

When repair is not possible.....

Reconstruction of the Aortic Valve and Root:
A practical approach
Homburg, September 7 - 9, 2022

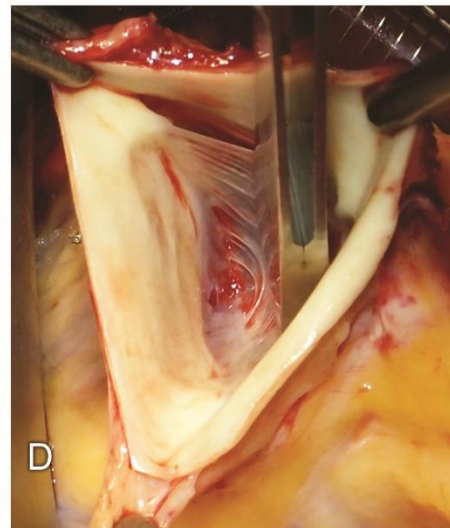
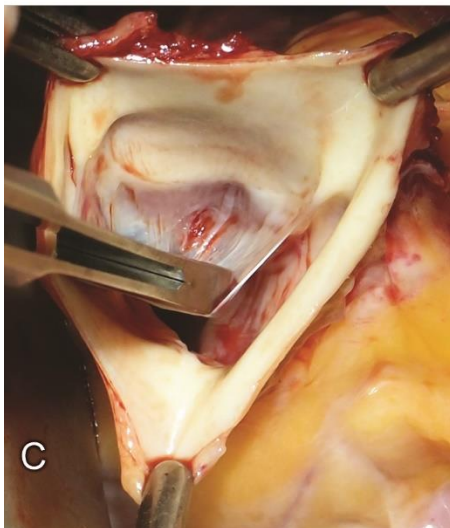
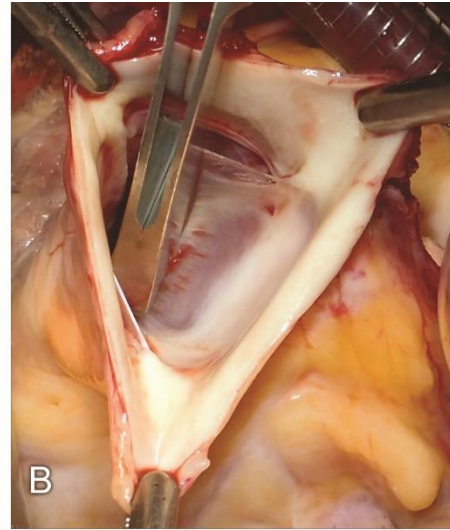
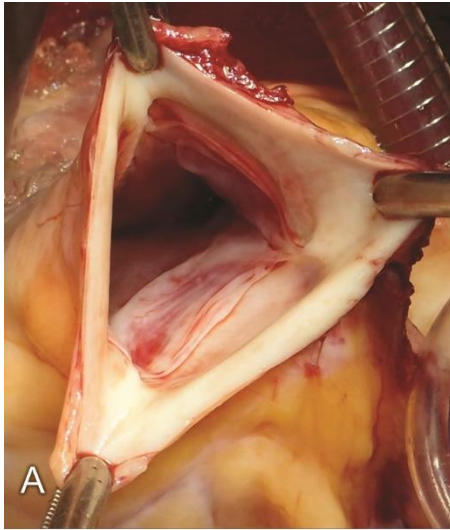
Jan Vojacek, M.D., Ph.D.
Professor of Cardiac Surgery
Department of Cardiac Surgery, Charles University
University Hospital Hradec Kralove
Czech Republic





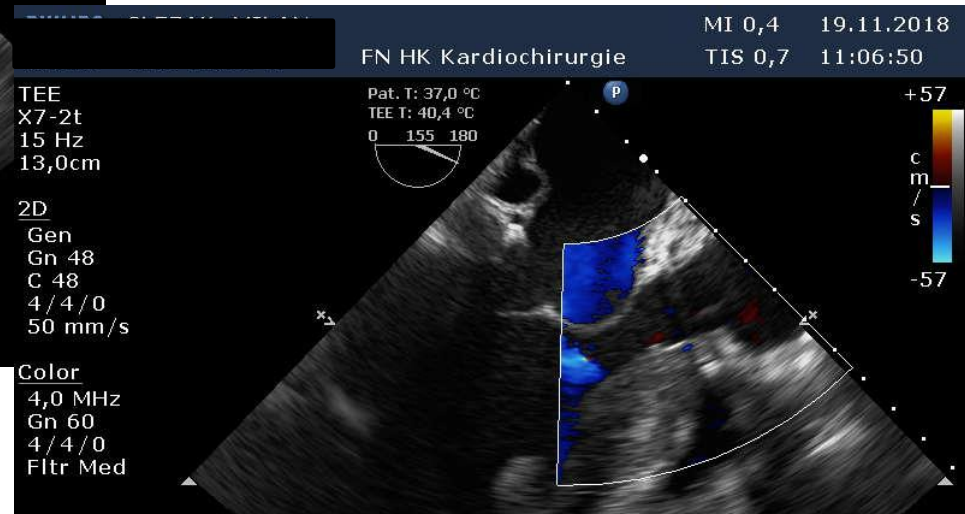
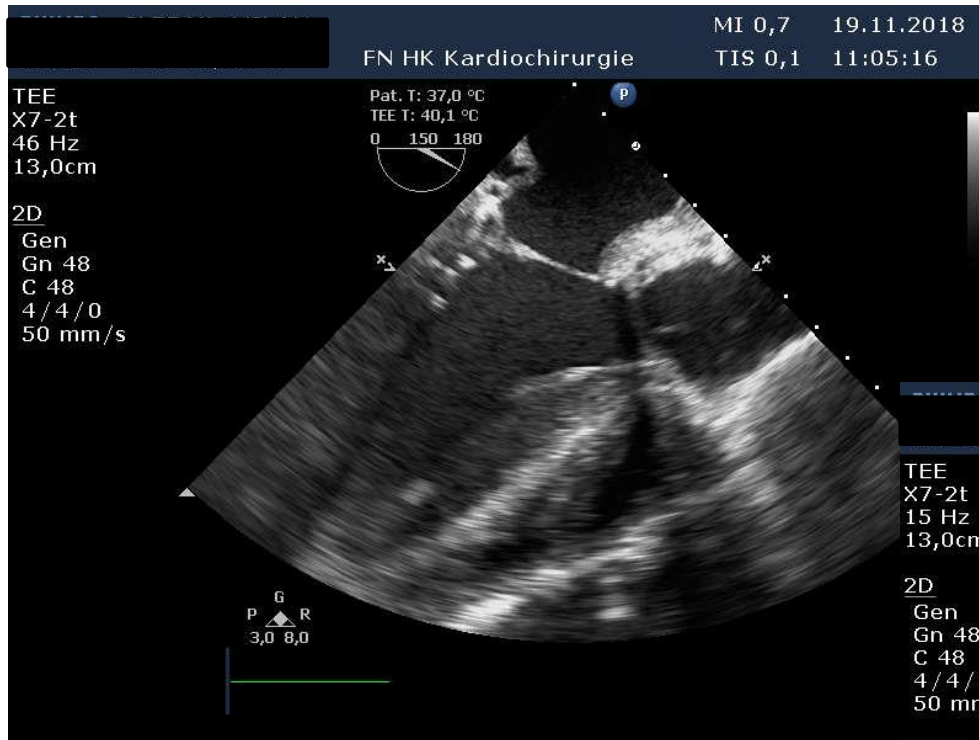
VALVE RELATED COMPLICATIONS ☹️

Pulmonary valve



The Ross procedure

Perioperative TEE



Procedure of choice in children
and in young or middle aged adults

The Ross operation: a Trojan horse?†

Loes M.A. Klieverik^{1*}, Johanna J.M. Takkenberg¹, Jos A. Bekkers¹, Jolien W. Roos-Hesselink², Maarten Witsenburg³, and Ad J.J.C. Bogers¹

¹Department of Cardio-Thoracic Surgery, Erasmus University Medical Center, Bd 571, PO Box 2040, 3000 CA, Rotterdam, The Netherlands; ²Department of Cardiology, Erasmus University Medical Center, Rotterdam, The Netherlands; and ³Department of Cardiology, Erasmus University Medical Center, Rotterdam, The Netherlands

Complex procedure – higher risk of in hospital mortality

KEYWORDS

Ross operation;
Prospective study;

Aims The Ross operation is the

(AVR) and may also provide a

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autograft reoperation at 13 ye

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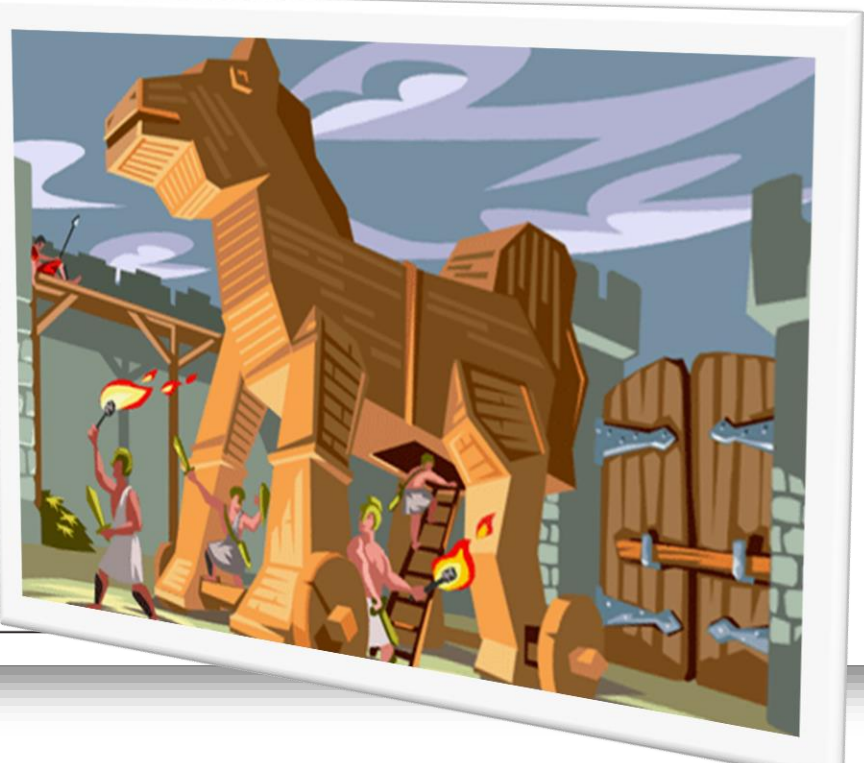
Conclusion Although survival

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nted

Transition of one valve disease into two valve disorders (aortic and pulmonary)

The risk of pulmonary autograft and/or pulmonary homograft failure (reoperation)



Improved Survival After the Ross Procedure Compared With Mechanical Aortic Valve Replacement

When is the Ross operation a good choice?

Tirone E. David, MD, Anna W...

...homograft aortic root
...trial. Lancet. 2010

Long-Term Outcomes of Patients Undergoing the Ross Procedure

JACC 2021



German Ross Registry

Outcomes of the Ross Procedure
vs Mechanical Aortic Valve Replacement

Aug 14, 2016 Matched Cohort Study

T. DAVID, Circulation, August 2016

Long-Term Outcomes of Patients Undergoing the Ross Procedure

German Ross Registry

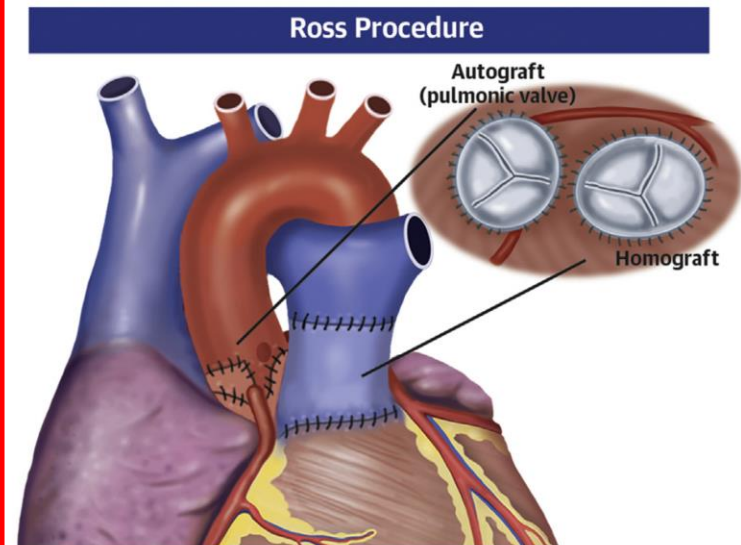
JACC 2021



— Ross (survival) — General Population (survival)
 - - - 95% CI — Ross (instantaneous risk of death)

Patients at Risk

2,271	1,694	1,104	568	116	30
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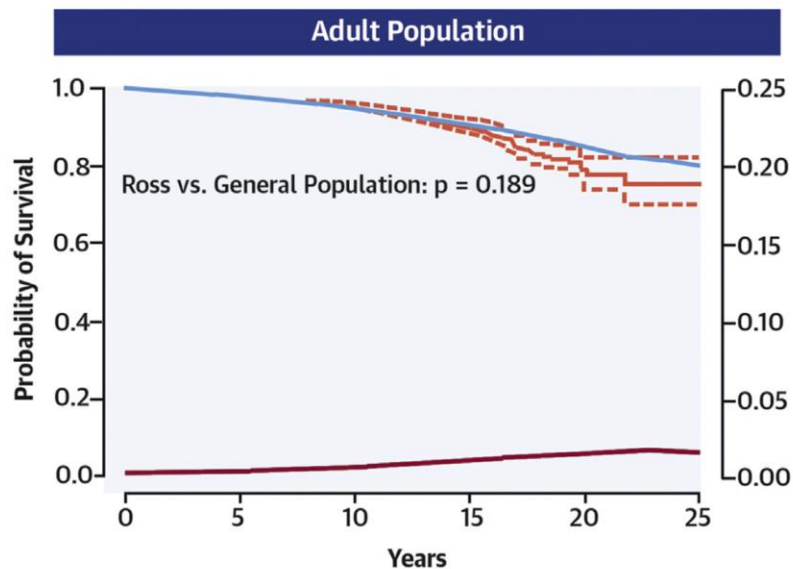


Autograft Reintervention	0.69%/Patient Year
RVOT Reintervention	0.62%/Patient Year
Major Bleeding	0.15%/Patient Year
Permanent stroke	0.13%/Patient Year
Valve Thrombosis	0.07%/Patient Year
Endocarditis	0.36%/Patient Year

Long-Term Outcomes of Patients Undergoing the Ross Procedure

German Ross Registry

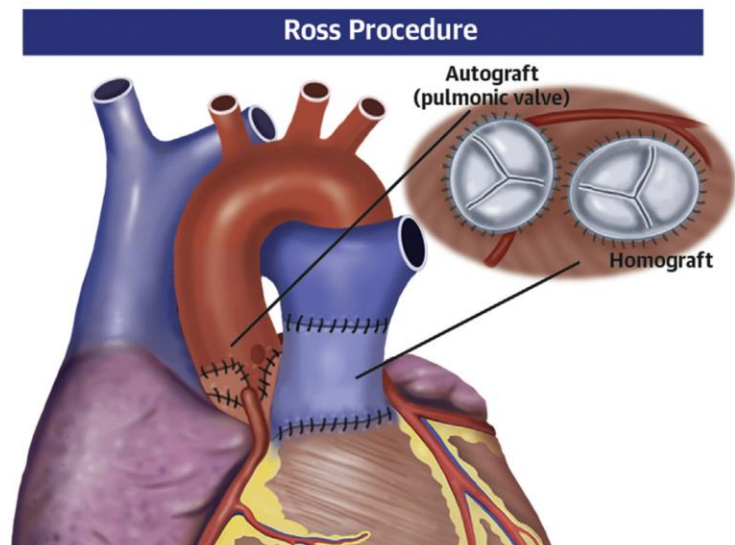
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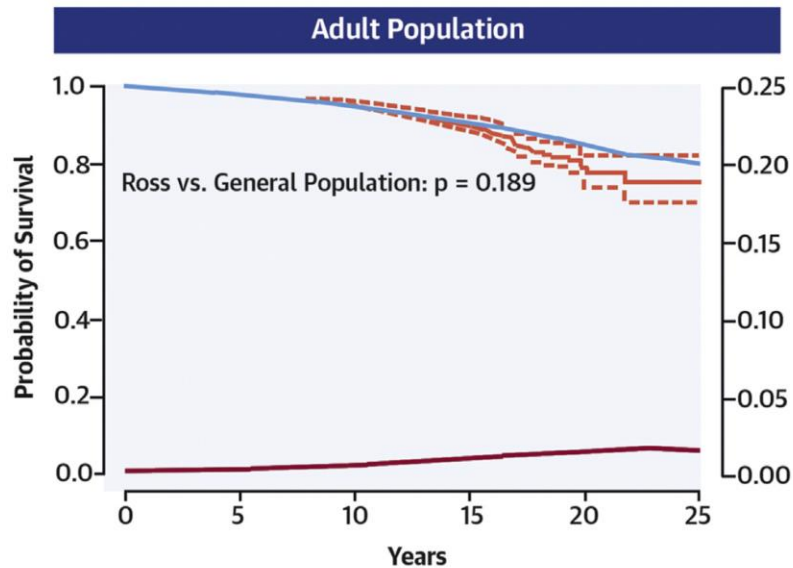


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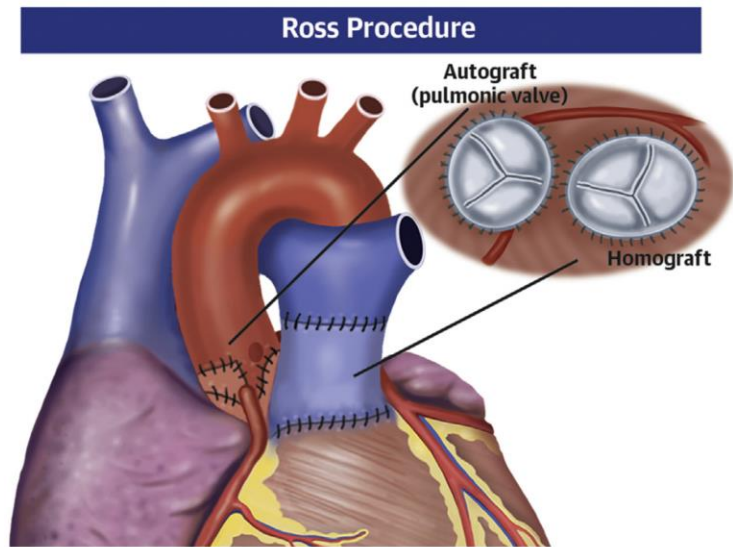
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Propensity-Matched Comparison of the Ross Procedure and Prosthetic

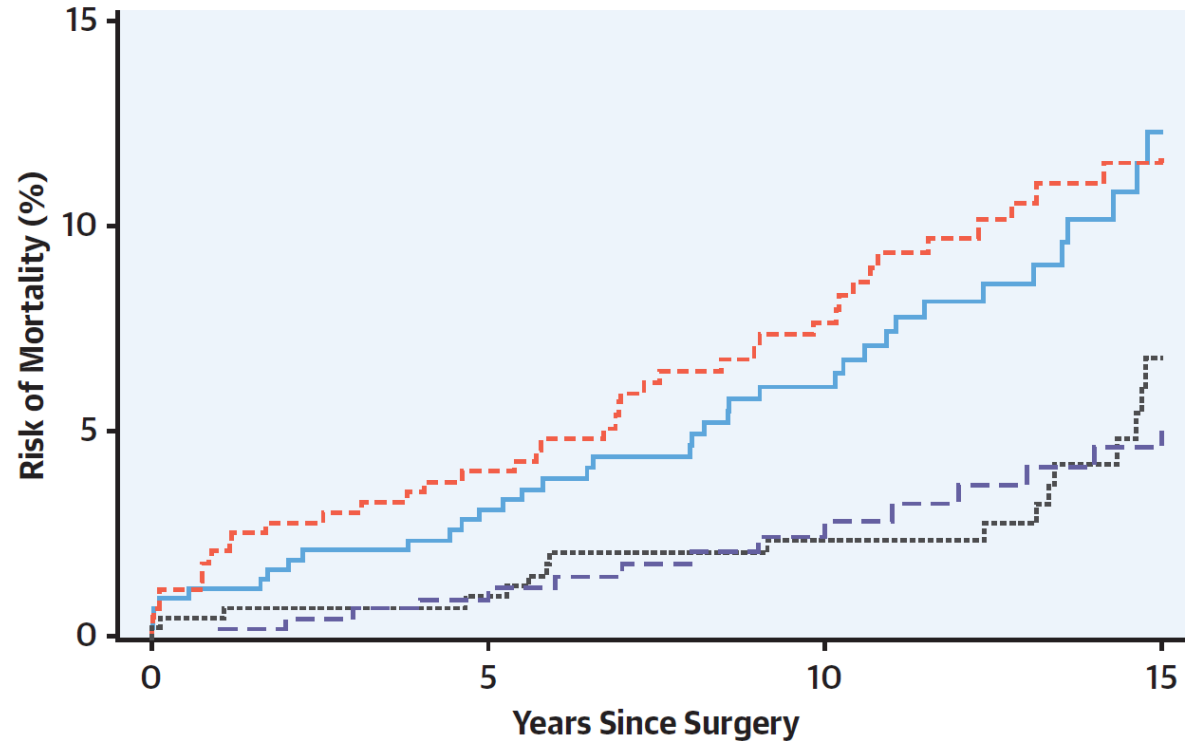


CENTRAL ILLUSTRATION Long-Term Outcomes After the Ross Procedure vs Prosthetic Aortic Valve Replacement in Adults

Ross vs Biological vs Mechanical AVR

- New York and California Statewide Data (1997-2014)
- Adults needing elective isolated AVR (18-50 years old)
- Exclusions: Concomitant procedures, reoperations, IV drug use, dialysis, endocarditis, history of cancer, connective tissue disorders
- 1:1:1 propensity matching (Ross: Biological: Mechanical)
- N = 434 patients per cohort
- Median follow-up: 12.5 years

Long-Term Cumulative Incidence of All Cause Mortality Compared with the Matched U.S. General Population







Number at Risk

Bioprosthetic	434	386	290	113
Mechanical	434	369	287	131
Ross	434	376	298	129

— Bioprosthetic — Mechanical - - - Ross - - - General Population

Cite this article as: Gofus J, Fila P, Drabkova S, Zacek P, Ondrasek J, Nemecek P *et al.* Ross procedure provides survival benefit over mechanical valve in adults: a propensity-matched nationwide analysis. *Eur J Cardiothorac Surg* 2022; doi:10.1093/ejcts/ezac013.

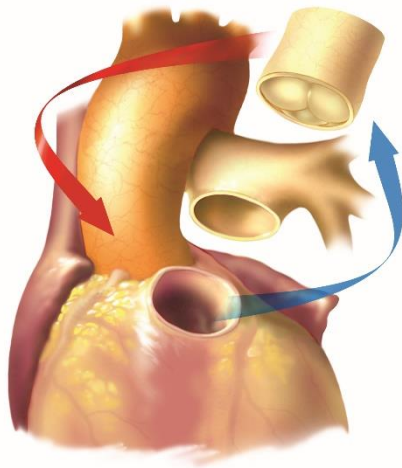
Ross procedure provides survival benefit over mechanical valve in adults: a propensity-matched nationwide analysis

Jan Gofus ^a, Petr Fila ^{b,*}, Svetlana Drabkova^c, Pavel Zacek ^a, Jiri Ondrasek^b, Petr Nemecek ^b, Jan Sterba^b,
Martin Tuna^a, Jiri Jarkovsky^c and Jan Vojacek^a

^a Department of Cardiac Surgery, Charles University, Faculty of Medicine and University Hospital in Hradec Kralove, Hradec Kralove, Czech Republic

^b Department of Cardiac Surgery, Centre of Cardiovascular Surgery and Transplantation, Brno, Czech Republic

^c Institute of Health Information and Statistics of the Czech Republic, Prague, Czech Republic



296 Ross adult patients







All cardiac centers in Czech Republic

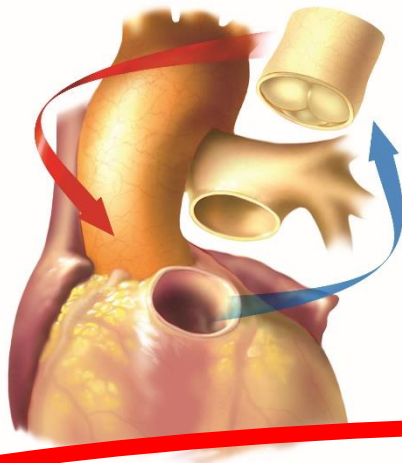
5120 mechanical AVR

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

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^a Department of
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^c Institute of



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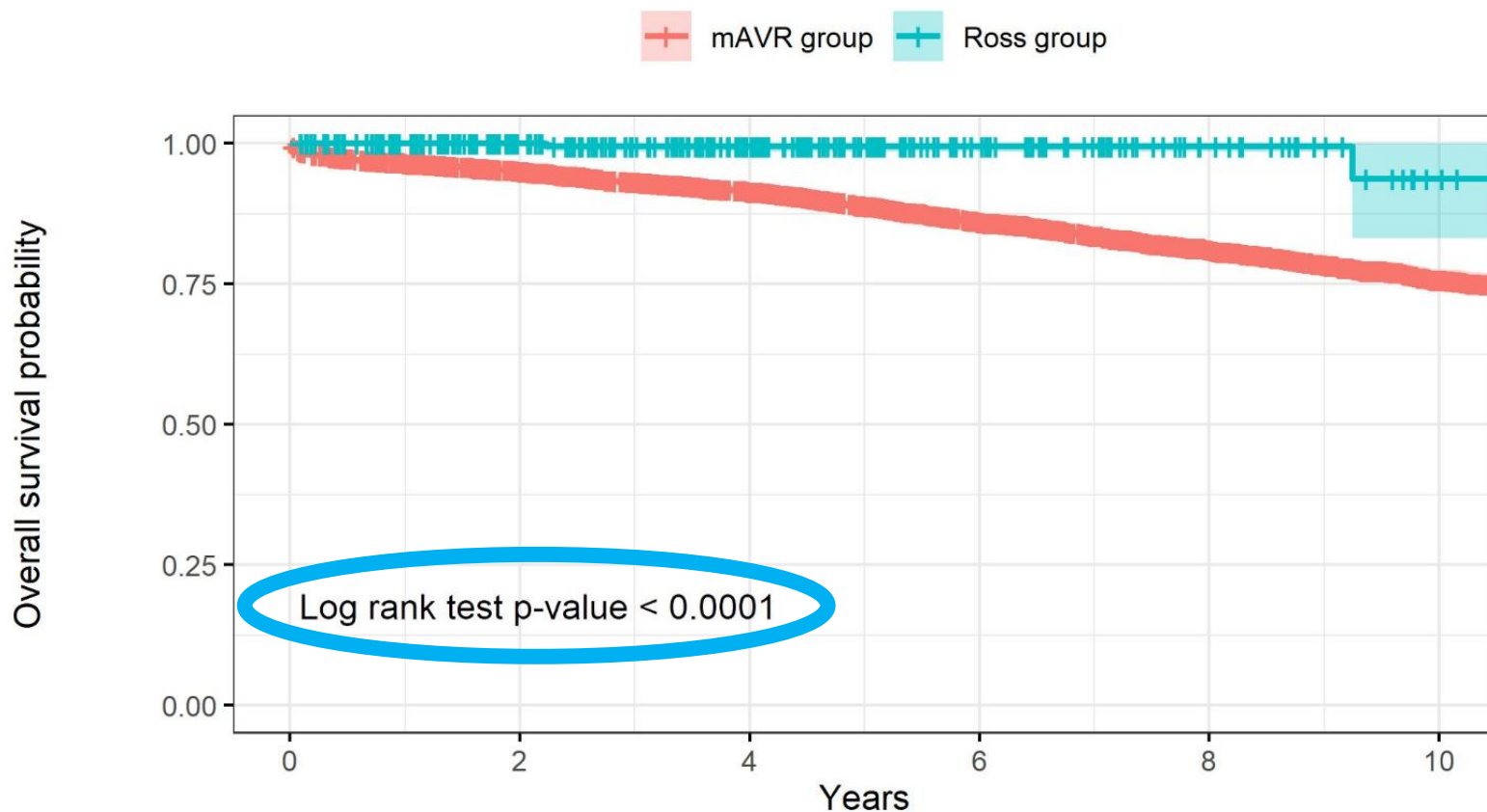
291 Ross adult patients

291 mechanical AVR

0% In-hospital mortality

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



QoL after the Ross procedure

Zacek et al. *BMC Cardiovascular Disorders* (2016) 16:63
DOI 10.1186/s12872-016-0236-0

BMC Cardiovascular Disorders

RESEARCH ARTICLE

Open Access



Quality of life after aortic valve repair is similar to Ross patients and superior to mechanical valve replacement: a cross-sectional study

Pavel Zacek^{1*†}, T. Holubec^{2†}, M. Vobornik¹, J. Dominik¹, J. Takkenberg³, J. Harrer¹ and J. Vojacek¹

Circulation 2009

Cardiovascular Surgery

The Ross Procedure

A Systematic Review and Meta-Analysis

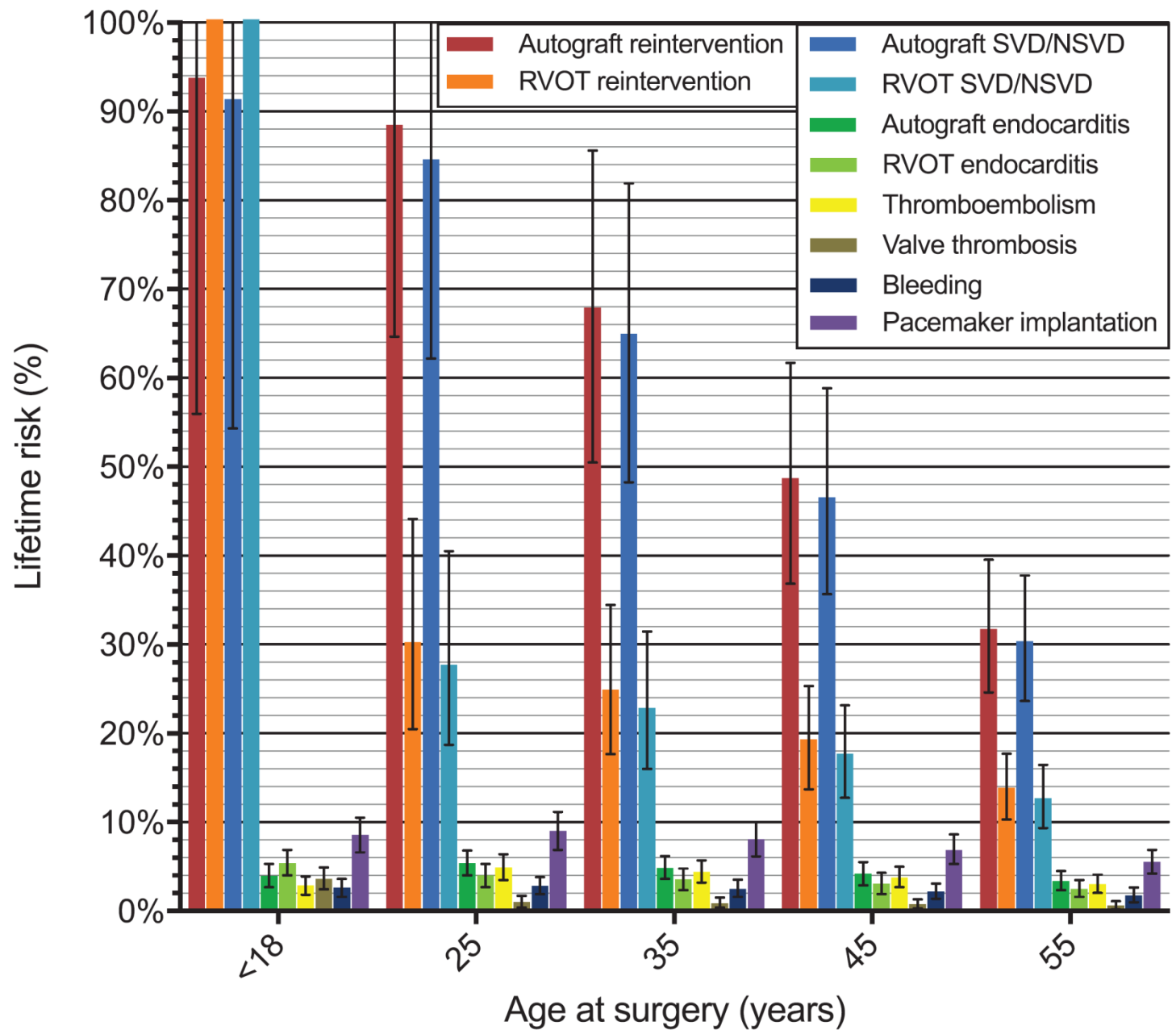
Johanna J.M. Takkenberg, MD, PhD; Loes M.A. Klieverik, MD, PhD; Paul H. Schoof, MD, PhD;
Robert-Jan van Suylen, MD, PhD; Lex A. van Herwerden, MD, PhD; Pieter E. Zondervan, MD, PhD;
Jolien W. Roos-Hesselink, MD, PhD; Marinus J.C. Eijkemans, PhD;
Magdi H. Yacoub, MD, PhD; Ad J.J.C. Bogers, MD, PhD

Circulation: Cardiovascular Quality and Outcomes

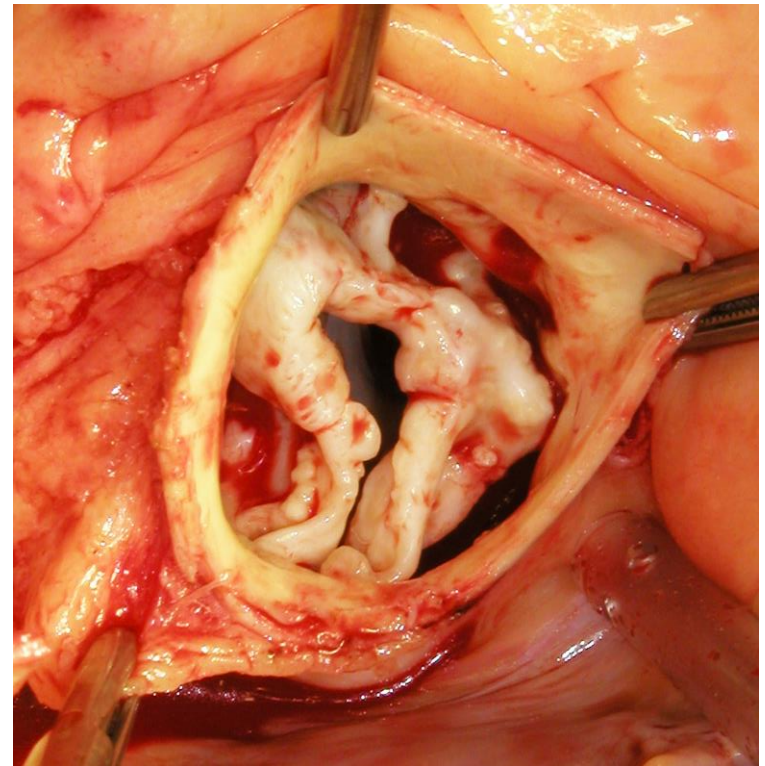
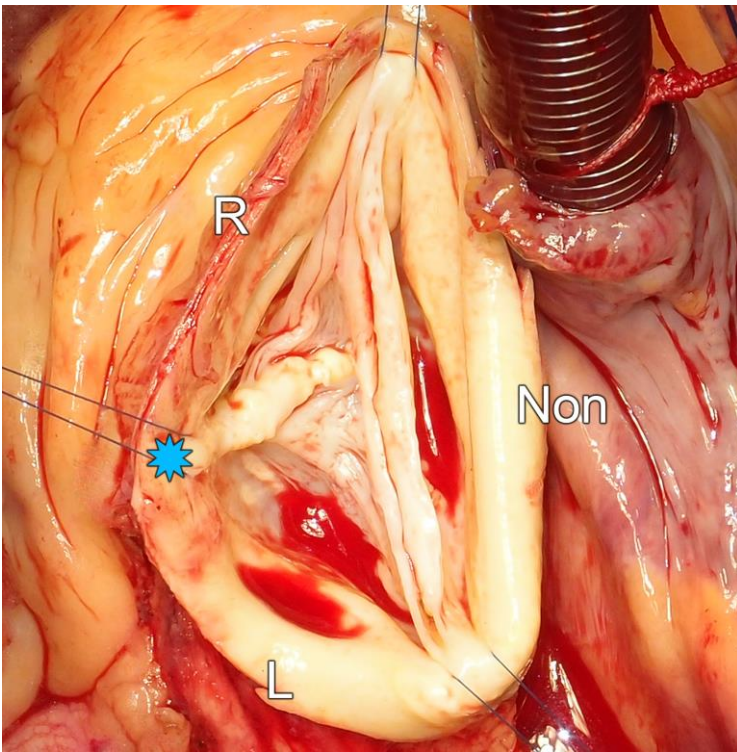
Circulation 2019

ORIGINAL ARTICLE

The Ross Procedure: A Systematic Review, Meta-Analysis, and Microsimulation

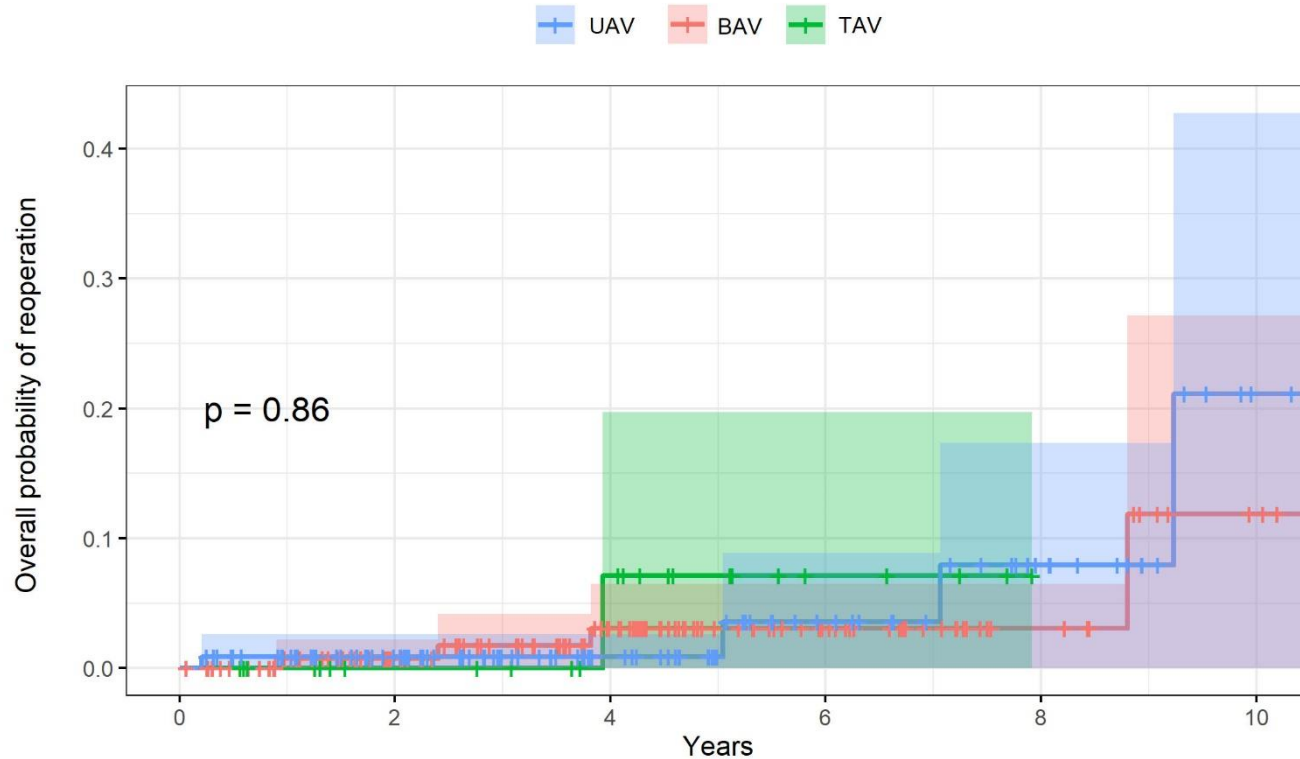


When repair is not possible.....



Unicuspid Aortic Valve in Patients Undergoing the Ross Procedure

Jan Gofus, MD, PhD, Petr Fila, MD, PhD, Martin Vobornik, MD, PhD, Jiri Ondrasek, MD, Petr Nemecek, MD, CSc. Jan Sterba, MD, Eva Cermakova, Dr. Martin Tuna, MD, PhD. and Jan Vojta



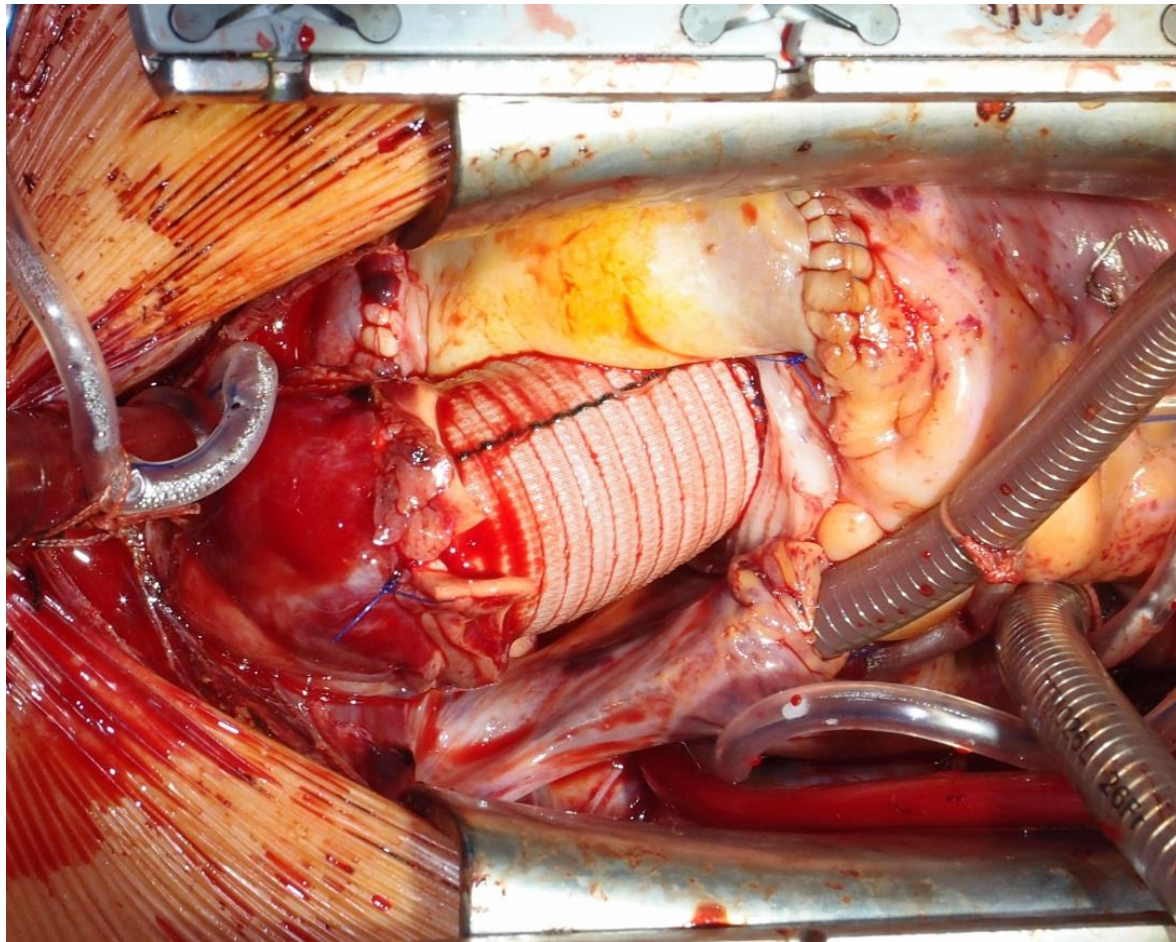
Number at risk

	0	2	4	6	8	10
BAV	149	106	70	34	14	5
TAV	25	18	13	4	0	0
UAV	112	85	50	28	15	2

Years

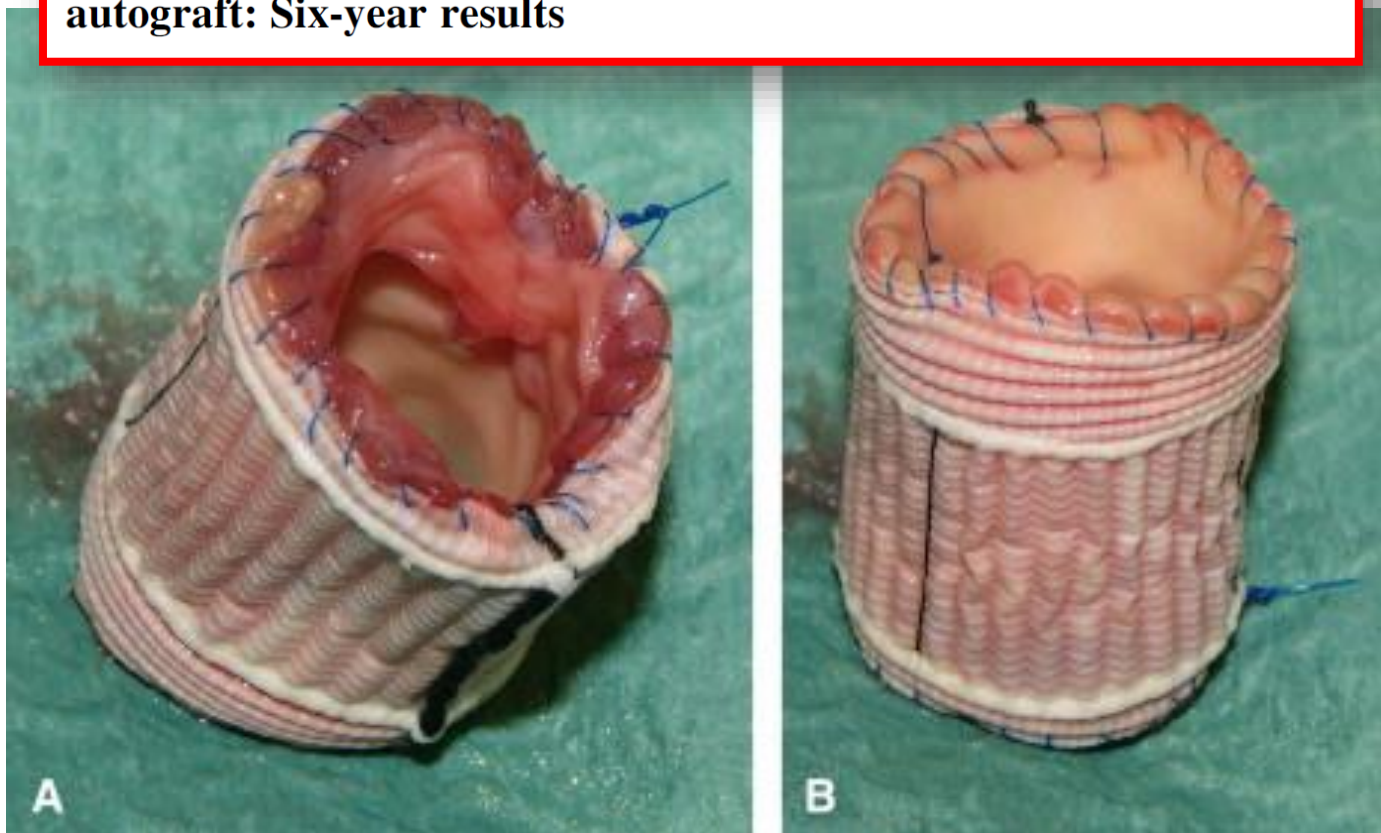
The Ross procedure:

How to reduce the risk of the autograft failure?

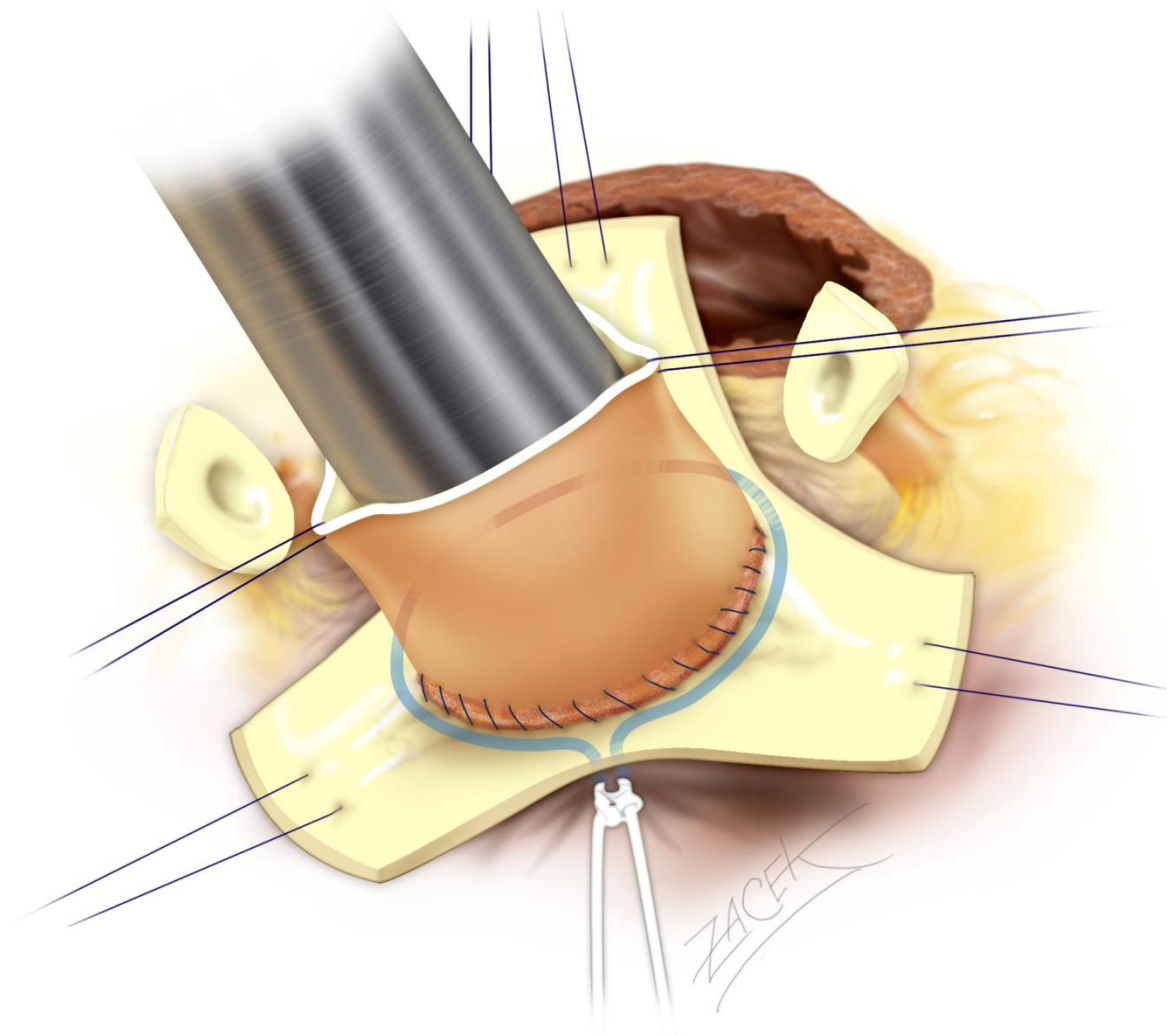


How to reinforce the root

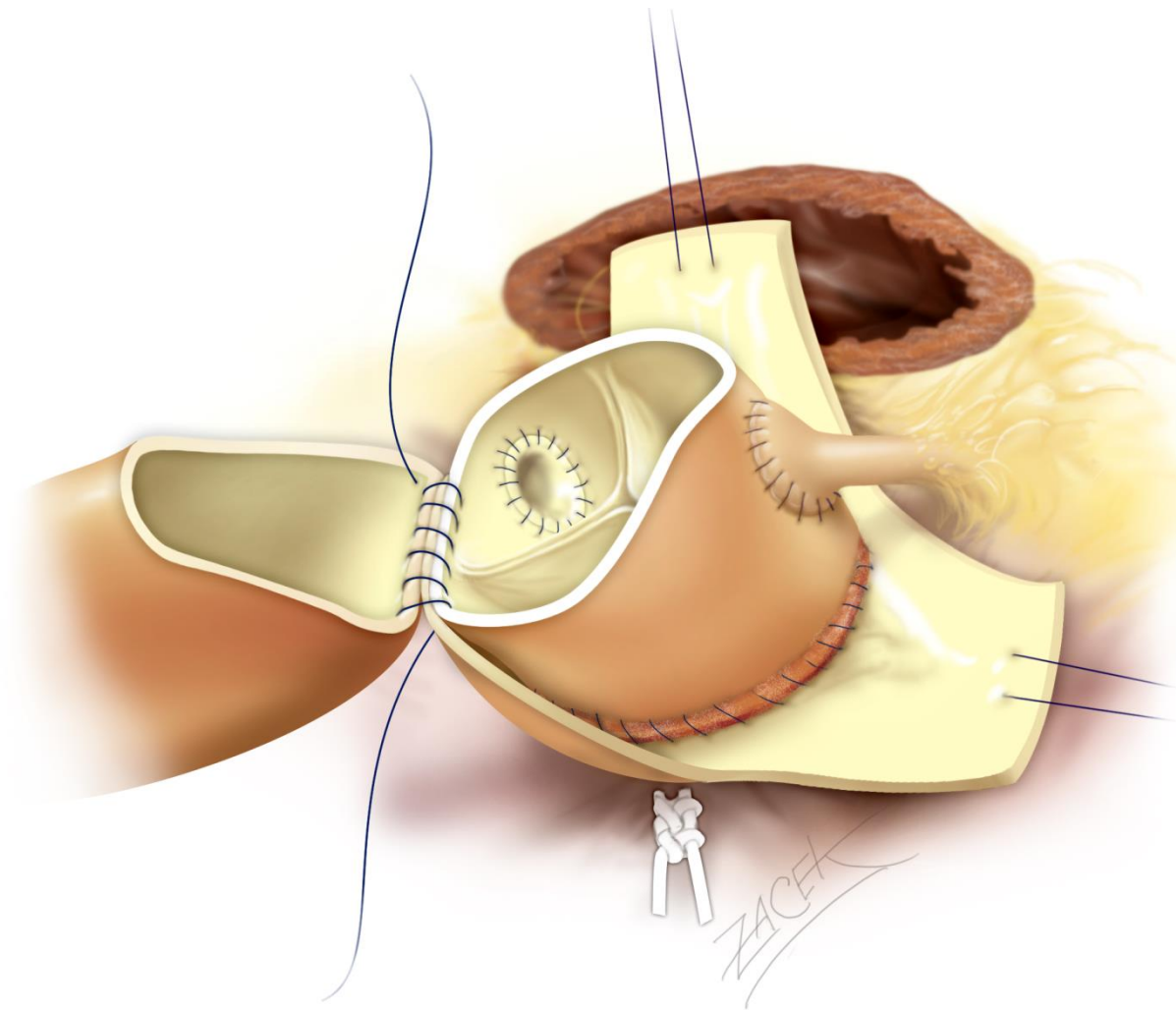
Modified Ross operation with reinforcement of the pulmonary autograft: Six-year results



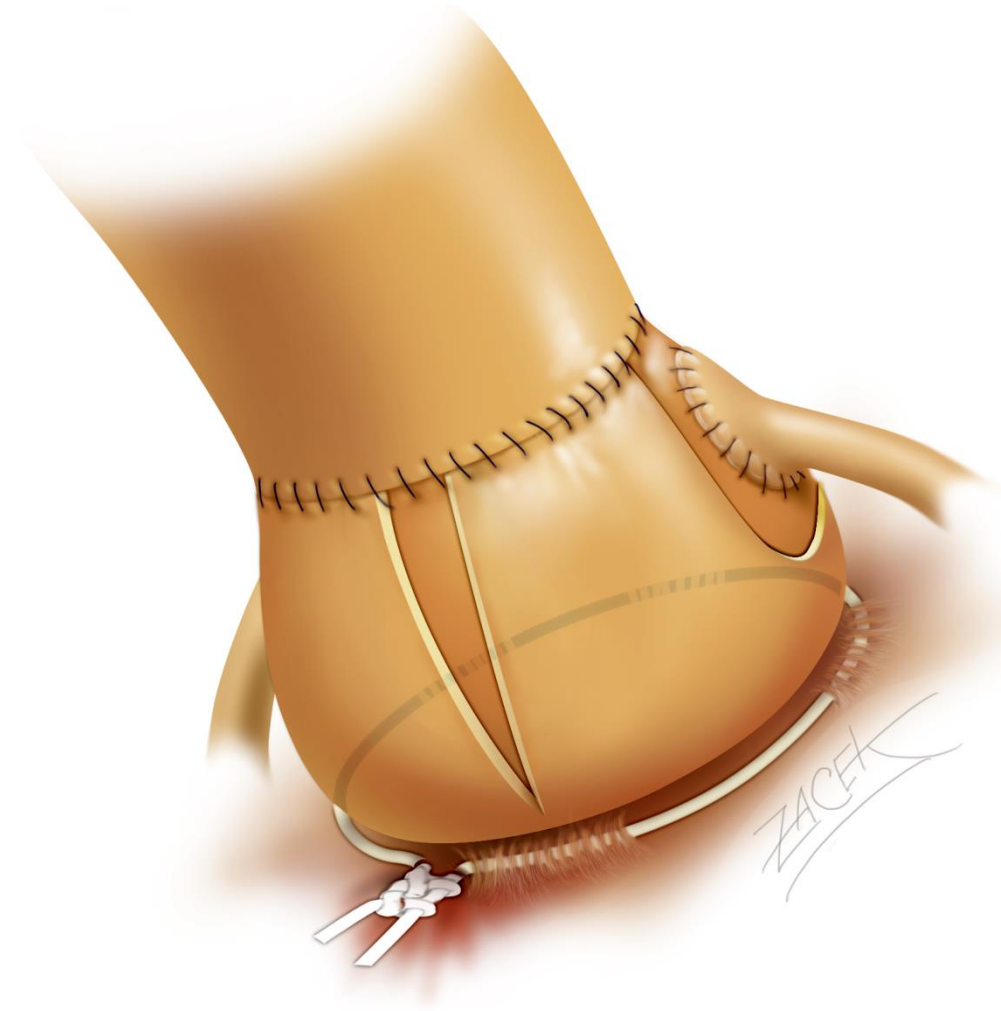
How to reinforce the root



How to reinforce the root

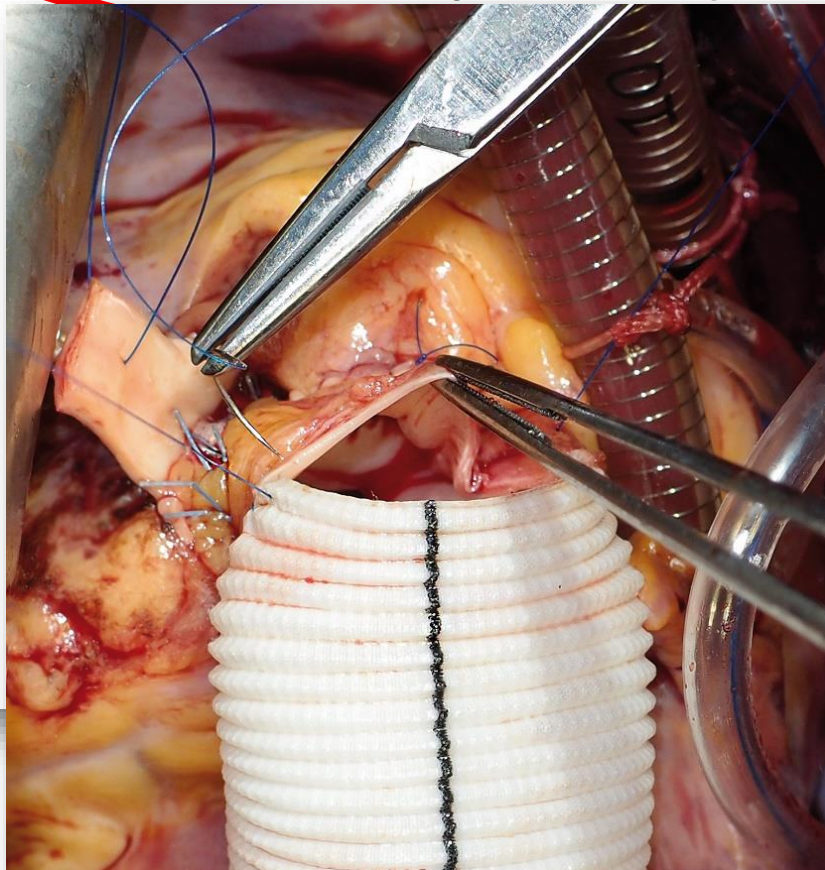


How to reinforce the root



Coronéo extra-aortic annuloplasty ring could stabilize even the pulmonary autograft annulus in a Ross operation

Jan Vojacek^{a,*}, Jaroslav Spatenka^b, Tomas Holubec^a and Pavel Zacek^a



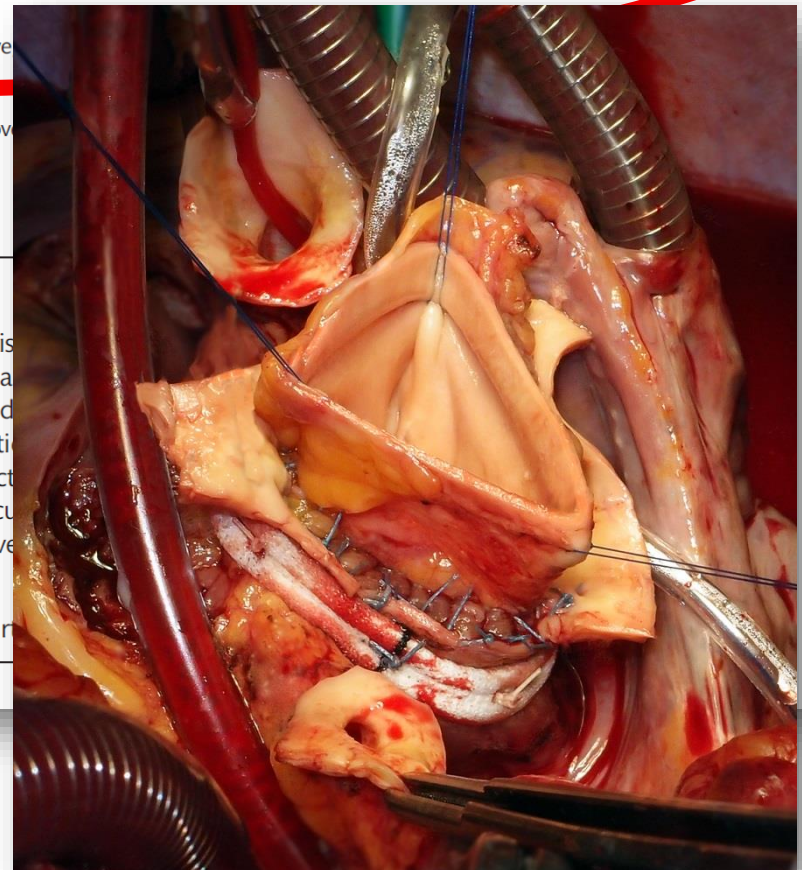
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Conclusions

Loss in life expectancy after conventional AVR

Optimal survival after the Ross procedure

Very low risk of valve related complications

Very good QoL

Risk of reoperation

Must be centralized!!!

Thank you for your attention 😊

