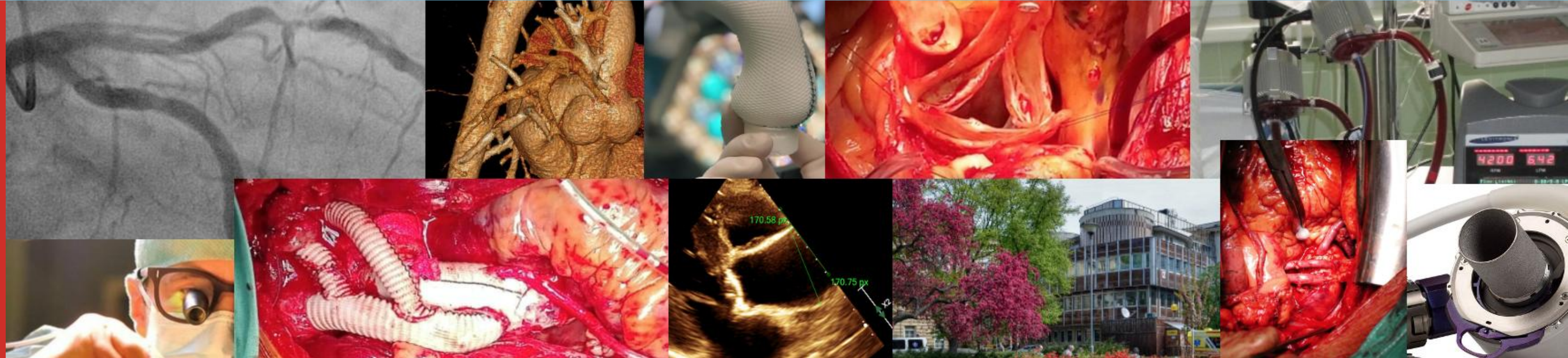


Chirurgické výkony na aortální chlopni a hrudní aortě

Petr Fila

ESC Guidelines

ESC European Society of Cardiology
European Heart Journal (2025) **46**, 4635–4736
https://doi.org/10.1093/eurheartj/ehaf194
ESC GUIDELINES

2025 ESC/EACTS Guidelines for the management of valvular heart disease

Developed by 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)

Authors/Task Force Members: Fabien Praz *†, (ESC Chairperson) (Switzerland), Michael A. Borger *†, (EACTS Chairperson) (Germany), Jonas Lanz ‡, (ESC Task Force Co-ordinator) (Switzerland), Mateo Marin-Cuartas ‡, (EACTS Task Force Co-ordinator) (Germany), Ana Abreu (Portugal), Marianna Adamo (Italy), Nina Ajmone Marsan (Netherlands), Fabio Barili (Italy), Nikolaos Bonaros (Austria), Bernard Cosyns (Belgium), Ruggero De Paulis (Italy), Habib Gamra (Tunisia), Marjan Jahangiri (United Kingdom), Anders Jeppsson (Sweden), Robert J.M. Klautz (Netherlands), Benoit Mores (Belgium), Esther Pérez-David (Spain), Janine Pöss (Germany), Bernard D. Prendergast (United Kingdom), Bianca Rocca (Italy), Xavier Rossello (Spain), Mikio Suzuki (Serbia), Holger Thiele (Germany), Christophe Michel Tribouilloy (France), Wojtek Wojakowski (Poland), and ESC/EACTS Scientific Document Group

ESC European Society of Cardiology
European Heart Journal (2024) **45**, 3538–3700
https://doi.org/10.1093/eurheartj/ehae179
ESC GUIDELINES

2024 ESC Guidelines for the management of peripheral arterial and aortic diseases

Developed by the task force on the management of peripheral arterial and aortic diseases of the European Society of Cardiology (ESC)

Endorsed by the European Association for Cardio-Thoracic Surgery (EACTS), the European Reference Network on Rare Multisystemic Vascular Diseases (VASCERN), and the European Society of Vascular Medicine (ESVM)

Authors/Task Force Members: Lucia Mazzolai *†, (Chairperson) (Switzerland), Gisela Teixido-Tura ‡, (Task Force Co-ordinator) (Spain), Stefano Lanzi ‡, (Task Force Co-ordinator) (Switzerland), Vinko Boc (Slovenia), Eduardo Bossone (Italy), Marianne Brodmann [1] (Austria), Alessandra Bura-Rivière (France), Julie De Backer [2] (Belgium), Sebastien Deglise (Switzerland), Alessandro Della Corte (Italy), Christian Heiss (United Kingdom), Marta Kałużna-Oleksy (Poland), Donata Kurpas (Poland), Carmel M. McEniery (United Kingdom), Tristan Mirault (France), Agnes A. Pasquet (Belgium), Alex Pitcher (United Kingdom), Hannah A.I. Schaubroeck (Belgium), Oliver Schlager (Austria), Per Anton Sirnes (Norway), Muriel G. Sprynger (Belgium), Eugenio Stabile (Italy), Françoise Steinbach (France), Matthias Thielmann (Germany), Roland R.J. van Kimmenade (Netherlands), Maarit Venermo (Finland), Jose F. Rodriguez-Palomares *†, (Chairperson) (Spain), and ESC Scientific Document Group

Praz, European heart journal, 2025, 46: 4635-4736
Mazzolai, European heart journal, 2024, 45.36: 3538-3700

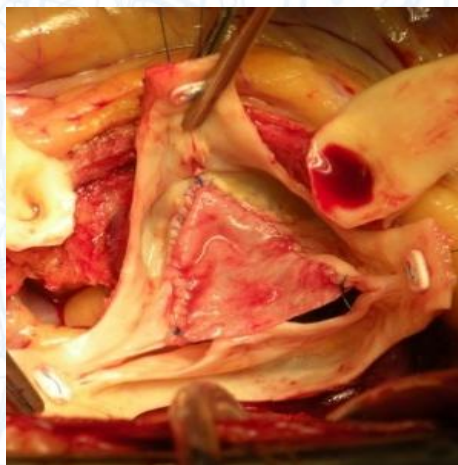
MUNI MED | CKTCH Centrum kardiovaskulární a transplantační chirurgie

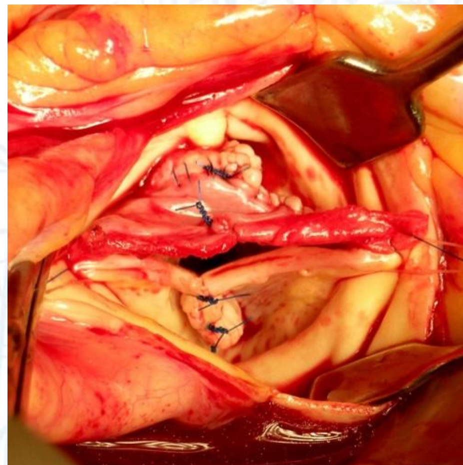
ESC Guidelines - aortální regurgitace

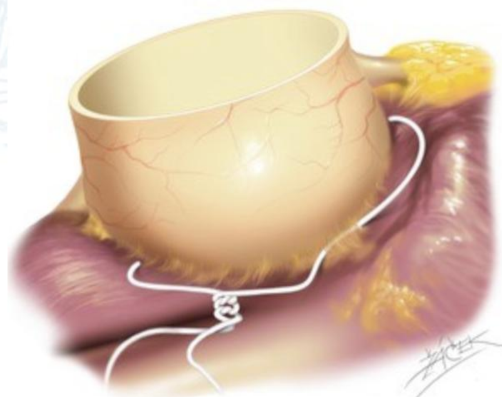
ESC European Society of Cardiology European Heart Journal (2025) 46, 4635–4736 https://doi.org/10.1093/eurheartj/ehaf194 ESC GUIDELINES

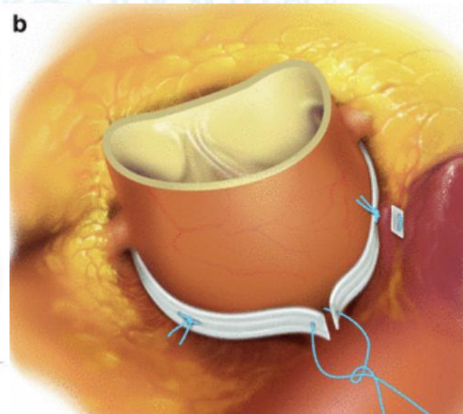
2025 ESC/EACTS Guidelines for the management of valvular heart disease

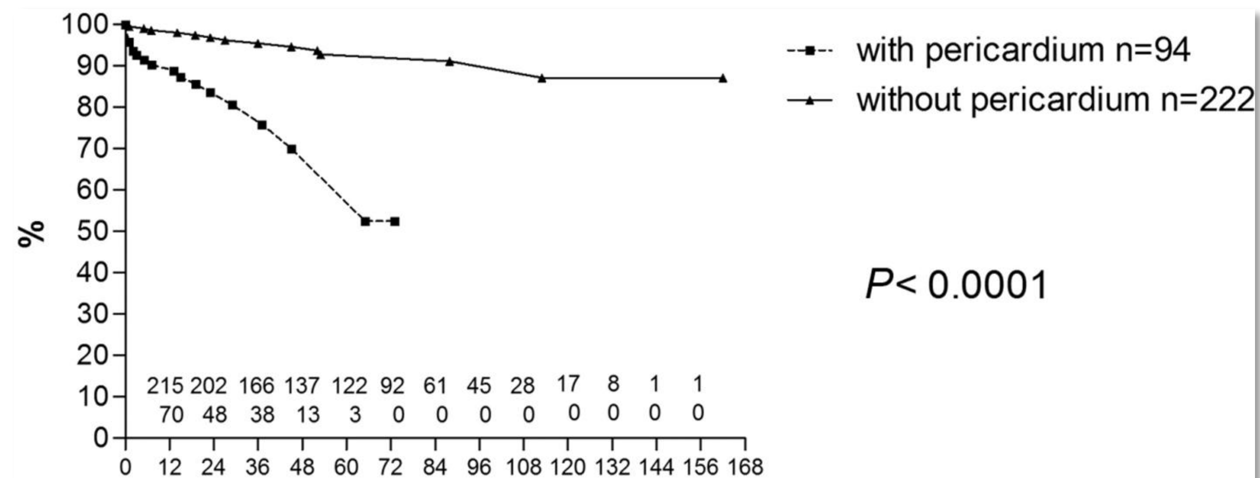
Indications for surgery in severe aortic regurgitation—*Section 7.4*					
AV repair may be considered in selected patients at experienced centres when durable results are expected.	IIb	C	AV repair should be considered in selected patients with severe AR at experienced centres, when durable results are expected.	IIa	B











Vojáček, Cor et Vasa, 2017, 59.1: e77-e84.

Praz, European heart journal, 2025, 46: 4635-4736
Aicher, Circulation, Circulation. 2011;123:178-185
Vojáček, Cor et Vasa, 2017, 59.1: e77-e84.

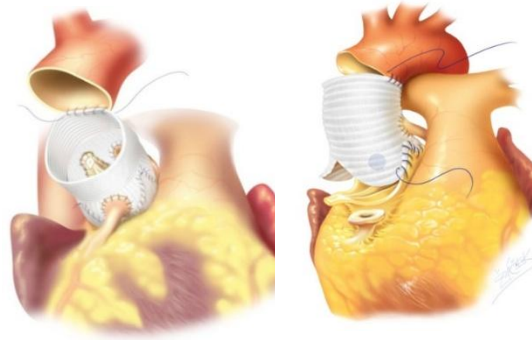
ESC Guidelines - aortální regurgitace

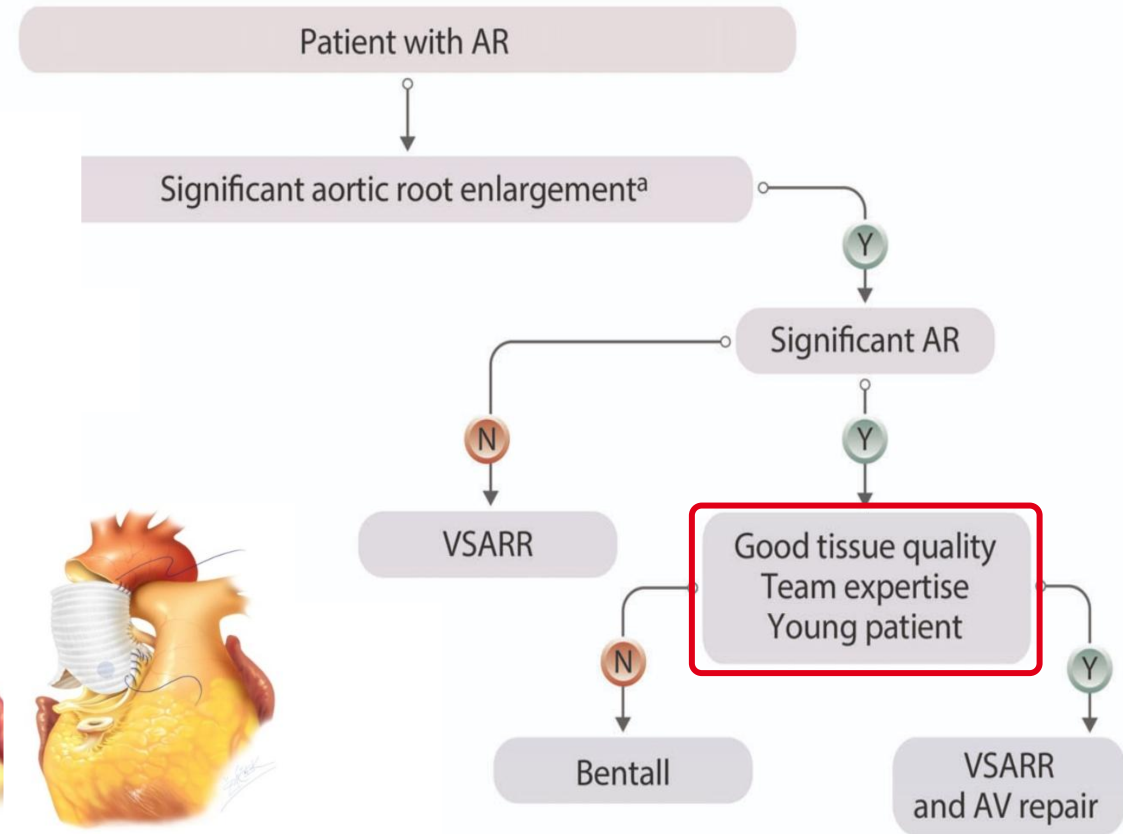
ESC European Society of Cardiology
European Heart Journal (2025) 46, 4635–4736
https://doi.org/10.1093/eurheartj/ehaf194
ESC GUIDELINES

2025 ESC/EACTS Guidelines for the management of valvular heart disease

Indications for surgery in severe aortic regurgitation—*Section 7.4*					
AV repair may be considered in selected patients at experienced centres when durable results are expected.	IIb	C	AV repair should be considered in selected patients with severe AR at experienced centres, when durable results are expected.	IIa	B

Concomitant surgery of the ascending aorta		
Valve-sparing aortic root replacement is recommended in young patients with aortic root dilatation at experienced centres, when durable results are expected.[247,250–253,255]	I	B
When AV surgery is indicated and the predicted surgical risk is low, replacement of the aortic root or ascending aorta should be considered if the maximal diameter is ≥45 mm.[d]	IIa	C



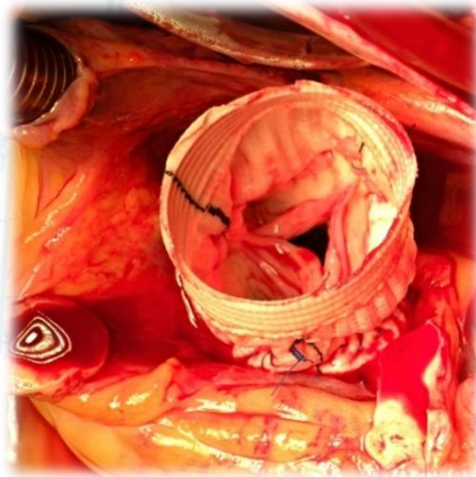


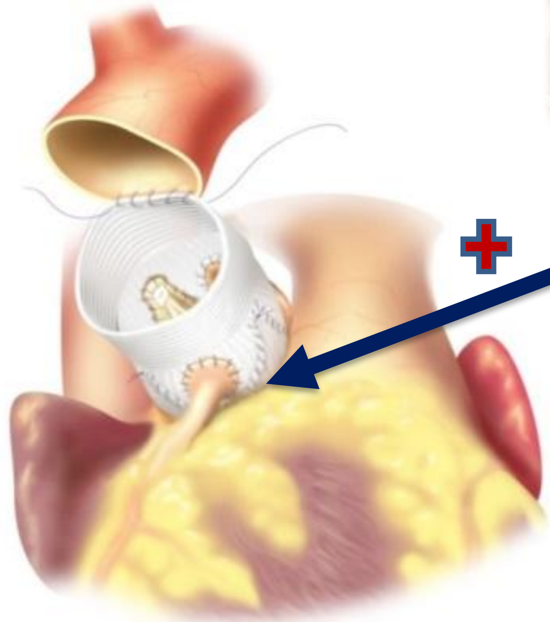
Praz, European heart journal, 2025, 46: 4635-4736
Vojáček, Cor et Vasa, 2017, 59.1: e77-e84.

MUNI MED
CKTCH Centrum kardiovaskulární a transplantační chirurgie

Záchovné operace aortální chlopně

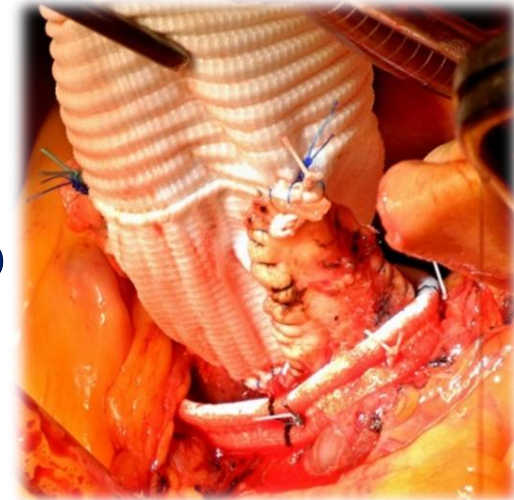
reimplantace - David

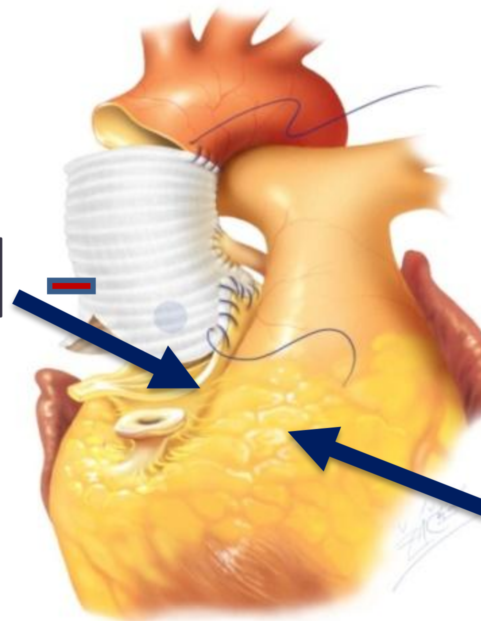


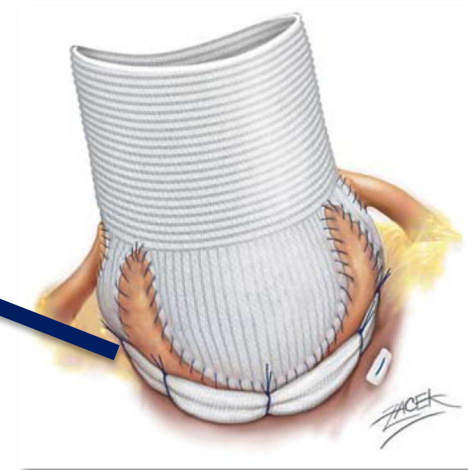


stabilizace aortálního anulu

remodelace - Yacoub



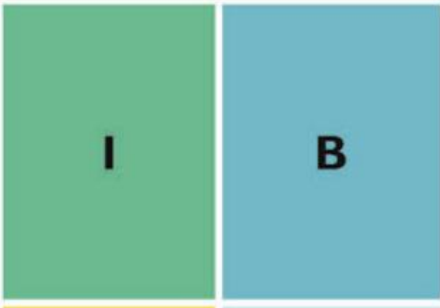




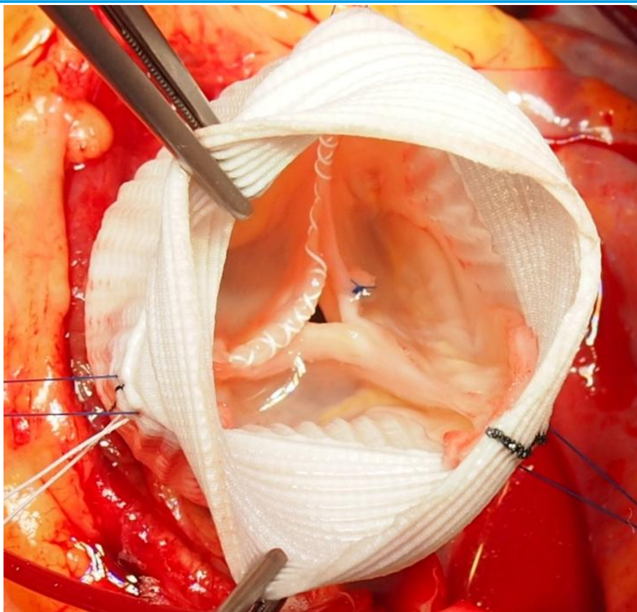
Vojáček, Cor et Vasa, 2017, 59.1: e77-e84.

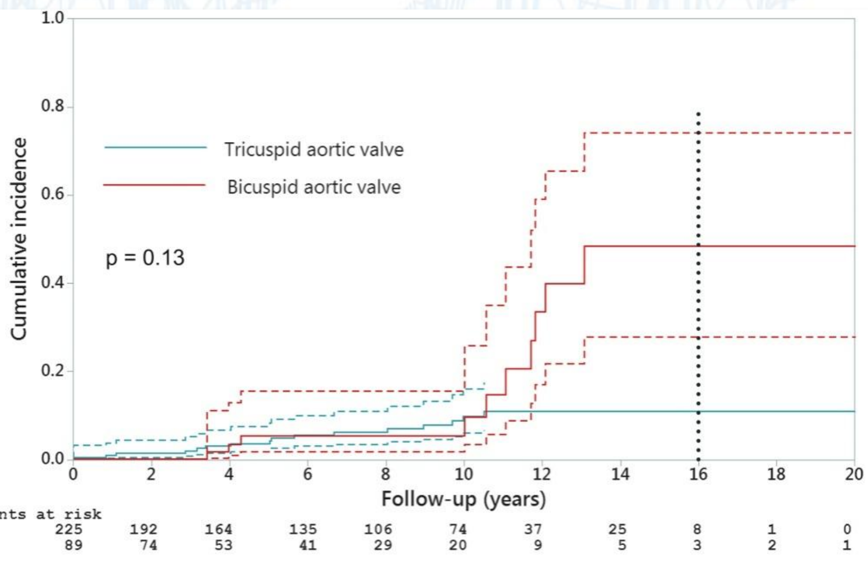
Záchovné operace aortální chlopně

Valve-sparing aortic root replacement is recommended in young patients with aortic root dilatation at experienced centres, when durable results are expected.[247,250–253,255]

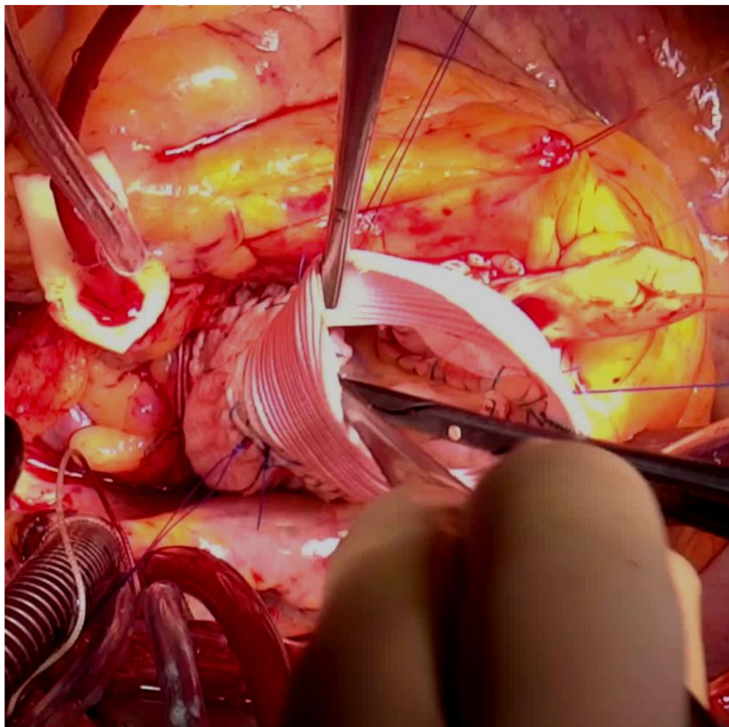


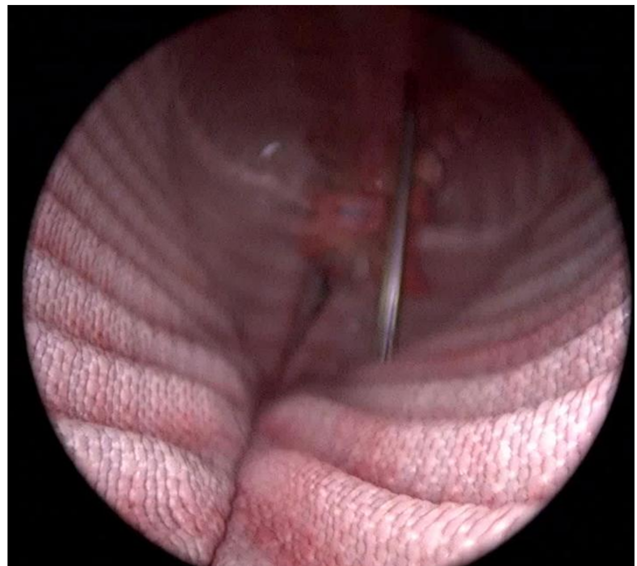
Praz F, 2025 ESC/EACTS Guidelines for the management of valvular heart disease. Eur J Cardiothorac Surg rgery 2025, 67(8.





Klotz, Journal of thoracic cardiovascular surgery, 2018, 155. and4: 1403-1411. e1.



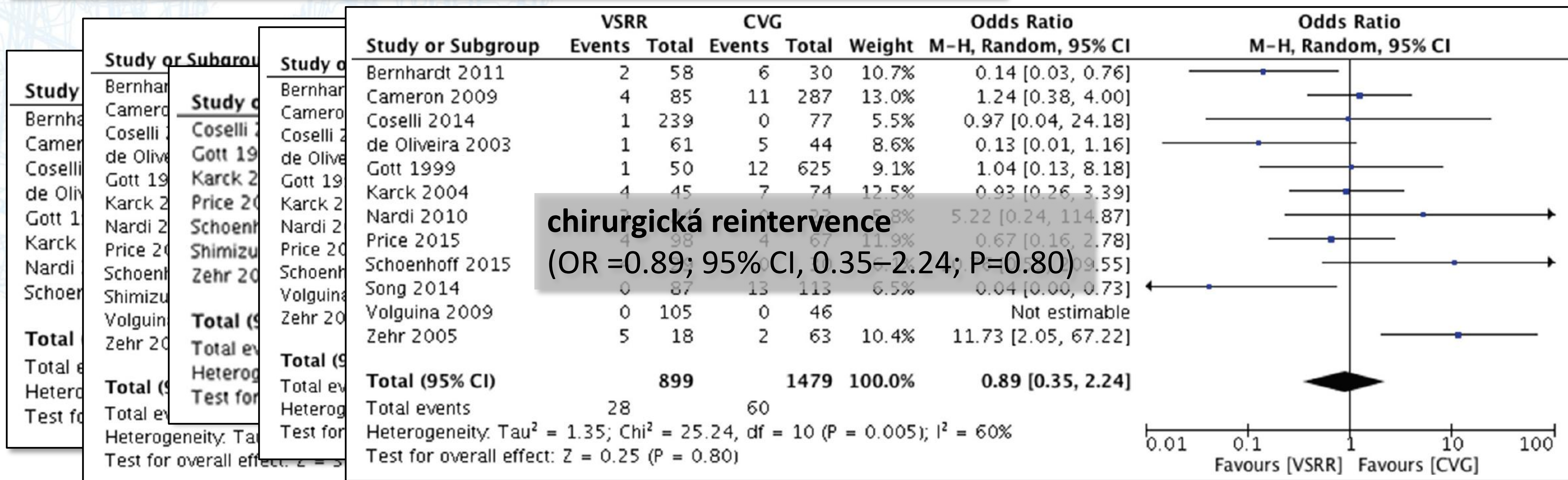


Záchovné operace aortální chlopně vs. Bentall

Systematic review and meta-analysis of surgical outcomes in Marfan patients undergoing aortic root surgery by composite-valve graft or valve sparing root replacement

Campbell D. Flynn[1], David H. Tian[2], Ashley Wilson-Smith[2], Tirone David[3], George Matalanis[4], Martin Misfeld[5], Stefano Mastrobuoni[6], Gebrine El Khoury[6], Tristan D. Yan[2,7,8]

23 studií
2976 pts s Marfan sydromem
1352 VSRR vs. 1624 Bentall
Ø FU VSRR 4,5 roků vs. Bentall 7,14 roků



Study or Subgroup	VSRR Events	VSRR Total	CVG Events	CVG Total	Weight	Odds Ratio M-H, Random, 95% CI
Bernhardt 2011	2	58	6	30	10.7%	0.14 [0.03, 0.76]
Cameron 2009	4	85	11	287	13.0%	1.24 [0.38, 4.00]
Coselli 2014	1	239	0	77	5.5%	0.97 [0.04, 24.18]
de Oliveira 2003	1	61	5	44	8.6%	0.13 [0.01, 1.16]
Gott 1999	1	50	12	625	9.1%	1.04 [0.13, 8.18]
Karck 2004	4	45	7	74	12.5%	0.93 [0.26, 3.39]
Nardi 2010	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.22 [0.24, 114.87]
Price 2015	4	98	4	67	11.9%	0.67 [0.16, 2.78]
Schoenhoff 2015	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Song 2014	0	87	13	113	6.5%	0.04 [0.00, 0.73]
Volguina 2009	0	105	0	46		Not estimable
Zehr 2005	5	18	2	63	10.4%	11.73 [2.05, 67.22]
Total (95% CI)		**899**		**1479**	**100.0%**	**0.89 [0.35, 2.24]**
Total events	28		60			

Heterogeneity: Tau² = 1.35; Chi² = 25.24, df = 10 (P = 0.005); I² = 60%
Test for overall effect: Z = 0.25 (P = 0.80)

Flynn, Annals of cardiothoracic surgery, 2017, 6.6: 570

MUNI MED
CKTCH Centrum kardiovaskulární a transplantační chirurgie

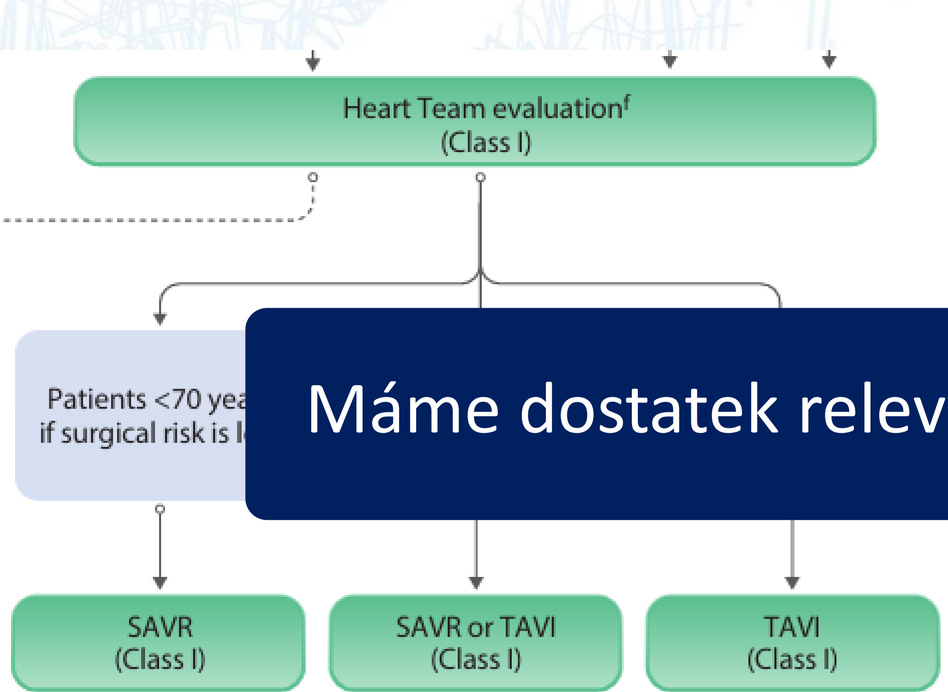
ESC Guidelines - aortální stenóza

ESC European Society of Cardiology | European Heart Journal (2025) 46, 4635–4736 | https://doi.org/10.1093/eurheartj/ehaf194 | ESC GUIDELINES

2025 ESC/EACTS Guidelines for the management of valvular heart disease

Recommendation	Class	Level
TAVI is recommended in older patients (≥75 years), or in those who are high risk (STS-PROM/EuroSCORE II >8%) or unsuitable for surgery.	I	A
SAVR is recommended in younger patients who are low risk for surgery (<75 years and STS-PROM/EuroSCORE II <4%), or in patients who are operable and unsuitable for transfemoral TAVI.	I	B

Recommendation	Class	Level
TAVI is recommended in patients ≥70 years of age with tricuspid AV stenosis, if the anatomy is suitable.	I	A
SAVR is recommended in patients <70 years of age, if the surgical risk is low.	I	B



Favours SAVR | Favours TAVI

<70 years | Age | ≥70 years

Anatomic
- Hostile annulus or LVOT calcification
- Bicuspid aortic valve
- Transfemoral access suitable for TAVI
- Porcelain aorta

Lifetime management[b]

Anticipate repeat procedure options and risks, when selecting modality and valve type at index procedure

Redo SAVR: risk of redo surgery
SAVR after TAVI: increased risk associated with THV explantation
Valve-in-valve TAVI: risk of coronary obstruction, impaired coronary access, prosthesis–patient mismatch

ESC EACTS

Máme dostatek relevantních dat pro snižování věku pro TAVI?

Praz, European heart journal, 2025, 46: 4635-4736

ESC Guidelines - aortální stenóza

ESC European Society of Cardiology
European Heart Journal (2025) 46, 4635–4736
https://doi.org/10.1093/eurheartj/ehaf194
ESC GUIDELINES

2025 ESC/EACTS Guidelines for the management of valvular heart disease

Recommendation	Class	Level
TAVI is recommended in older patients (≥75 years), or in those who are high risk (STS-PROM/EuroSCORE II >8%) or unsuitable for surgery.	I	A

Recommendation	Class	Level
TAVI is recommended in patients ≥70 years of age with tricuspid AV stenosis, if the anatomy is suitable.	I	A

Transcatheter Aortic-Valve Replacement in Low-Risk Patients at Five Years

M.J. Mack, M.B. Leon, V.H. Thourani, P. Pibarot, R.T. Hahn, P. Genereux, S.K. Kodali, S.R. Kapadia, D.J. Cohen, S.J. Pocock, M. Lu, R. White, M. Szerlip, J. Ternacle, S.C. Malaisrie, H.C. Herrmann, W.Y. Szeto, M.J. Russo, V. Babaliaros, C.R. Smith, P. Blanke, J.G. Webb, and R. Makkar, for the PARTNER 3 Investigators*

5-Year Outcomes After Transcatheter or Surgical Aortic Valve Replacement in Low-Risk Patients With Aortic Stenosis

John K. Forrest, MD,[a] Steven J. Yakubov, MD,[b] G. Michael Deeb, MD,[c] Hemal Gada, MD,[d] Mubashir A. Mumtaz, MD,[d] Basel Ramlawi, MD,[e] Tanvir Bajwa, MD,[f] John Crouch, MD,[f] William Merhi, DO,[g] Stephane Leung Wai Sang, MD,[g] Neal S. Kleiman, MD,[h] George Petrossian, MD,[i] Newell B. Robinson, MD,[i] Paul Sorajja, MD,[j] Ayman Iskander, MD,[k] Pierre Berthoumieu, MD,[l] Didier Tchétché, MD,[l] Christopher Feindel, MD,[m] Eric M. Horlick, MD,[m] Shigeru Saito, MD,[n] Jae K. Oh, MD,[o] Yoojin Jung, PhD,[p] Michael J. Reardon, MD,[h] the Low Risk Trial Investigators*

Transcatheter or Surgical Treatment of Aortic-Valve Stenosis

S. Blankenberg, M. Seiffert, R. Vonthein, H. Baumgartner, S. Bleiziffer, M.A. Borger, Y.-H. Choi, P. Clemmensen, J. Cremer, M. Czerny, N. Diercks, I. Eitel, S. Ensminger, D. Frank, N. Frey, A. Hagendorff, C. Hagl, C. Hamm, U. Kappert, M. Karck, W.-K. Kim, I.R. König, M. Krane, U. Landmesser, A. Linke, L.S. Maier, S. Massberg, F.-J. Neumann, H. Reichenspurner, T.K. Rudolph, C. Schmid, H. Thiele, R. Twerenbold, T. Walther, D. Westermann, E. Xhepa, A. Ziegler, and V. Falk, for the DEDICATE-DZHK6 Trial Investigators*

Praz, European heart journal, 2025, 46: 4635-4736
Mack, NEJM, 2023, 389.21: 1949-1960
Forrest, JACC, 2025, 85.15: 1523-1532
Blankenberg, NEJM, 2024, 390.17: 1572-1583

Předpokládaná délka života

RCT s 5 letými výsledky

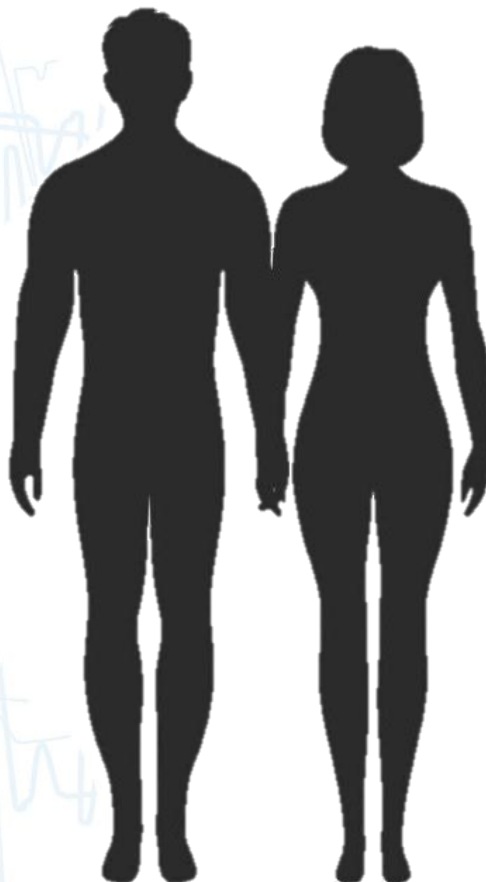
X

střední délka života (2024)

muž 77,2 žena 83,1 let

předpokládané dožití

Věk	muži	ženy
65 let	17,0	20,7
70 let	13,5	16,6
75 let	10,5	12,9



bikuspidní chlopeň

Věk	BAV
50 let	70 %
60 let	59 %
70 let	42 %
80 let	28 %

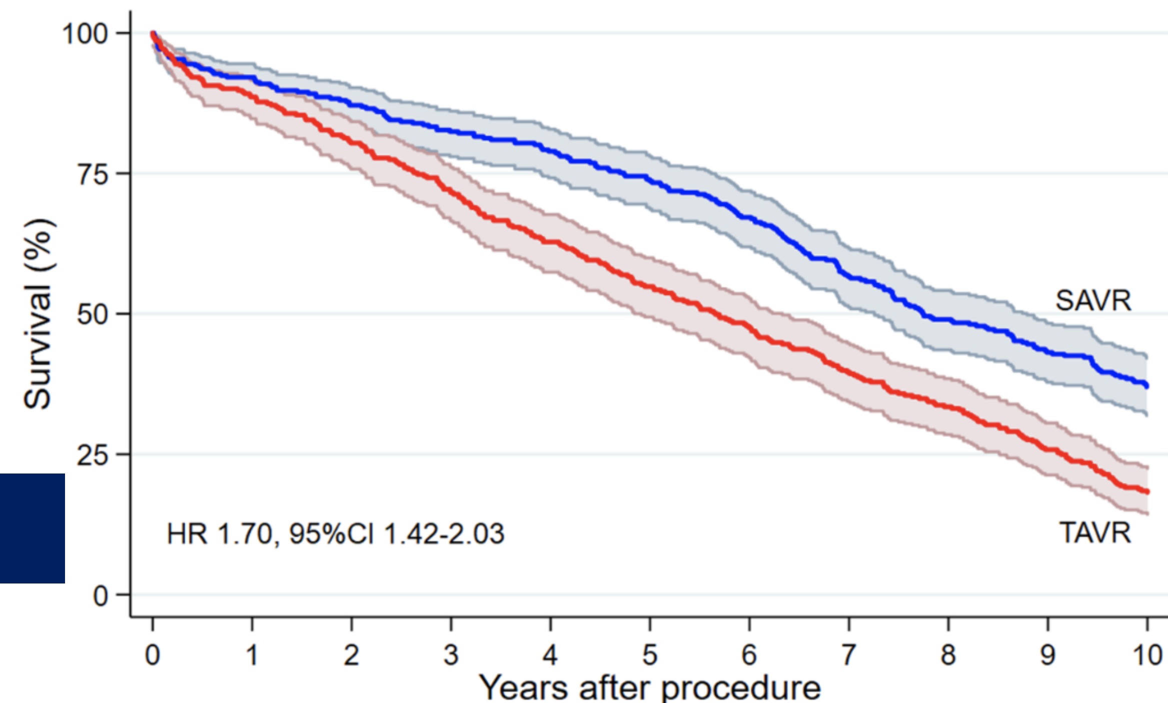
Český statistický úřad
Roberts. Am J Cardiol. 2007;100:489–498.

OBSERVANT study - 10 let u nízkorizikových

Ten-year outcomes after transcatheter or surgical aortic valve replacement in low-risk patients: The OBSERVANT study

Fausto Biancari [a,*], Paola D'Errigo [b], Marco Barbanti [c,d], Gabriella Badoni [b], Corrado Tamburino [e], Gianluca Polvani [a,f], Giuliano Costa [e], Giovanni Baglio [g], Stefano Rosato [b]

PSM – 355 SAVR vs. 355 TAVI
Ø věk 80 let
signifikantní rozdíl v přežívání od 3. roku
10leté přežívání 37,0% vs 18,2 % (p < 0,001)



limitem není věk, ale "rizikovost" pacienta

Biancari,. IJC Heart & Vasculature, 2024, 55: 101545

MUNI MED
CKTCH Centrum kardiovaskulární a transplantační chirurgie

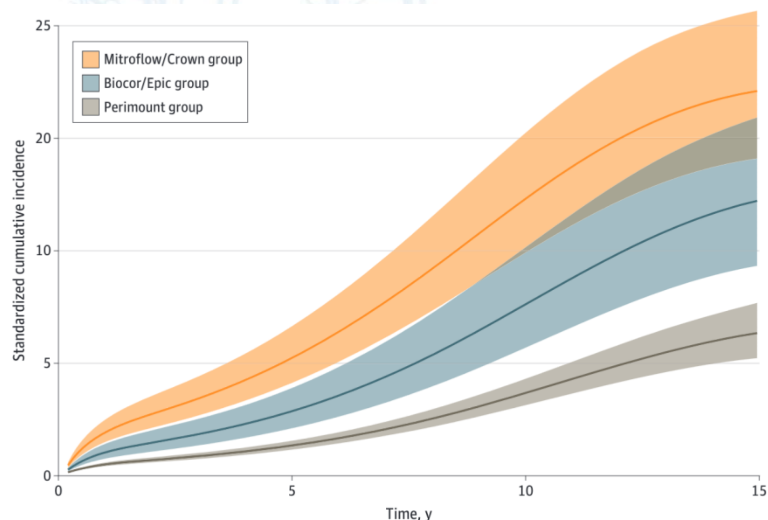
Dlouhodobá trvanlivost biochlopní

Original Investigation | Cardiology

Comparison of Long-term Performance of Bioprosthetic Aortic Valves in Sweden From 2003 to 2018

Michael Persson, MD; Natalie Glaser, MD, PhD; Johan Nilsson, MD, PhD; Örjan Friberg, MD, PhD; Anders Franco-Cereceda, MD, PhD; Ulrik Sartipy, MD, PhD

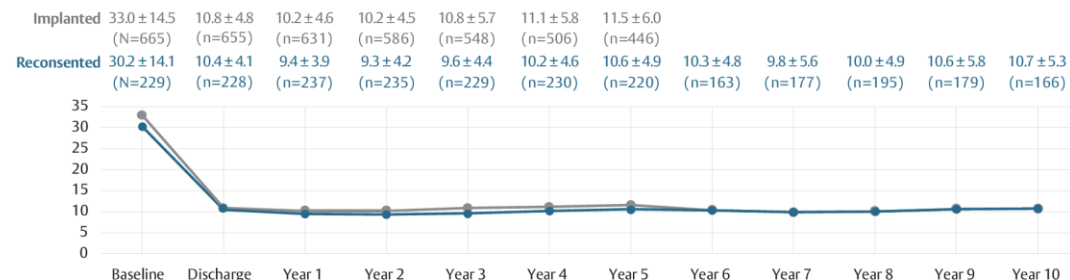
SWEDEHEART; 2003-2018, n=16 983 bioSAVR
věk 72,6 ± 8,5
Perimount
reintervence 3,6%/10 letech, 6,1%/15 letech



27. Long-Term Outcomes Following Aortic Valve Replacement with a Novel Tissue Bioprosthesis: 10-Year Results from the COMMENCE Trial

Lars Svensson [1], Eugene Blackstone [1], Joseph Bavaria [2], Bartley Griffith [3], Thomas Beaver [4], Nimesh Desai [5], Philippe Pibarot [6], Michael Borger [7], Vinod Thourani [8], John Puskas [9]

bioSAVR Inspiris Resilia, n = 102
věk 65,1 ± 10,9
SVD
reintervence 2,2%/10 letech



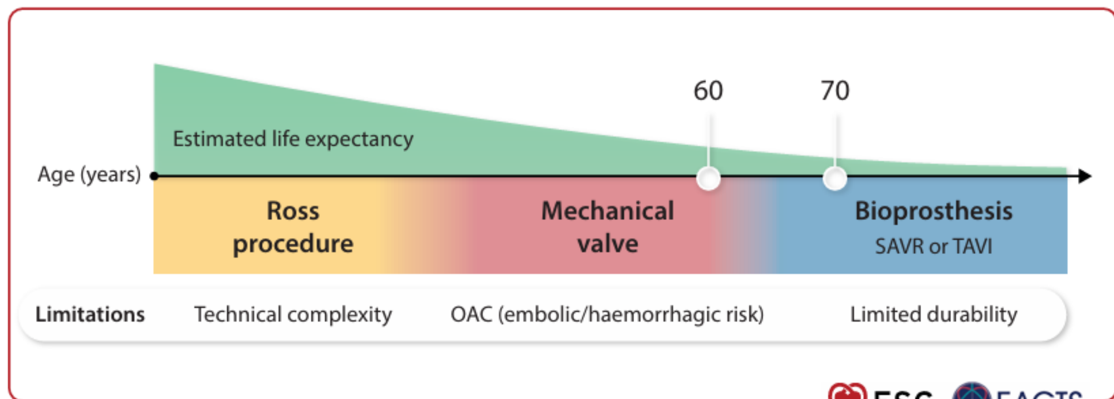
Persson, 8. JAMA Network Open, 2022, 5.3: e220962-e220962.
Svensson, JTCS, 171, 4, 2026, S18-S19,

MUNI MED
CKTCH Centrum kardiovaskulární a transplantační chirurgie

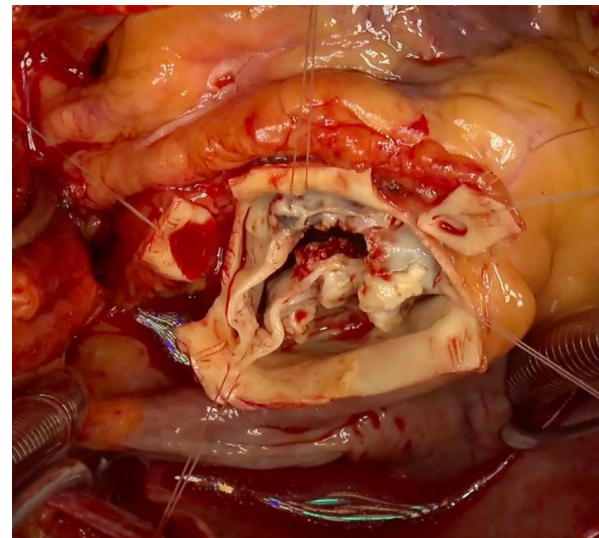
Guidelines - Rossova operace

ESC European Society of Cardiology
European Heart Journal (2025) **46**, 4635–4736
https://doi.org/10.1093/eurheartj/ehaf194
ESC GUIDELINES

2025 ESC/EACTS Guidelines for the management of valvular heart disease

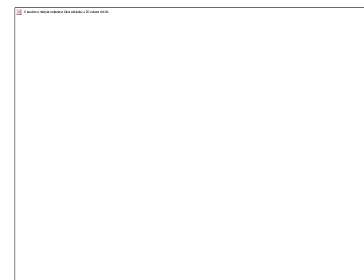


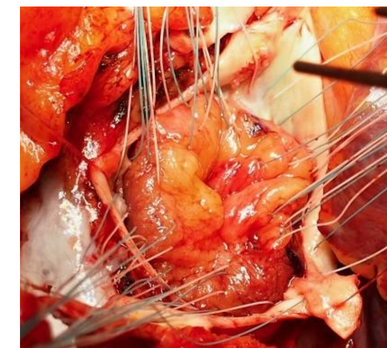
Replacement of the AV using an autograft (Ross procedure) is an alternative to an MHV in young patients that should be performed at experienced centres by operators with dedicated expertise (see also *Section 8*).[806] General recommendations are summarized in



mAVR

Ross





Praz, European heart journal, 2025, 46: 4635-4736

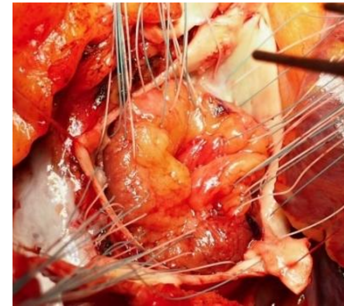
MUNI MED

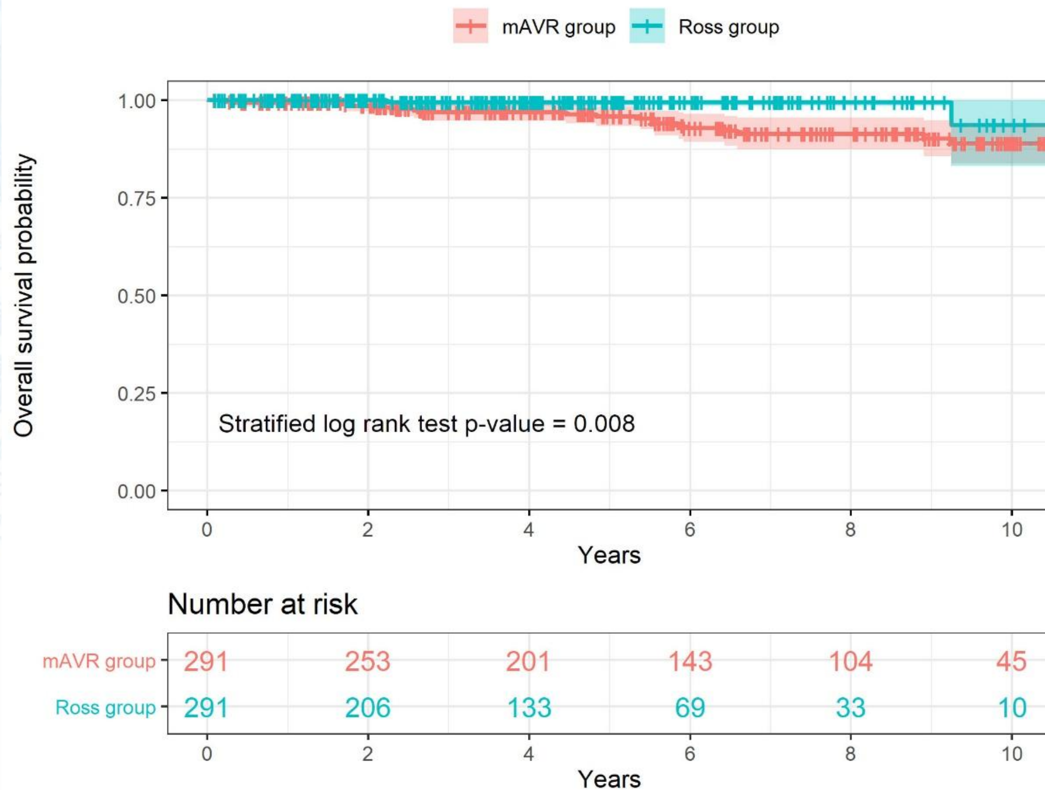
CKTCH Centrum kardiovaskulární a transplantační chirurgie

Rossova operace

Ross procedure provides survival benefit over mechanical valve in adults: a propensity-matched nationwide analysis

Jan Gofus [a], Petr Fila [b,*], Svetlana Drabkova [c], Pavel Zacek [a], Jiri Ondrasek [b], Petr Nemec [b], Jan Sterba [b], Martin Tuna [a], Jiri Jarkovsky [c] and Jan Vojacek [a]





Ross - Brno, Hradec Králové N=296
mAVR v ČR N=5120
propensity score matching
291 vs 291 pts

- Ross - nižší mortalita (0,7 vs 6,5 %; p=0,015)
- přežívání - 100 % vs 95,9 % - 5 leté
  93,6 % vs 88,9 % - 10 leté (p=0,008)

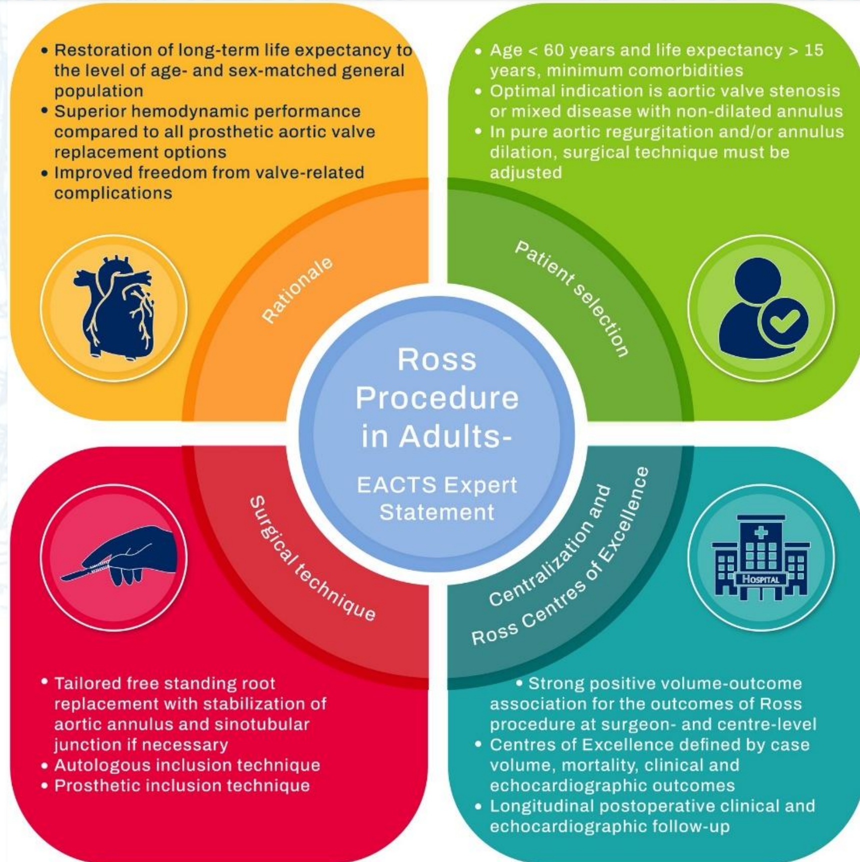
- 10 leté přežívání - Ross - **podobné běžné populace**
  - mAVR - **významně redukováno**

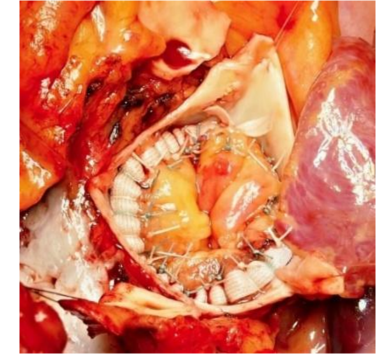
Gofus, EJCTS, 2022, 61.6: 1357-1365.

MUNI MED

CKTCH Centrum kardiovaskulární a transplantační chirurgie

Rossova operace - co je nového?

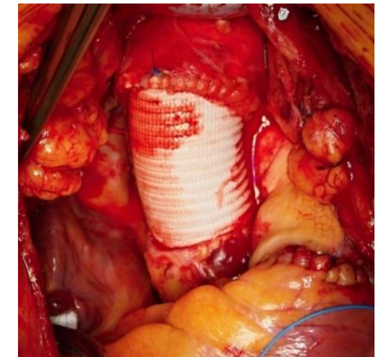




Co?
- vynikající hemodynamické vlastnosti
- dlouhodobé přežití
- kvalita života

Pro koho?
- pod 50let (60 let), s dlouhou life-expactacy, minimem komorbidit
- AoS, stenosinsuficienece bez dilatovaného anulu
- AoR/dilatací anulu - techniky ke stabilizici autograftu

Kde a jak?
- centralizace/asociace na chirurga
- dlouhodobé sledování
- dlouhodobá péče o pacienty - korekce TK!



Vojacek J, European Journal of Cardio-Thoracic Surgery, 2026, 68.2: ezaf295.

ESC Guidelines

ESC European Society of Cardiology
European Heart Journal (2025) 46, 4635–4736
https://doi.org/10.1093/eurheartj/ehaf194
ESC GUIDELINES

2025 ESC/EACTS Guidelines for the management of valvular heart disease

Developed by 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)

Authors/Task Force Members: Fabien Praz *†, (ESC Chairperson) (Switzerland), Michael A. Borger *†, (EACTS Chairperson) (Germany), Jonas Lanz ‡, (ESC Task Force Co-ordinator) (Switzerland), Mateo Marin-Cuartas ‡, (EACTS Task Force Co-ordinator) (Germany), Ana Abreu (Portugal), Marianna Adamo (Italy), Nina Ajmone Marsan (Netherlands), Fabio Barili (Italy), Nikolaos Bonaros (Austria), Bernard Cosyns (Belgium), Ruggero De Paulis (Italy), Habib Gamra (Tunisia), Marjan Jahangiri (United Kingdom), Anders Jeppsson (Sweden), Robert J.M. Klautz (Netherlands), Benoit Mores (Belgium), Esther Pérez-David (Spain), Janine Pöss (Germany), Bernard D. Prendergast (United Kingdom), Bianca Rocca (Italy), Xavier Rossello (Spain), Mikio Suzuki (Serbia), Holger Thiele (Germany), Christophe Michel Tribouilloy (France), Wojtek Wojakowski (Poland), and ESC/EACTS Scientific Document Group

ESC European Society of Cardiology
European Heart Journal (2024) 45, 3538–3700
https://doi.org/10.1093/eurheartj/ehae179
ESC GUIDELINES

2024 ESC Guidelines for the management of peripheral arterial and aortic diseases

Developed by the task force on the management of peripheral arterial and aortic diseases of the European Society of Cardiology (ESC)

Endorsed by the European Association for Cardio-Thoracic Surgery (EACTS), the European Reference Network on Rare Multisystemic Vascular Diseases (VASCERN), and the European Society of Vascular Medicine (ESVM)

Authors/Task Force Members: Lucia Mazzolai *†, (Chairperson) (Switzerland), Gisela Teixido-Tura ‡, (Task Force Co-ordinator) (Spain), Stefano Lanzi ‡, (Task Force Co-ordinator) (Switzerland), Vinko Boc (Slovenia), Eduardo Bossone (Italy), Marianne Brodmann [1] (Austria), Alessandra Bura-Rivière (France), Julie De Backer [2] (Belgium), Sebastien Deglise (Switzerland), Alessandro Della Corte (Italy), Christian Heiss (United Kingdom), Marta Kałużna-Oleksy (Poland), Donata Kurpas (Poland), Carmel M. McEniery (United Kingdom), Tristan Mirault (France), Agnes A. Pasquet (Belgium), Alex Pitcher (United Kingdom), Hannah A.I. Schaubroeck (Belgium), Oliver Schlager (Austria), Per Anton Sirnes (Norway), Muriel G. Sprynger (Belgium), Eugenio Stabile (Italy), Françoise Steinbach (France), Matthias Thielmann (Germany), Roland R.J. van Kimmenade (Netherlands), Maarit Venermo (Finland), Jose F. Rodriguez-Palomares *†, (Chairperson) (Spain), and ESC Scientific Document Group

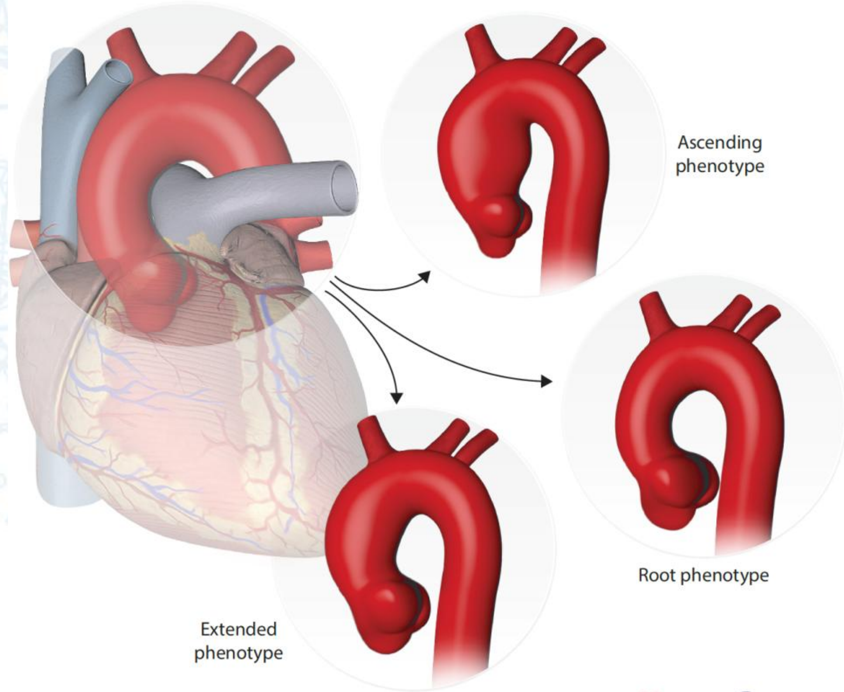
Praz, European heart journal, 2025, 46: 4635-4736
Mazzolai, European heart journal, 2024, 45.36: 3538-3700

MUNI MED | CKTCH Centrum kardiovaskulární a transplantační chirurgie

ESC Guidelines

ESC
European Society of Cardiology
European Heart Journal (2024) **45**, 3538–3700
https://doi.org/10.1093/eurheartj/ehae179
ESC GUIDELINES

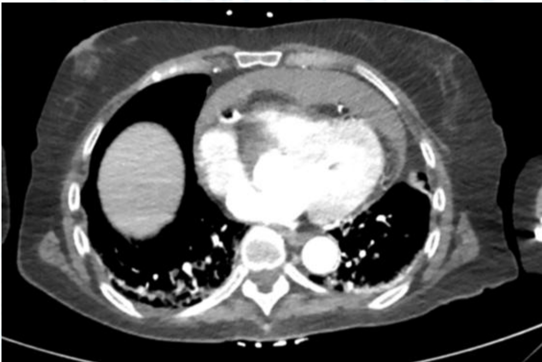
2024 ESC Guidelines for the management of peripheral arterial and aortic diseases

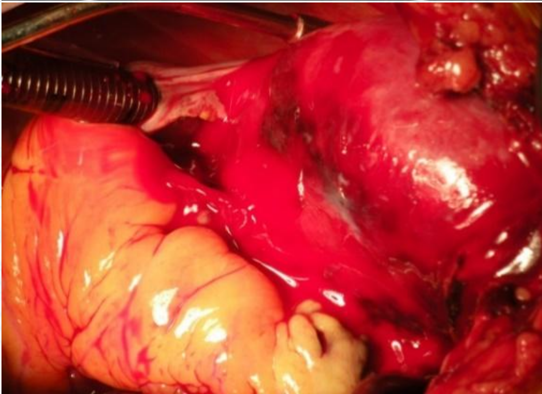


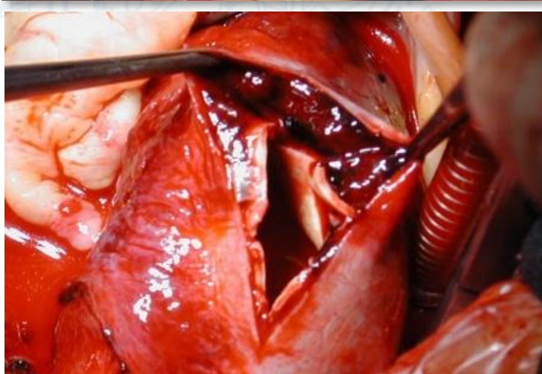
- **posun k nižším rozměrům/rizikovost pacienta**
- **nejen příčný rozměr**
  - růst ≥ 3mm/rok
  - rezistentní hypertenze
  - výška postavy <1,69m
  - kořenový fenotyp
  - délka asc. aorty >11cm
  - věk <50 let
  - plánované těhotenství
  - anamnéza akutního aortálního syndromu

Mazzolai, European heart journal, 2024, 45.36: 3538-3700

Cíl? Zabránit dilataci/disekci!







- 20-50% zemře, než se dostane do nemocnice/kardiochirurgii

Mahase, BMJ 2020; 368 :m304

- 50 % neléčených typ A zemře do 48 hod - mortalita 1-2 % / hod

- 30 denní mortalita po operaci 5-24%

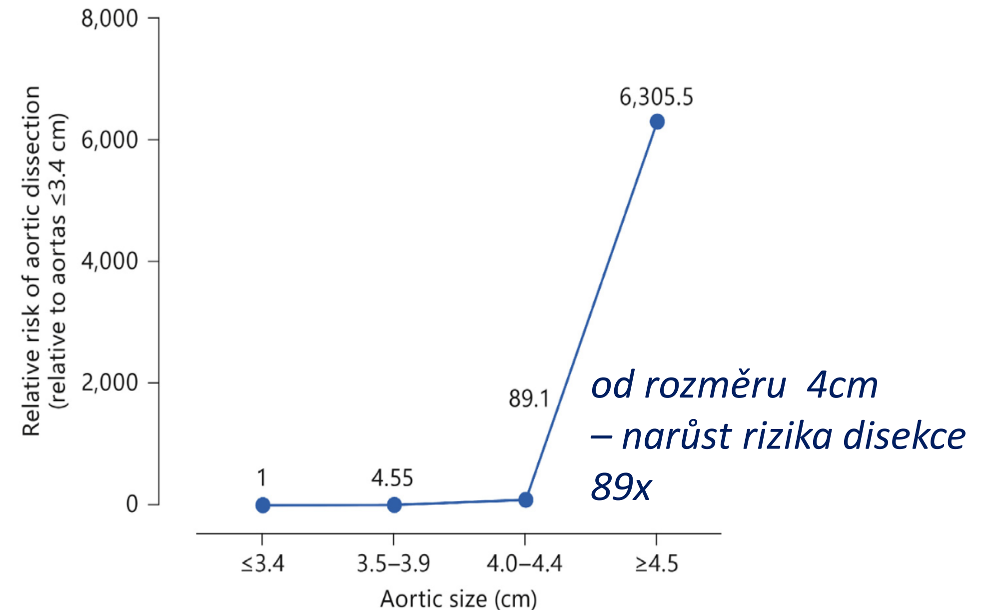
Gudbjartsson,. Scandinavian Cardiovascular Journal, 2020, 54.1: 1-13.

Predikce disekce aorty typu A

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY
VOL. 80, NO. 24, 2022
© 2022 BY THE AMERICAN COLLEGE OF CARDIOLOGY FOUNDATION
AND THE AMERICAN HEART ASSOCIATION, INC.
PUBLISHED BY ELSEVIER

CLINICAL PRACTICE GUIDELINE

2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease



The relative risk of aortic dissection begins to increase appreciably at a diameter of 4.0 cm to 4.4 cm and then increases dramatically at a diameter of ≥4.5 cm. Reprinted from Paruchuri et al.[5] Copyright 2005, with permission from Karger Publishers, Basel Switzerland.

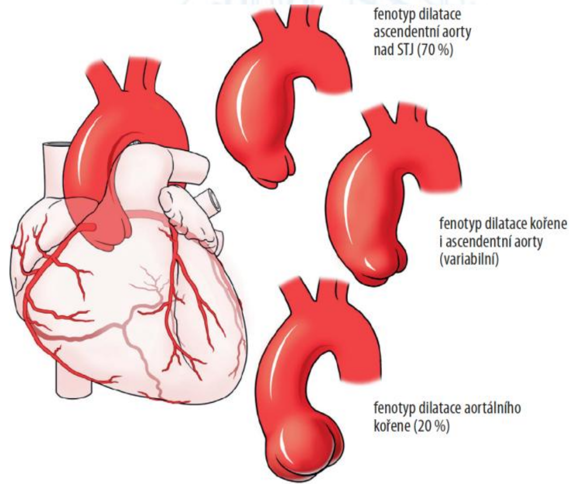
- In asymptomatic patients with aneurysms of the aortic root or ascending aorta who have a maximum diameter of ≥5.0 cm, surgery is reasonable when performed by experienced surgeons in a Multidisciplinary Aortic Team.[14-17]

Isselbacher, JACC, 2022, 80.24: e223-e393.
Paruchuri, Cardiology, 2015, 131.4: 265-272.

MUNI MED

CKTCH Centrum kardiovaskulární a transplantační chirurgie

Hranice pro výkon na aortě



- Marfan + RF (IIa)
- výkon na Ao chlopni

- Marfan (I)
- BAV root (I)
- BAV asc. + RF (IIa)
- TAV root low-risk (IIa)

- izolované aneurysma
- BAV asc. (I)
- TAV (I)

- PRKG1 + RF

- ACT2 + RF
- PRKG1

- ACTA2
- MYLK, MYH11

- BAV asc. (IIa)
- TAV asc. (IIa)

- Loeys-Dietz syndrom (40-50mm) – podle patogenní varianty

TGFB2 +RF (IIa)
TGFBR1 + RF (IIb)

TGFBR1 (I)
TGFBR2 (I)
SMAD3 (IIa)
TGFB2, SMAD2 (IIb)

TGFB3 (IIb)

Czerny, European Journal of Cardio-Thoracic Surgery, 2024, 65.2: ezad426.
Mazzolai, European heart journal, 2024, 45.36: 3538-3700.

Hranice pro výkon na aortě

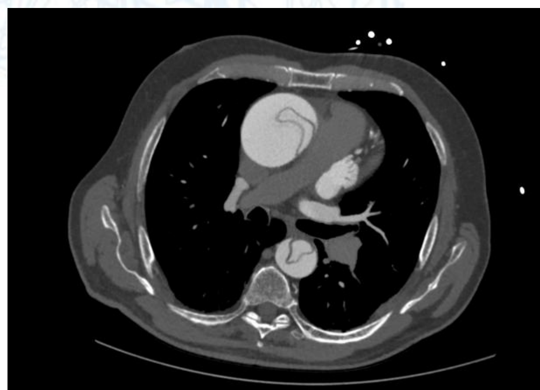
40 mm	42 mm	45 mm	50 mm	52 mm	55 mm
▪ PRKG1 + RF	▪ ACT2 + RF ▪ PRKG1	▪ Marfan + RF (IIa) ▪ výkon na Ao chlopni ▪ ACTA2 ▪ MYLK, MYH1 1	▪ Marfan (I) ▪ BAV root (I) ▪ BAV asc. + RF (IIa) ▪ TAV root low-risk (IIa)	▪ BAV asc. (IIa) ▪ TAV asc. (IIa)	▪ izolované aneurysma ▪ BAV asc. (I) ▪ TAV (I)

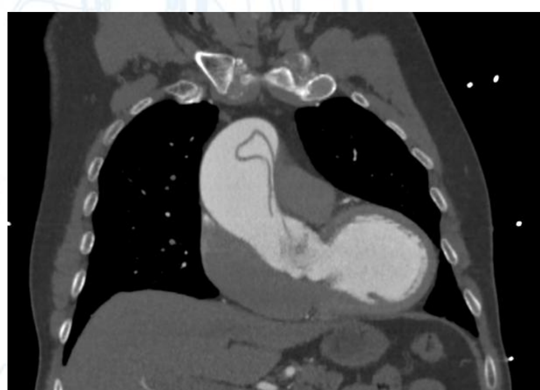
- **Loeys-Dietz syndrom (40-50mm) – podle patogenní varianty**

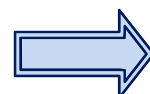
TGFB2 +RF (IIa)
TGFBR1 + RF (IIb)

TGFBR1 (I)
TGFBR2 (I)
SMAD3 (IIa)
TGFB2, SMAD2 (IIb)

TGFB3 (IIb)







Nejen dilatace (příčný rozměr) aorty!

Co dalšího hraje roli?

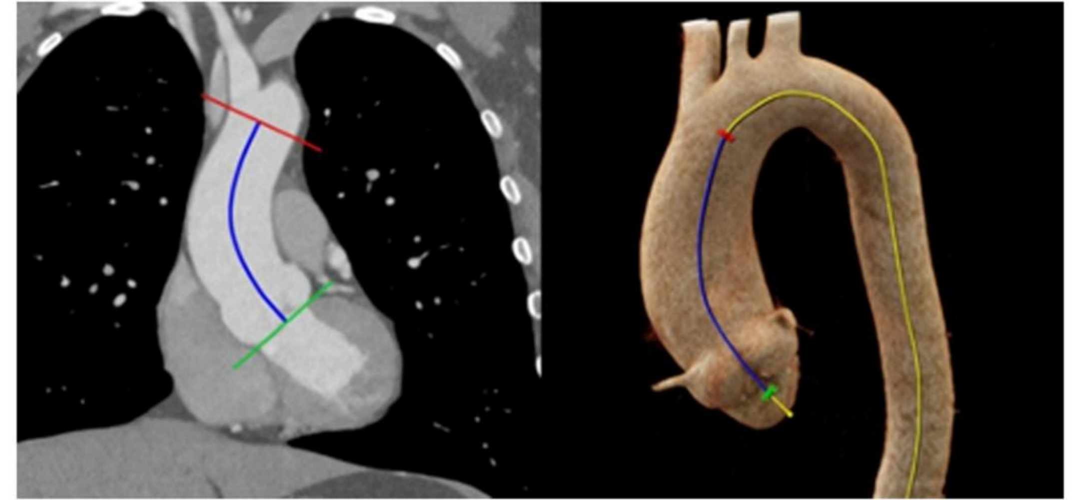
Czerny, European Journal of Cardio-Thoracic Surgery, 2024, 65.2: ezad426.
Mazzolai, European heart journal, 2024, 45.36: 3538-3700.

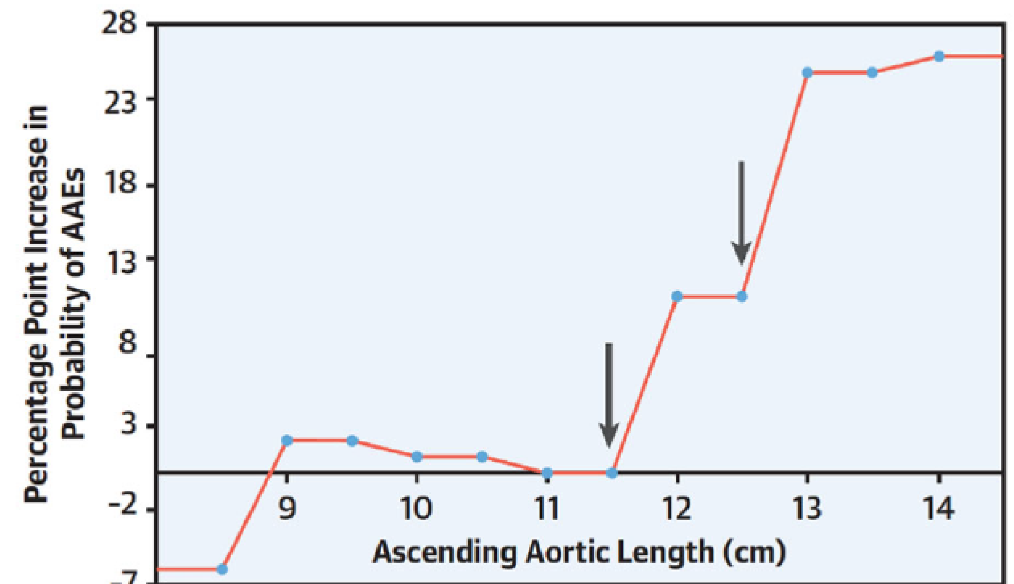
Riziko elongace aorty

EACTS/STS Guidelines for diagnosing and treating acute and chronic syndromes of the aortic organ

Authors/Task Force Members: Martin Czerny [a,b,*,†] (Co-Chairperson) (Germany), Martin Grabenwöger[c,d,*,†] (Co-Chairperson) (Austria), Tim Berger[a,b] (Task Force Coordinator), Victor Aboyans[e,f] (France), Alessandro Della Corte [g,h] (Italy), Edward P. Chen[i] (USA), Nimesh D. Desai[j] (USA), Julia Dumfarth [k] (Austria), John A. Elefteriades[l] (USA), Christian D. Etz[m] (Germany), Karen M. Kim[n] (USA), Maximilian Kreibich[a,b] (Germany), Mario Lescan [o] (Germany), Luca Di Marco[p] (Italy), Andreas Martens [q,r] (Germany), Carlos A. Mestres [s] (South Africa), Milan Milojevic [t] (Serbia), Christoph A. Nienaber [u,v] (UK), Gabriele Piffaretti[w] (Italy), Ourania Preventza[x] (USA), Eduard Quintana[y] (Spain), Bartosz Rylski [a,b] (Germany), Christopher L. Schlett[b,z] (Germany), Florian Schoenhoff[aa] (Switzerland), Santi Trimarchi[ab] (Italy) and Konstantinos Tsagakis [ac] (Germany), EACTS/STS Scientific Document Group

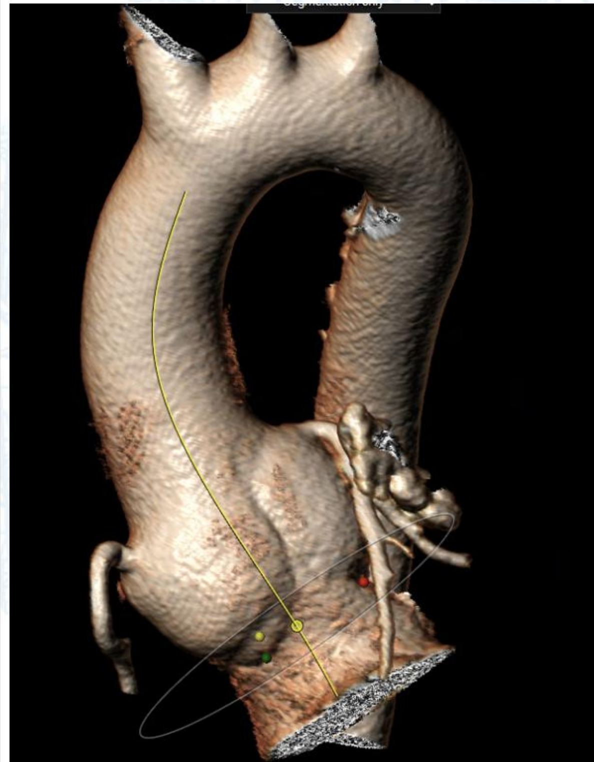
Recommendations	Class[a]	Level[b]	Ref[c]
Surgery should be considered for a symptomatic aneurysm of the ascending aorta, almost independently of size (once non-aortic causes have been eliminated).	IIa	C	-
For individuals of small body size, height nomograms should be considered in the decision about indications for surgery at various aortic dimensions.	IIa	B	[340]
An ascending aortic length exceeding 110 mm should be considered as a risk factor for aortic events when indicating elective surgery for aortic aneurysms.	IIa	B	[196]
Despite metrics and precision criteria, the benefits and risks of surgical intervention versus nonoperative management should be considered on a case-by-case basis.	IIa	C	-





Czerny, European Journal of Cardio-Thoracic Surgery, 2024, 65.2: ezad426.

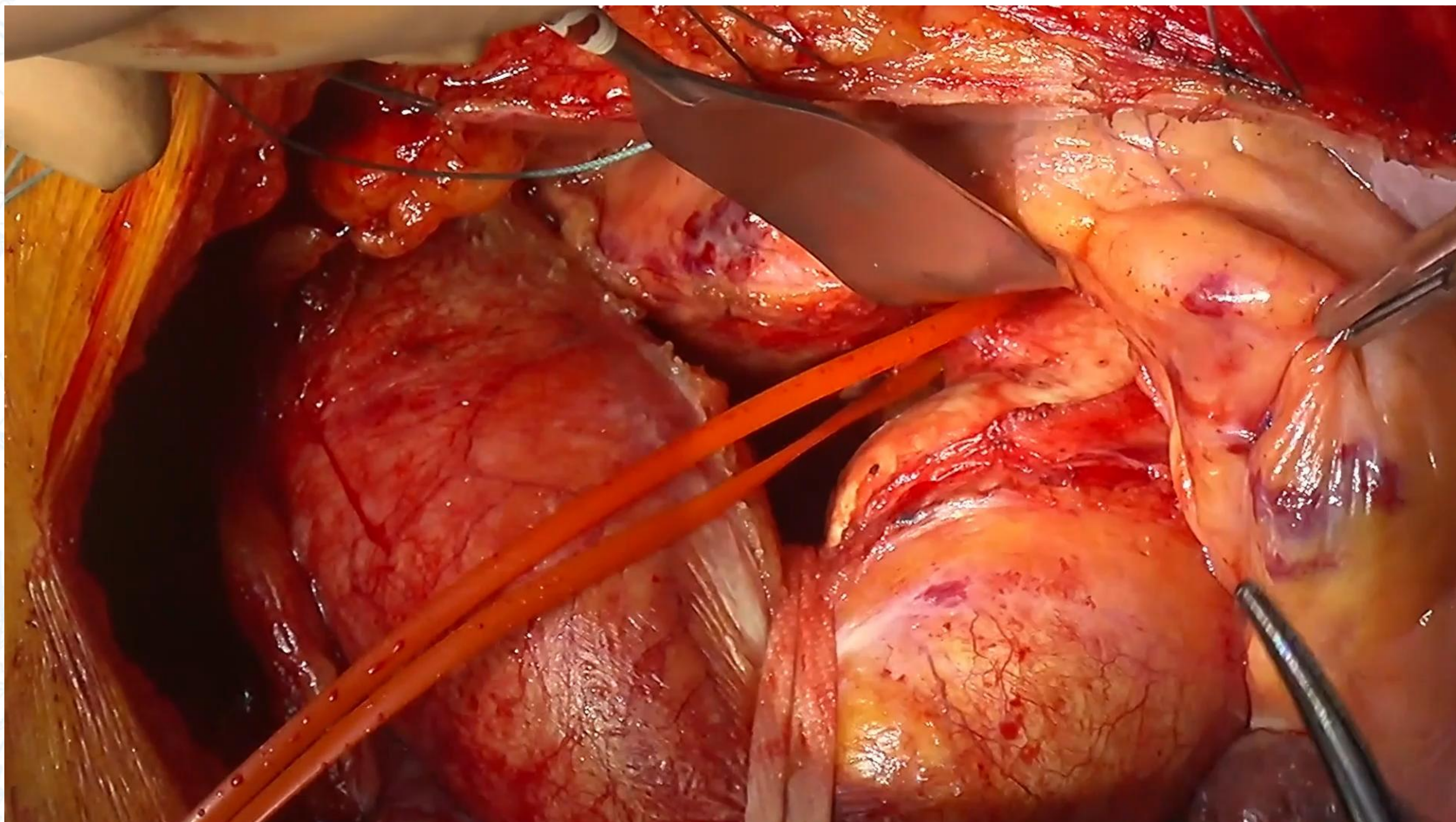
Posun k preventivní chirurgické léčbě - individualizované řešení



- PEARS - Personalised External Aortic Root Support
- polyesterová síťka kolem kořene a ascendentní aorty
- individualizace tvaru dle CT
- preventivní/kurativní výkon

Implantace PEARS

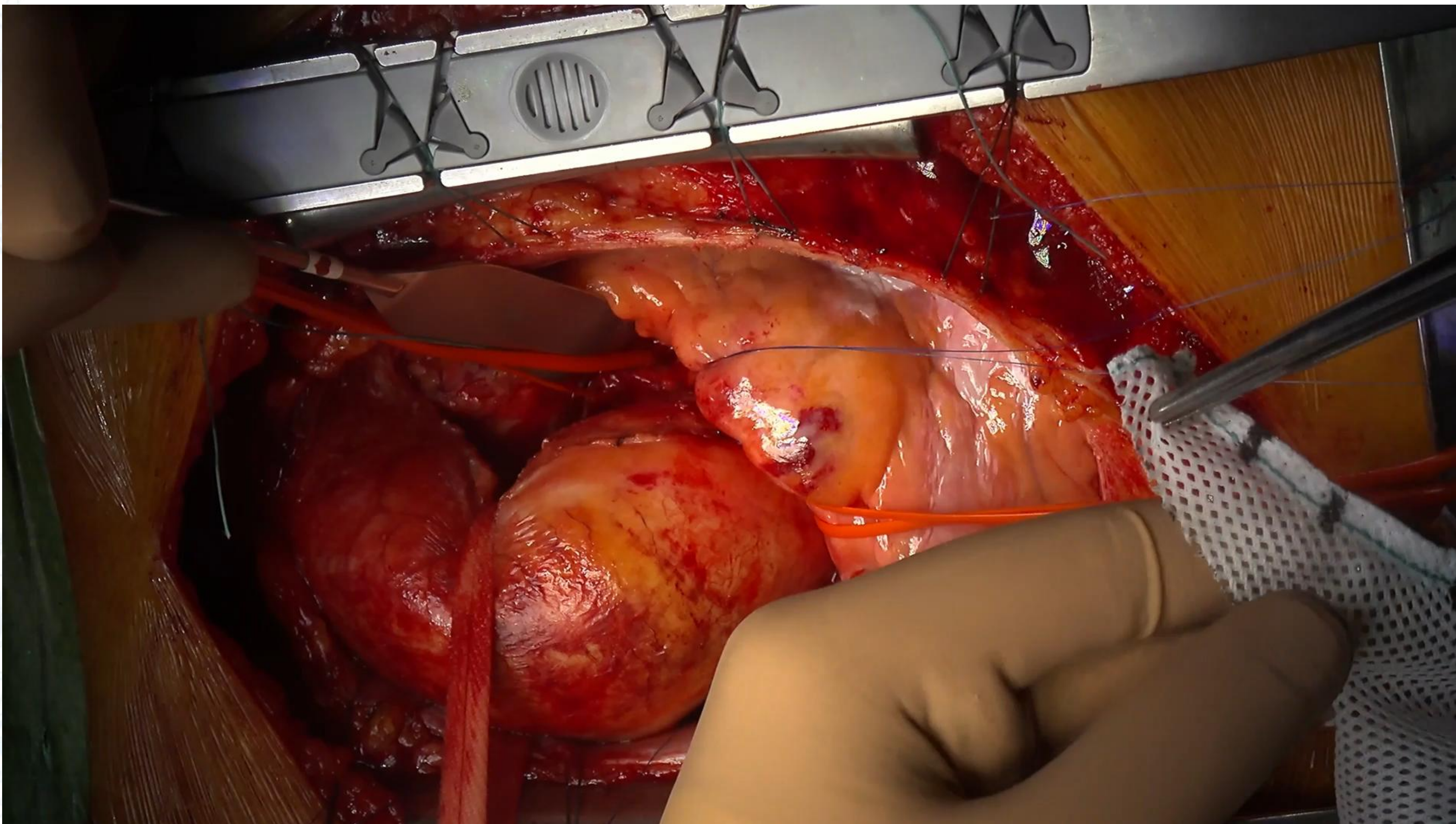
kmen ACS
kmen ACD



Implantace PEARS

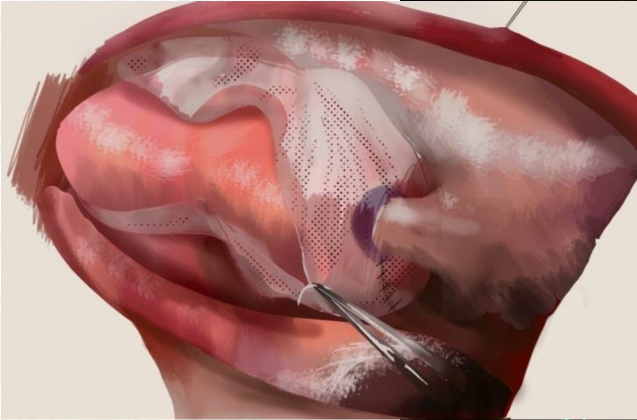
Implantace PEARS

Exovasc
umístění



Implantace PEARS

sutura švu



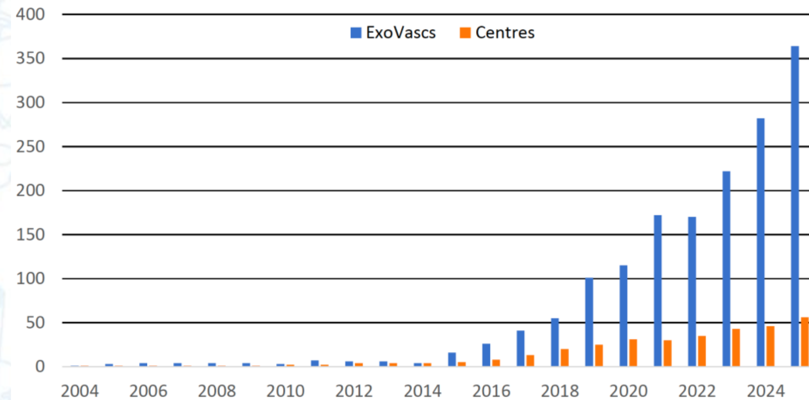
PEARS - celosvětový report

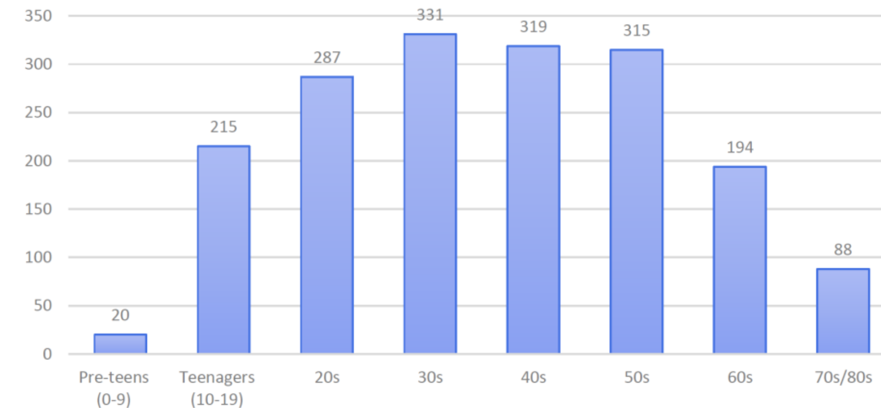
27. dubna 2026

n = 1769 (479 žen, 1290 mužů), 3-84 let

MFS, bikuspidní aortopatie, L-D sy, Turner sy, E-D sy, MYBCP3, ACTA2 mutace, TGA, Ross/PEARS

79% bez mimotělního oběhu





7 pacientů > 20 let

68 pacientů > 10 let

446 pacientů > 5 let

15 žen - 16 narozených dětí

bez akutní disekce (pokryté části) u implantovaných pacientů

MUNI MED

CKTCH Centrum kardiovaskulární a transplantační chirurgie

Shrnutí

Záchovné operace
- náhrada dilatované aorty + korekce chlopenní vady
- fungující/opravená chlopeň je vždy lepší než náhrada

Aortální stenóza
- SAVR vs. TAVI - posuzovat rizikovost více než pouze věk
- naděje na dožití a life-time management

Rossova operace
- jediná náhrada aortální chlopně - zachování přežívání běžné populace
- ano, ale... NE VŠEM, NE VŠUDE, NE KÝMKOLI

Aneurysma aorty
- němé/agresivní onemocnění
- nečekat na příznaky = problém

PEARS
- pacientovi na míru, prevence fatální komplikace
- včasné řešení

MUNI MED

CKTCH | Centrum kardiovaskulární a transplantační chirurgie