STS Adult Cardiac Surgery

Operační mortalita 3% - MVRep 2.2%, MVR 4.8%

Table 2. Operative Characteristics

Characteristics	Overall (N = 12,043)	Total Cohort (N = 12,043)		
		MVP (n = 8,523)	MVR (n = 3,520)	*p* Value
Median sternotomy	8,728 (73)	5,798 (68)	2,930 (83)	<0.0001
Blood product transfusion	4,460 (37)	971 (28)	779 (46)	<0.0001
CPB, minutes, median (IQR)	117 (90–151)	115 (88–148)	122 (94–160)	<0.0001
Aortic CCT, minutes, median (IQR)	85 (65–111)	83 (63–107)	90 (69–122)	<0.0001
Lowest CPB temp, °C, median (IQR)	33 (31–34)	33 (31–34)	33 (31–34)	<0.0001
Lowest CPB HCT, mean (SD)	25 (4.5)	25 (4.5)	24 (4.3)	<0.0001
Tricuspid procedure				
Replacement	41 (1.6)	17 (0.92)	24 (3.3)	<0.0001
Repair	2,528 (98)	1,834 (99)	694 (97)	
Intraop IABP	141 (1.2)	82 (0.96)	59 (1.7)	0.001
Atrial fibrillation surgery	881 (7.3)	634 (7.4)	247 (7)	0.42
Intraop postprocedural TEE	10,050 (83)	7,241 (85)	2,809 (80)	<0.0001
Postprocedural MR				<0.0001
None	5,802 (58)	3,927 (54)	1,875 (67)	
Trace/trivial	2,715 (27)	2,192 (30)	523 (19)	
Mild	766 (7.6)	667 (9.2)	99 (3.5)	
Moderate	158 (1.6)	117 (1.6)	41 (1.5)	
Severe	234 (2.3)	138 (1.9)	96 (3.4)	
Unknown	375 (3.7)	200 (2.8)	175 (6.2)	

Values are n (%) unless otherwise indicated.

Ann Thorac Surg 2019;107:747–53

Plastika vs náhrada mitrální chlopně u senior ≥ 70 let

STS Adult Cardiac Surgery

Operační mortalita (30-ti denní)	3.0%
repair	2.2%
replacement	4.8%

Table 5. Adjusted 30-Day Mortality Stratified by Age

Age	OR (95% CI)
Overall	1.83 (1.45–2.31)
70–74 years	1.86 (1.23–2.82)
75–79 years	2.25 (1.48–3.42)
≥80 years	1.53 (1.05–2.23)

CI = confidence interval; OR = odds ratio.

Ann Thorac Surg 2019;107:747–53

MiSO study

- Osmdesátníci – celkem 252 pacientů
- Retrospektivní studie v letech 2001-2015
- 3 britská centra: Bristol, Papworth, and Southampton
- Degenerativní mitrální regurgitace

J Thorac Cardiovasc Surg 2018;155:1474-82

MiSO study
Baseline characteristics

TABLE 1. Preoperative characteristics

Characteristic	Surgical technique			
	Overall (247)	Repair (150)	Replacement (97)	*P* value
Age, y	82.8 ± 2.3	82.9 ± 2.3	82.6 ± 2.5	.12
Female gender	108 (43.7)	62 (41.3)	46 (47.4)	.41
BMI, kg/m^2	24.3 ± 3.2	24.3 ± 3.6	24.4 ± 4.3	.89
LVEF				.87
Good (≥50%)	168 (68)	102 (68)	66 (68)	
Moderate impairment (≥30% and <50%)	64 (25.9)	38 (25.3)	26 (25.3)	
Severe impairment (<30%)	15 (6.1)	10 (6.7)	5 (6.7)	
Preoperative AF	113 (45.7)	79 (52.6)	34 (35.1)	<.01
Diabetes	13 (5.3)	8 (5.3)	5 (5.1)	1
Hypertension	133 (53.8)	80 (53.3)	53 (54.6)	.94
COPD	32 (13)	16 (10.7)	16 (16.5)	.98
Smoking history	113 (45.7)	71 (47.3)	42 (43.3)	.62
Previous MI	31 (12.6)	17 (11.2)	14 (14.4)	.76
Logistic euroSCORE	11.5 ± 13.4	10.2 ± 11.8	13.7 ± 15.2	.07
Previous CVA	19 (7.7)	11 (7.3)	8 (8.2)	.98
NYHA III/IV	180 (72.9)	106 (70.6)	74 (76.3)	.4
Previous cardiac surgery	17 (6.9)	6 (4)	11 (11.3)	.04
Emergency	6 (2.4)	2 (1.3)	4 (4.1)	.21
Urgency	34 (13.8)	23 (15.3)	11 (11.3)	.37

BMI, Body mass index; *LVEF*, left ventricular ejection fraction; *AF*, atrial fibrillation; *COPD*, chronic obstructive pulmonary disease; *MI*, myocardial infarction; *euroSCORE*, European System for Cardiac Operative Risk Evaluation; *CVA*, cerebrovascular accident; *NYHA*, New York Heart Association.

J Thorac Cardiovasc Surg 2018;155:1474-82

MiSO study

Baseline characteristics

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J Thorac Cardiovasc Surg 2018;155:1474-82

MiSO study

Postoperative outcomes

TABLE 2. Operative characteristics and postoperative outcomes

Characteristic	Surgical technique			
	Overall (247)	Repair (150)	Replacement (97)	*P* value
CPB time (min)	133.5 ± 52.2	128.9 ± 47.5	140.5 ± 58.3	.21
Crossclamp time (min)	95.9 ± 38	91.1 ± 32.8	103.3 ± 44	.06
Concomitant procedures				
CABG	88 (35.6)	55 (36.6)	33 (34)	.77
AVR	53 (21.5)	27 (18)	26 (26.8)	.14
TV	47 (19)	30 (20)	17 (17.5)	.75
AF ablation	19 (7.7)	17 (11.3)	2 (2.1)	.02
30-d mortality	25 (13.8)	7 (4.7)	18 (18.6)	<.01
CVA	6 (2.4)	3 (2)	3 (3.1)	.9
AKI (dialysis)	23 (9.3)	10 (6.7)	13 (13.4)	.12
Sternal wound infection	37 (15.2)	18 (12)	19 (20.4)	.11
Superficial	31 (12.6)	15 (10)	16 (16.5)	.17
Deep	6 (2.4)	3 (2)	3 (3.1)	.67
Return to operating room	16 (6.5)	7 (4.7)	9 (9.2)	.24
Postoperative length of stay (d)	13.6 ± 11.9	14.1 ± 9.5	12.7 ± 14.7	<.01
Composite outcome (death at 30 d, AKI, CVA)	41 (16.6)	16 (10.6)	25 (25.7)	<.01

CPB, Cardiopulmonary bypass; *CABG*, coronary artery bypass grafting; *AVR*, aortic valve replacement; *TV*, tricuspid valve; *AF*, atrial fibrillation; *CVA*, cerebrovascular accident; *AKI*, acute kidney injury.

J Thorac Cardiovasc Surg 2018;155:1474-82

MiSO study

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AKI, acute kidney injury.

J Thorac Cardiovasc Surg 2018;155:1474-82

MiSO study

Mortalita podle typu operace

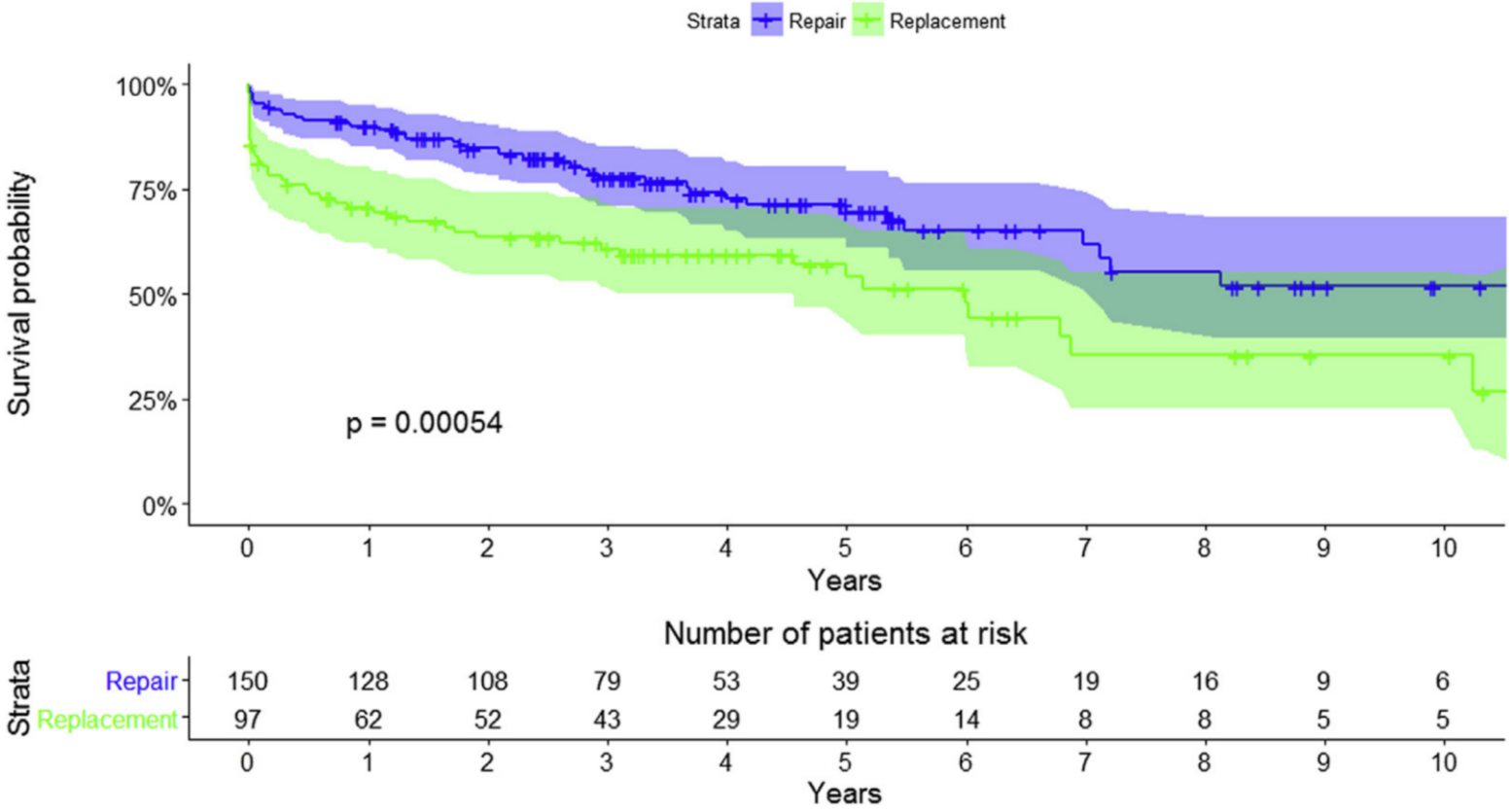


FIGURE 2. Kaplan–Meier survival curves between the 2 groups (raw data).

J Thorac Cardiovasc Surg 2018;155:1474-82

MiSO study

Euroscore – predictor mortality u 80+ s organickou mitrální vadou?

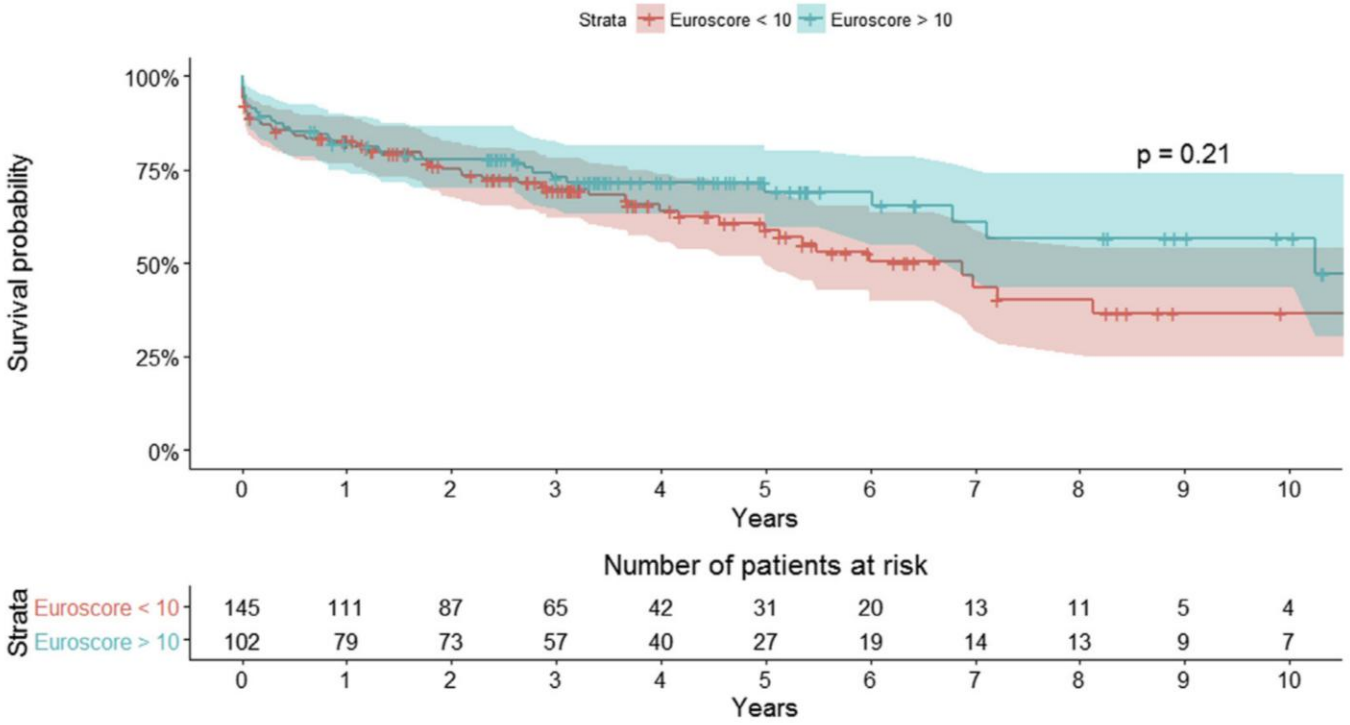


FIGURE 3. Impact of euroSCORE on survival: Kaplan–Meier survival curves. *euroSCORE*, European System for Cardiac Operative Risk Evaluation.

J Thorac Cardiovasc Surg 2018;155:1474-82

MiSO study
Prediktory mortality

30-ti denní mortalita

TABLE 3. Multivariable logistic regression model for predictors of short-term composite outcome (death at 30 days, acute kidney injury, and cerebrovascular accident)

Predictor	OR (95% CI)	*P* value
Previous cardiac surgery	4.47 (1.37-17.46)	.02
IABP use	4.77 (1.67-15.79)	<.01
Reduced LVEF	1.73 (0.88-3.43)	.11
MVR	7.7 (4.04-14.9)	<.01

OR, Odds ratio; *CI*, confidence interval; *IABP*, intra-aortic balloon pump; *LVEF*, left ventricular ejection fraction; *MVR*, mitral valve replacement.

Dlouhodobá mortalita

TABLE 4. Cox proportional hazard ratio multivariable model for predictor affecting long-term mortality*

Predictor	HR (95% CI)	*P* value
BMI	0.94 (0.89-1.01)	.09
MVR	1.88 (1.22-2.89)	<.01
IABP use	2.54 (1.26-5.13)	<.01
Reduced LVEF	1.09 (0.42-2.82)	.84

HR, Hazard ratio; *CI*, confidence interval; *BMI*, body mass index; *MVR*, mitral valve replacement; *IABP*, intra-aortic balloon pump; *LVEF*, left ventricular ejection fraction. *Gender has been included as stratum variable.

J Thorac Cardiovasc Surg 2018;155:1474-82

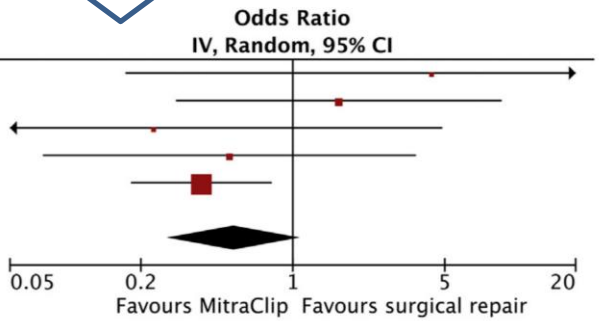
MitraClip versus chirurgická plastika

↑ VĚK
↓ EF
↑ NYHA
↑ EUROScore

Časná mortalita

Study or Subgroup	Weight	Odds Ratio IV, Random, 95% CI
Buzzatti 2015	4.6%	4.35 [0.17, 111.19]
Conradi 2013	15.3%	1.63 [0.29, 9.13]
De Bonis 2016	5.1%	0.23 [0.01, 4.87]
EVEREST II	11.9%	0.51 [0.07, 3.69]
Taramasso 2012	63.1%	0.38 [0.18, 0.80]
Total (95% CI)	**100.0%**	**0.54 [0.27, 1.08]**

Heterogeneity: $Tau^2 = 0.06$; $Chi^2 = 4.28$, df = 4 (P = 0.37); $I^2 = 7\%$
Test for overall effect: Z = 1.75 (P = 0.08)

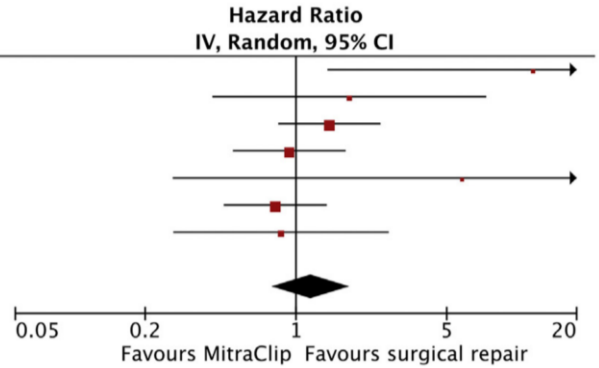


MitraClip KCH repair

Pozdní mortalita

Study or Subgroup	Weight	Hazard Ratio IV, Random, 95% CI
Buzzatti 2015	3.4%	12.56 [1.40, 112.71]
Conradi 2013	7.0%	1.77 [0.41, 7.62]
De Bonis 2016	26.7%	1.43 [0.83, 2.46]
EVEREST II	24.3%	0.93 [0.51, 1.70]
Paranskaya 2013	1.8%	5.89 [0.27, 129.16]
Swaans 2014	26.5%	0.80 [0.46, 1.39]
Taramasso 2012	10.4%	0.85 [0.27, 2.69]
Total (95% CI)	**100.0%**	**1.17 [0.77, 1.78]**

Heterogeneity: $Tau^2 = 0.09$; $Chi^2 = 8.91$, df = 6 (P = 0.18); $I^2 = 33\%$
Test for overall effect: Z = 0.75 (P = 0.46)



MitraClip KCH repair

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MitraClip versus chirurgická plastika

Závěry metaanalýzy 7 studií

- **MitraClip má podobný efekt na mortalitu jako chirurgická plastika chlopně navzdory vyššímu předoperačnímu rizikovému profilu pacientů**

- **Riziko rekurence vady je 4.8 x vyšší u MitraClipu**

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Kvalita života u 70+ po chir.operaci mitrální chlopně

- Miláno 2003-2006, 225 pts (z toho 46 pts 80+)
- CABG 25 %, repair 53%
- Mortalita: 2.7% in-hospital, 9% ve 3 letech follow-up
- MLHK >30 mělo 66% pts

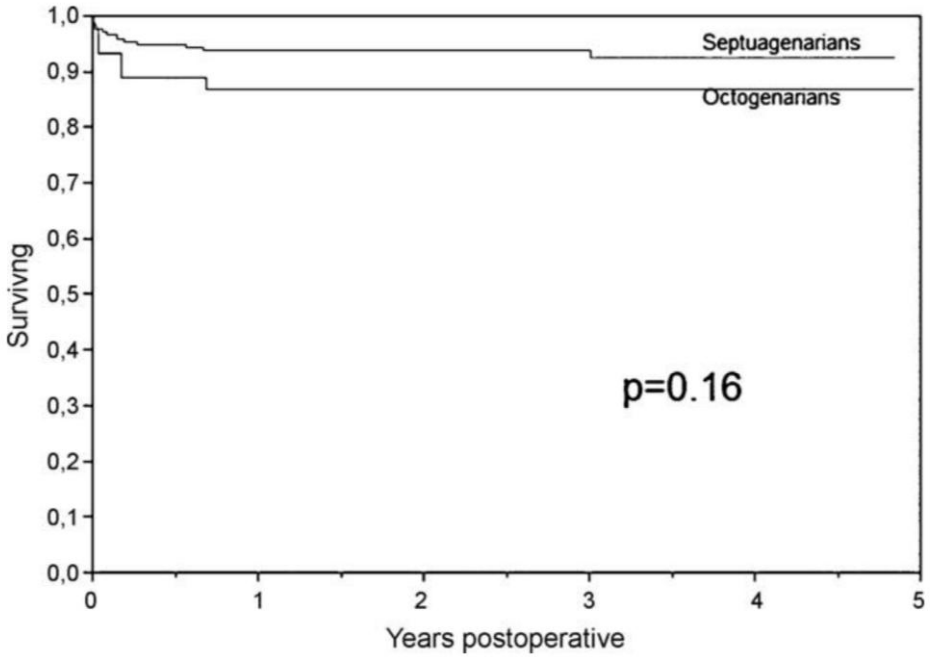


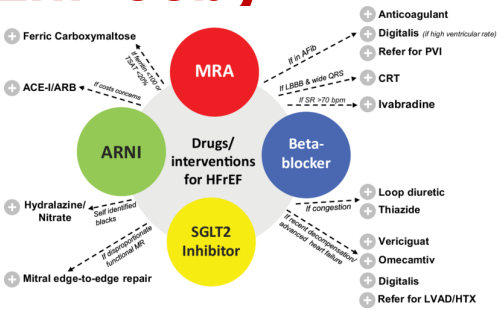
Table 3
Univariable and multivariable analysis of preoperative and postoperative factors associated with MLHF score.

	r^2	*p* uni	*p* multi
Age at follow-up	0.03	0.007	
Preoperative AFib	0.07	<0.0001	0.019
Diabetes	0.03	0.009	0.03
Preoperative serum creatinine level	0.1	<0.0001	0.0009
Preoperative NYHA class	0.05	0.01	
EuroSCORE	0.07	<0.0001	0.02
Charlson score	0.06	<0.0001	
Preoperative PAPs	0.02	0.09	
EF at follow-up	0.11	<0.0001	
Sinus rhythm vs AFib or PM at follow-up	0.02	0.01	
LVEDD at follow-up	0.07	0.0001	
LVESD	0.08	0.0001	
PAPs at follow-up	0.13	<0.0001	0.04
MR grade at follow-up	0.07	0.0001	0.002

F. Maisano et al. / European Journal of Cardio-thoracic Surgery 36 (2009) 261—266

- **Individuální přístup**

- **Optimalizace medikamentózní léčby**



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- **Intervence:**

Symptomatický pacient – cíl je kvalita života!
Motivovaný pacient
Euroscore – limitovaná spolehlivost
KCH: preferenčně plastika chlopně
rychlost - inkompletní korekce?
MitraClip - vysoce rizikový pacient

Děkuji za pozornost

doc. MUDr. Radka Kočková PhD
Centrum pro vrozené vady v dospělosti
Nemocnice Na Homolce
radka.kockova@homolka.cz