PROGRAMMA WETENSCHAPPELIJKE VOORJAARSVERGADERING NVT

23 mei 2025

Nederlandse Vereniging voor
Thoraxchirurgie

Locatie

Van Der Valk Hotel Utrecht
Winthontlaan 4
3526 KV Utrecht

Sponsors

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Artivion EMEA

Organisatie, accreditatie, ALV

Organisatie

K. Averink
Nederlandse Vereniging voor Thoraxchirurgie
Mercatorlaan 1200
3528 BL Utrecht

Tel: 030 - 899 0640
E-mail: secretariaat@nvtnet.nl

Abstract commissie

Dr. T.J. van Brakel (voorzitter)
Drs. W.W.L. Li
Dr. Y.J.H.J. Taverne
Dr. B.A.E. Maesen
T.A. Berk (juniorkamer)
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Inschrijving en accreditatie

Inschrijven voor deze wetenschappelijke voorjaarsvergadering kan via het aanmeldformulier op de website.

Deze wetenschappelijke voorjaarsvergadering wordt geaccrediteerd en gewaardeerd met 8 accreditatiepunten door de NVT. Accreditatie is verder aangevraagd bij het Verpleegkundig specialisten register. Leden van de NAPA ontvangen een certificaat, waarna zij zelf de behaalde accreditatiepunten kunnen bijschrijven in het persoonlijk GAIA dossier.

Algemene Ledenvergadering

Toegang tot de algemene ledenvergadering hebben alle gewone leden van de vereniging, alle bestuursleden, alle ereleden, alle senior leden alsmede de voorzitter en secretaris van de Juniorkamer.

Programma 23 mei 2025

8.30 – 9.00 uur	**Ontvangst en inschrijving**	Foyer
9.00 uur	**Opening door de voorzitter**	
9.15 – 10.50 uur	**Abstract sessie** **Sessievoorzitters**: J.R. Olsthoorn en M.J. Kawczynski	Nieuwegracht 2
9.15 uur	**E.C.H. van Doorn** DECODING ATRIAL BIOMECHANICS: HUMAN ATRIAL SLICES AS A MODEL FOR ATRIAL DISEASE	
9.30 uur	**R.S.A. Symakani** RIGHT VENTRICULAR ENERGETICS IN REPAIRED TETRALOGY OF FALLOT	
9.45 uur	**S.H.Q. Beukers** CHOOSING THE OPTIMAL SECOND ARTERIAL GRAFT IN CORONARY ARTERY BYPASS SURGERY AND ITS RELATION TO SEX: RESULTS OF 10 YEARS OF MULTI-ARTERIAL GRAFTING FROM THE NETHERLANDS HEART REGISTRATION	
10.00 uur	**N. Roorda** OUTCOMES OF ACUTE TYPE A AORTIC DISSECTION IN THE NETHERLANDS: DATA FROM THE NETHERLANDS HEART REGISTRATION	
10.15 uur	**Pitch sessie** **I.A. Ertugrul** PROLONGED EX SITU OXYGENATED HYPOTHERMIC MACHINE PRESERVATION IN DONATION AFTER CIRCULATORY DEATH DONOR HEARTS **J. Jennekens** HYPOTHERMIC OXYGENATED MACHINE PERFUSION OF LUNG ALLOGRAFTS FOLLOWING A PERIOD OF NORMOTHERMIC EVLP: HOPE AFTER EVLP **T.J. Mandigers** COMPARISON OF OPEN AND ENDOVASCULAR LEFT SUBCLAVIAN ARTERY REVASCULARIZATION FOR ZONE 2 THORACIC ENDOVASCULAR AORTIC REPAIR **D. Votano** EARLY EXPERIENCE WITH THE CASTOR™ SINGLE-BRANCHED UNIBODY STENT-GRAFT FOR THE TREATMENT OF DISTAL AORTIC ARCH DISEASE	

K. Ko
INITIAL EXPERIENCE WITH THE NOVEL GORE THORACIC BRANCH ENDOPROSTHESIS: 21 CONSECUTIVE CASES

S.A. Max
A VIRTUAL REALITY EXTRACORPOREAL MEMBRANE OXYGENATOR SIMULATOR VERSUS CONVENTIONAL PERFUSION EDUCATION: A RANDOMISED CONTROLLED TRIAL

10.50 – 11.15 uur	**Koffiepauze**	Expositieruimte

11.15 – 12.45 uur	**Abstract sessie** **Sessievoorzitters**: S.E. Kaffka genaamd Dengler	Nieuwegracht 2

11.15 uur **L. Aerts**
EFFECTIVENESS OF CATHETER AND STANDALONE SURGICAL ABLATION PROCEDURES FOR ATRIAL FIBRILLATION: A BAYESIAN NETWORK META-ANALYSIS

11.30 uur **D.F.N. Görtzen**
ENDOSCOPIC-ASSISTED, MINIMALLY INVASIVE VERSUS STERNOTOMY TOTAL ARTERIAL MULTIVESSEL BYPASS GRAFTING

11.45 uur **B.J.J. Velders**
AORTIC VALVE REPLACEMENT IN CLINICAL TRIALS: EVALUATING THE EXTERNAL VALIDITY OF SURGICAL CONTROLS

12.00 uur **M.A. Bayon**
“CONCOMITANT SURGICAL ABLATION IN ATRIAL FIBRILLATION PATIENTS UNDERGOING CARDIAC SURGERY FOR CORONARY AND AORTIC VALVE DISEASE: A MULTICENTRE STUDY FROM THE NETHERLANDS HEART REGISTRATION”

12.15 uur **Pitch sessie**
K. Ko
ACHIEVING OPTIMAL RESULTS IN MITRAL VALVE SURGERY: THE TEXTBOOK OUTCOME. RESULTS FROM THE NETHERLANDS HEART REGISTRATION

R.A. Bhoera
STARTING A ROBOTIC MITRAL VALVE PROGRAM: FOCUS ON SAFETY AND LEARNING CURVE

J.R. Olsthoorn
THE OPTIMAL AGE TO PERFORM MITRAL VALVE REPAIR OR REPLACEMENT: RESULTS FROM THE NETHERLANDS HEART REGISTRATION

	W.J.L. Suyker THE OCTOCON®: A NOVEL SUTURELESS CONNECTOR FOR DISTAL CORONARY CONNECTIONS REPRODUCING HAND-SEWN GEOMETR **E. Polling** UNILATERAL CEREBRAL PERFUSION: A NON-INFERIOR ALTERNATIVE TO BILATERAL CEREBRAL PERFUSION DURING AORTIC ARCH SURGERY? **B. Swinnen** THE PROGNOSTIC IMPACT OF PREVAILLING DEFINITIONS OF PERIPROCEDURAL MYOCARDIAL INFARCTION IN PATIENT UNDERGOING CORONARY ARTERY BYPASS GRAFTING	
12.50 – 13.45 uur	**Lunch**	Expositieruimte
13.45 – 14.45 uur	**Algemene Ledenvergadering**	Nieuwegracht 2
13.45 – 14.45 uur	**Alternatief programma juniorkamer, VS-en, NP'ers en PA's**	Oudegracht 1
14.45 – 15.05 uur	**Koffiepauze**	Expositieruimte
15.05 – 15.50 uur	**Themasessie - De opleiding van de toekomst: "van ik naar wij" door Marijn Houwert, traumachirurg UMCU** Over de veranderende omstandigheden voor zowel de AIOS als de opleiders, en hoe we de opleiding in de toekomst duurzaam kunnen houden. Daarnaast kijken we naar hoe we het vak aantrekkelijk genoeg kunnen maken (en houden) voor de komende generaties, zodat zij gemotiveerd blijven om voor ons mooie specialisme te kiezen.	Nieuwegracht 2
15.50 – 16.50 uur	**Abstract sessie** **Sessievoorzitters:** S. Siddiqi en T.J. Mandigers	Nieuwegracht 2
15.50 uur	**M.J. Kawczynski** THE OPTIMAL REVASCULARIZATION STRATEGY FOR STABLE CORONARY ARTERY DISEASE	
16.05 uur	**N.A. Hasami** OPEN SURGERY OF THE DESCENDING THORACIC AORTA IN THE CURRENT ENDOVASCULAR ERA: SINGLE CENTRE EXPERIENCE IN 95 CONSECUTIVE CASES	

16.20 uur	**M.A. Hu** BIOMARKERS OF STANDARD CRITERIA AND MARGINAL DONOR LUNGS DURING EX VIVO LUNG PERFUSION: A COMPARATIVE STUDY	
16.35 uur	**I.A. Achbar** ETIOLOGY OF CORONARY REINTERVENTION AFTER CORONARY ARTERY BYPASS SURGERY	
16.50 uur	**Borrel en uitreiking assistentenprijs** Ter beschikking gesteld door de Nederlandse Vereniging voor Thoraxchirurgie	Foyer
16.50 – 17.45 uur	**Tekenen voor accreditatie**	Inschrijfbalie

Abstract

09.15 uur

DECODING ATRIAL BIOMECHANICS: HUMAN ATRIAL SLICES AS A MODEL FOR ATRIAL DISEASE

Elisa C.H. van Doorn[1,2], Lu Zhang[2], Kevin M. Veen[3], Natasja M.S. de Groot[2,4], Yannick J.H.J. Taverne[1,3]
[1]*Translational Cardiothoracic Surgery Research Lab, Lowlands Institute for Bioelectric Medicine, Department of Cardiothoracic Surgery, Erasmus Medical centre, Rotterdam, The Netherlands*
[2]*Translational Electrophysiology Laboratory, Lowlands Institute for Bioelectric Medicine, Department of Cardiology, Erasmus Medical centre, Rotterdam, The Netherlands*
[3]*Department of Cardiothoracic Surgery, Erasmus Medical Centre, Rotterdam, The Netherlands*
[4]*Department of Cardiology, Erasmus Medical Centre, Rotterdam, The Netherlands*

Objectives
Living myocardial slices (LMS) are ultrathin sections of cardiac biopsies that preserve myocardial architecture in near-physiological conditions. While traditionally sourced from ventricular tissue, we have developed high-quality human atrial LMS (aLMS) to study atrial pathology. In cardiac disease such as atrial fibrillation (AF) and heart failure (HF), pathological remodeling disrupts excitation-contraction coupling, impairing atrial function and accelerating clinical decline. Yet, the biomechanical response to electrical signaling remains largely unexplored. This study characterizes aLMS biomechanical profiles across patient subsets to uncover mechanisms underlying atrial dysfunction.

Methods
Atrial tissue was collected during surgery from donors and patients with AF, HF or atrial dilatation. aLMS were prepared using our optimized protocol and cultured in biomimetic chambers under isotonic load and electrical pacing. Contraction metrics including peak force (Fmax), time to peak (TTP), time to relaxation (TTR), and refractory periods (RP) were analyzed using MyoDish software. Linear mixed-effects models were applied for analysis.

Results
Analysis of 250 aLMS from 48 patients revealed distinct biomechanical trends. HF aLMS showed reduced Fmax and prolonged TTR, while dilated aLMS exhibited similar patterns, with RP prolongation worsening with severity. AF aLMS demonstrated trends toward higher contraction and significantly greater RP variability.

Conclusion
Human aLMS provide a patient-specific platform for studying atrial biomechanics in cardiac disease. Higher Fmax in AF slices may indicate compensatory adaptations, while reduced atrial contractility in HF suggests atrial remodelling, despite being a ventricular disorder. Future research will refine disease modeling using advanced techniques to deepen understanding of atrial dysfunction and improve HF therapies.

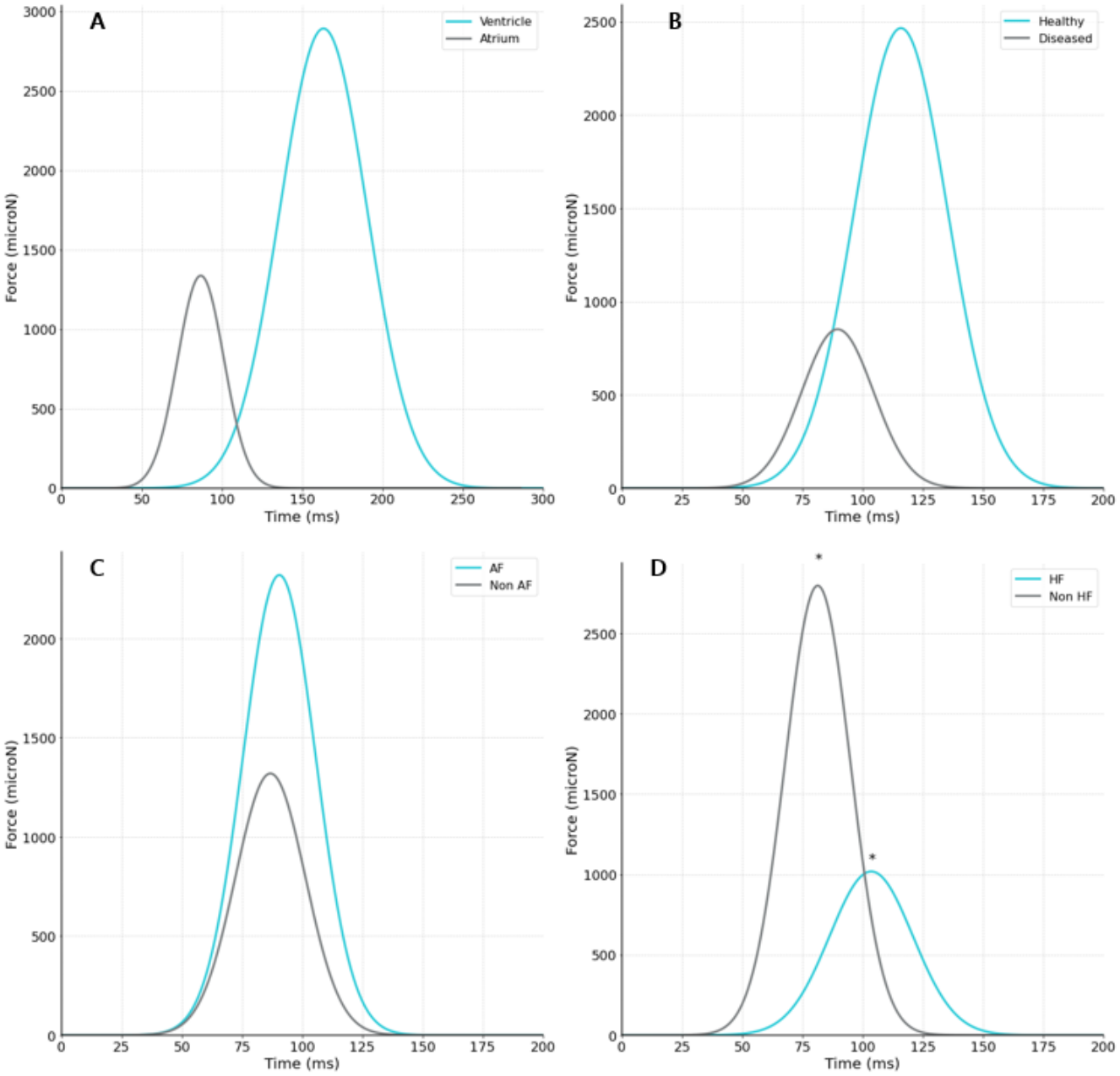


Figure 1 Contraction curves of LMS

A atrial LMS vs. ventricular LMS
B healthy atrial LMS vs. diseased atrial LMS
C AF atrial LMS vs. non AF atrial LMS
D HF atrial LMS vs. non HF atrial LMS

Abstract

09.30 uur

RIGHT VENTRICULAR ENERGETICS IN REPAIRED TETRALOGY OF FALLOT

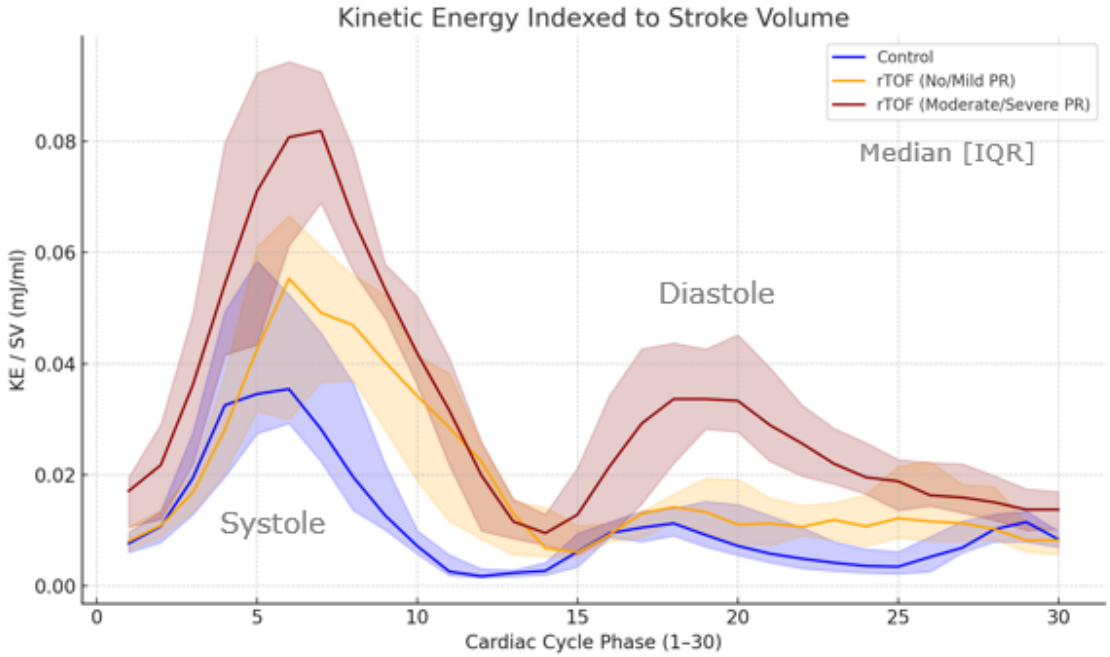
Rahi S. Alipour Symakani[1,2], Wouter J. van Genuchten[1], Margherita Premi[1], Anouk Moerdijk[1], Yichuang Han[1], Jason Voorneveld[1], Piotr Wielopolski[1], Jolanda Wentzel[1], Martijn Kauling[1], Yannick J.H.J. Taverne[1], Alexander Hirsch[1], Willem A. Helbing[1], Daphne Merkus[1], Beatrijs Bartelds[1]
[1]Erasmus Medical Center, Rotterdam; [2]Catharina Hospital, Eindhoven

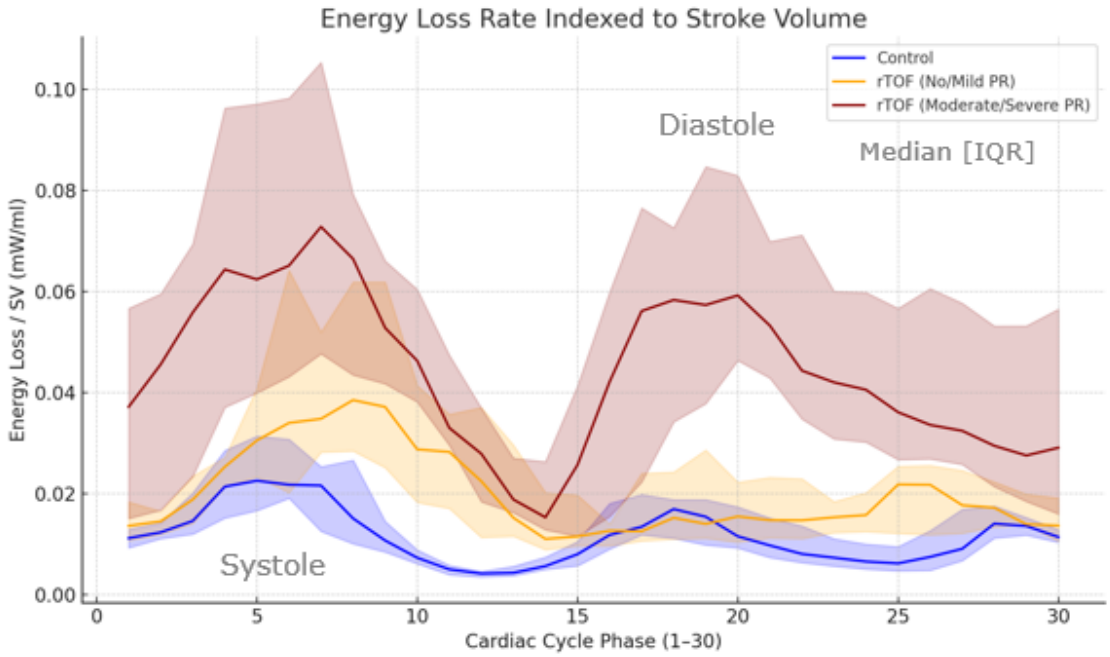
Objectives
Right ventricular (RV) failure is a late complication following repair of tetralogy of Fallot (rTOF), commonly associated with pulmonary regurgitation (PR), though the underlying mechanisms remain unclear. This study investigates RV energetics in rTOF, focusing on the role of abnormal intracardiac flow patterns.

Methods
4D flow cardiovascular magnetic resonance was used to quantify RV viscous energy loss and kinetic energy in rTOF patients (n=26) with varying degrees of PR and no prior pulmonary valve replacement, and in healthy controls (n=10). Similar measurements were performed in a porcine model of transannular patch repair (rTAP) (n=7) and sham-operated animals (n=4), alongside invasive pressure-volume loop recordings obtained on the same day.

Results
RV viscous energy loss, peak systolic, and diastolic kinetic energy were significantly elevated in rTOF patients compared to controls, even in the absence of significant PR. Comparable findings were observed in rTAP animals versus shams, along with increased mechanical work. Energy inefficiency was evident from greater mechanical work and viscous energy loss per unit of effective forward flow.

Conclusions
Abnormal RV flow patterns in rTOF are associated with increased energy losses and higher myocardial energy demands. Both systolic and diastolic flow are affected, and the degree of PR alone does not account for the observed energy loss. Energetic markers may offer additional insight into RV dysfunction and support earlier detection of patients at risk for progressive right heart failure.


Kinetic Energy Indexed to Stroke Volume
Control
rTOF (No/Mild PR)
rTOF (Moderate/Severe PR)
Median [IQR]
Diastole
Systole
KE / SV (mJ/ml)
0.00
0.02
0.04
0.06
0.08
0
5
10
15
20
25
30
Cardiac Cycle Phase (1–30)


Energy Loss Rate Indexed to Stroke Volume
Control
rTOF (No/Mild PR)
rTOF (Moderate/Severe PR)
Diastole
Median [IQR]
Systole
Energy Loss / SV (mW/ml)
0.00
0.02
0.04
0.06
0.08
0.10
0
5
10
15
20
25
30
Cardiac Cycle Phase (1–30)

Abstract

09.45 uur

CHOOSING THE OPTIMAL SECOND ARTERIAL GRAFT IN CORONARY ARTERY BYPASS SURGERY AND ITS RELATION TO SEX: RESULTS OF 10 YEARS OF MULTI-ARTERIAL GRAFTING FROM THE NETHERLANDS HEART REGISTRATION

Sophie H.Q. Beukers[1], Edgar J. Daeter[1], Hans Kelder[2], Saskia Houterman[3], Geoffrey T.L. Kloppenburg[1] on behalf of the participating centers of the Cardiothoracic Surgery Registration Committee of the Netherlands Heart Registration*

[1] Department of cardiothoracic surgery, St. Antonius Hospital, Nieuwegein; [2] Department of research and innovation, St. Antonius Hospital, Nieuwegein; [3] Netherlands Heart Registration, Utrecht

Objectives

Coronary artery bypass grafting (CABG) with multi-arterial grafting (MAG) has demonstrated superior long-term outcomes compared to single arterial grafting. However, the impact of choice for type of second arterial graft and its relation to sex-dependent differences in CABG outcome has still to be elucidated. Analyzing the results of MAG in The Netherlands, we aim to determine if the right internal thoracic artery (RITA) or the radial artery (RA) is the optimal second arterial graft and its relation to sex.

Methods

We analyzed data from 13,477 patients undergoing primary isolated CABG with the left internal thoracic artery and either RITA or RA between 2013 and 2022 from The Netherlands Heart Registration. Baseline characteristics of both sexes were balanced between treatment groups (RITA vs RA) using inverse probability treatment weighting. The primary outcome was long-term mortality, secondary outcomes included short-term complications and repeat revascularization.

Results

In both sexes, the choice of second arterial graft did not lead to differences in long-term survival. Use of the RA was associated with higher rate of repeat revascularization at 5-years postoperative in men (p=0.044) and more cerebrovascular accidents in women (0.9% vs 0.2%, p=0.028). Postoperative arrhythmias were more prevalent in both sexes following RITA use (men 22% vs 16%, p<0.001; women 23% vs 15%, p=0.004).

Conclusion

The choice of second arterial graft affect long-term survival in neither sex. An increased rate of repeat revascularization after MAG with the RA was observed in men. This warrants further investigation.

Appendix: On behalf of the Cardiothoracic Surgery Registration Committee of the Netherlands Heart Registration:

Dr. S. Bramer, Cardiothoracaal Chirurg, Amphia Ziekenhuis
Dr. R.A.F. de Lind van Wijngaarden, Cardiothoracaal Chirurg, Amsterdam UMC
Dhr. B.M.J.A. Koene, Cardiothoracaal Chirurg, Catharina Ziekenhuis
Dr. J.A. Bekkers, Cardiothoracaal Chirurg, Erasmus MC
Dr. G.J.F. Hoohenkerk, Cardiothoracaal Chirurg, HagaZiekenhuis
Dr. A.L.P. Markou, Cardiothoracaal Chirurg, Isala
Dhr. A. de Weger, Cardiothoracaal Chirurg, Leids Universitair Medisch Centrum
Dr. P. Segers, Cardiothoracaal Chirurg, Maastricht UMC+
Dr. D. Stecher, Cardiothoracaal Chirurg, Medisch Centrum Leeuwarden
Dr. R.G.H. Speekenbrink, Cardiothoracaal Chirurg, Medisch Spectrum Twente
Dr. V.G. Hindori, Cardiothoracaal Chirurg, Onze Lieve Vrouwe Gasthuis
Dhr. W.W.L. Li, Cardiothoracaal Chirurg, Radboudumc
Dhr. E.J. Daeter, Cardiothoracaal Chirurg, St. Antonius Ziekenhuis
Dr. M.M. Mokhles, Cardiothoracaal Chirurg, UMC Utrecht
Dr. Y. Douglas, Cardiothoracaal Chirurg, Universitair Medisch Centrum Groningen

Abstract

10.00 uur

OUTCOMES OF ACUTE TYPE A AORTIC DISSECTION IN THE NETHERLANDS: DATA FROM THE NETHERLANDS HEART REGISTRATION

Nynke Roorda[1], Gianclaudio Mecozzi[1], Ben R. Saleem[1], Martijn L. Dijkstra[1], Wobbe Bouma[1], Barzi Gareb[1], Jesper Hjortnaes[2], Wilson W.L. Li[3], Maaike M. Roefs[4], Massimo A. Mariani[1], on behalf of the cardiothoracic surgery registration committee and aortic surgery work group of the Netherlands Heart Registration
[1]Universitair Medisch Centrum Groningen, Groningen; [2]Leids Universitair Medisch Centrum, Leiden; [3]Radboud Universitair Medisch Centrum, Nijmegen; [4]Nederlandse Hart Registratie, Utrecht

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Objectives
Data on ATAAD treatment outcomes in the Netherlands are currently lacking, and it remains unclear which treatment practices are being followed. There is no consensus on key perioperative strategies, such as minimum central temperature, cerebral perfusion, and surgical extent. This study aims to explore these factors and their potential impact on mortality.

Methods
Between January 2018 and December 2021, 1260 ATAAD patients from 16 Dutch centres were enrolled in this study, providing data on patient characteristics, operative strategies and postoperative outcomes. Multiple logistic regression analysis was conducted to identify factors associated with 30-day mortality.

Results
The overall 30-day mortality rate after open surgical repair of ATAAD was 17.1%. 30-day mortality significantly decreased from 20.5% in 2018 to 14.4% in 2021 ($p = 0.020$). Age was associated with increased 30-day mortality for patients undergoing aortic ascending or arch replacement with circulatory arrest (adjusted OR = 1.02; $p = 0.001$). Intraoperative factors, such as longer CPB duration (adjusted OR = 1.01; $p < 0.001$) and higher minimum central temperature (adjusted OR = 1.07; $p = 0.01$) were significantly associated with increased 30-day mortality. Other surgical strategies, root replacement and the extent of arch interventions did not significantly impact mortality.

Conclusion
The results indicate that prolonged CPB time and higher minimum central temperature during ATAAD treatment with circulatory arrest are associated with increased 30-day mortality. Partial or total arch replacement did not negatively impact 30-day mortality compared to less extensive approaches, such as open anastomosis or hemiarch replacement.

ATAAD Acute type A aortic dissection
CPB Cardiopulmonary bypass

Pitch

10.15 – 10.50 uur

PROLONGED EX SITU OXYGENATED HYPOTHERMIC MACHINE PRESERVATION IN DONATION AFTER CIRCULATORY DEATH DONOR HEARTS

Imran A. Ertugrul[1*], Elisa M. Ballan[2,3], Raden A.D.A. Puspitarani[4], Joris van den Hurk[4], Vincent van Suylen[1], Berend D. Westenbrink[4], Niels P. van der Kaaij[5], Michiel E. Erasmus[1]
[1]Department of Cardiothoracic Surgery, University Medical Center Groningen, University of Groningen, the Netherlands. [2]Department of Cardiothoracic Surgery, University Medical Centre Utrecht, the Netherlands. [3]Netherlands Heart Institute, Utrecht, the Netherlands. [4]Department of Cardiology, University Medical Centre Groningen, University of Groningen, Groningen, Netherlands. [5]Department of Cardiothoracic Surgery, Erasmus University Medical Center, Rotterdam, The Netherlands.

Objectives
Hypothermic oxygenated machine perfusion (HOPE) is shown to successfully preserve donor hearts and extend preservation time in donation after brain death hearts. However, up to date, no serial report is available on prolonged HOPE of donation after circulatory death (DCD) hearts. In this study, we aim to evaluate whether DCD hearts can be successfully preserved using HOPE for a prolonged period.

Methods
This study is implemented in the existing infrastructure of organ donation in the Netherlands. DCD donor hearts declined for clinical transplantation are included in the study. Hearts are preserved for either 4 or 8 hours using HOPE. After preservation, hearts are evaluated during normothermic machine preservation (NMP, 2 hours) using a novel pressure-volume loop analyses system.

Results
A total of 9 hearts are included in the study: 2 hearts were preserved with HOPE for 4 hours, and 7 hearts for 8 hours. At the end of NMP, mean maximal left ventricular pressure was 87 ± 53 mmHg and 81 ± 19 mmHg in the 4- and 8-hour groups, respectively, at a pre-load of 15 mmHg. End-systolic elastance (Ees) was used for assessment of left ventricular contractility. Mean Ees was 1.52 ± 0.2 mmHg/mL in the 4-hour group, and 1.53 ± 0.5 mmHg/mL in the 8-hour group.

Conclusion
These preliminary results suggest that a preservation time up to 8 hours with HOPE is feasible and results in comparable left ventricular function when compared to 4 hours of preservation. To draw firmer conclusions we will perform additional experiments and assess more outcome parameters.

Pitch

10.15 – 10.50 uur

HYPOTHERMIC OXYGENATED MACHINE PERFUSION OF LUNG ALLOGRAFTS FOLLOWING A PERIOD OF NORMOTHERMIC EVLP: HOPE AFTER EVLP

Jitte Jennekens[1], Sue Braithwaite[2], Elise van Hooijdonk[1], Elize Berg[3], Bart Luijk[3], Linda de Heer[1], Niels van der Kaaij[1]
[1] *Department of Cardiothoracic Surgery, University Medical Center Utrecht, Utrecht, Netherlands*
[2] *Department of Anesthesiology, University Medical Center Utrecht, Utrecht, Netherlands*
[3] *Department of Pulmonology, University Medical Center Utrecht, Utrecht, Netherlands*

Objectives
We developed a protocol for hypothermic oxygenated machine perfusion (HOPE; 12°C) in order to preserve lungs for transplantation after a period of normothermic ex vivo lung perfusion (nEVLP-HOPE). This case series reports our initial clinical experience with the nEVLP-HOPE protocol.

Methods
In this prospective cohort study, early post-transplant outcomes after nEVLP-HOPE were evaluated and compared to a historical control cohort in which lung allografts were preserved on ice and transplanted without EVLP.

Results
All allografts indicated for logistic EVLP (n=12; September 2022 – August 2024) underwent the nEVLP-HOPE protocol and were compared to a control cohort (n=118; January 2017 – February 2023). No lungs in the nEVLP-HOPE protocol were rejected for transplantation. The incidence of PGD grade 3 at T0 and T72 hours was 17% and 0% in nEVLP-HOPE group vs. 23% and 15% in controls (p=0.329 and p=0.368 respectively). There were no significant differences in median (IQR) first P/F-ratio (nEVLP-HOPE: 318 (274-500) mmHg vs. control: 241 (181-351) mmHg; p=0.086), ventilator-free hours at 72 hours (nEVLP-HOPE: 33 (0-51) hours vs. control: 5 (0-50) hours; p=0.712), and ICU stay (nEVLP-HOPE: 9 (6-25) days vs. control: 9 (5-19) days; p=0.651). Total out-of-body times of nEVLP-HOPE lungs were 12 (10-15) hours and 15 (13-17) hours for the first and second lung respectively, with a maximum total out-of-body time of 19 hours and 41 minutes.

Conclusion
Our findings indicate that HOPE is a safe and effective lung preservation method after a period of normothermic EVLP, even with total out-of-body times approaching 20 hours.

Pitch

10.15 – 10.50 uur

COMPARISON OF OPEN AND ENDOVASCULAR LEFT SUBCLAVIAN ARTERY REVASCULARIZATION FOR ZONE 2 THORACIC ENDOVASCULAR AORTIC REPAIR

Tim J. Mandigers[1,2,3,4], Sara Allievi[2], Gabriel Jabbour[2], Jorge L. Gomez-Mayorga[2], Elisa Caron[2], Kristina A. Giles[5], Grace J. Wang[6], Joost A. van Herwaarden[4], Santi Trimarchi[3,7], Salvatore T. Scali[8], Marc L. Schermerhorn[2]

[1] *Department of Cardiothoracic Surgery, St Antonius Hospital, Nieuwegein, The Netherlands;* [2] *Department of Surgery, Division of Vascular and Endovascular Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA;* [3] *Section of Vascular Surgery, Cardio Thoracic Vascular Department, Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico, Milan, Italy;* [4] *Department of Vascular Surgery, University Medical Centre Utrecht, Utrecht, The Netherlands* [5] *Division of Vascular and Endovascular Surgery, Maine Medical Center, Portland, ME, USA;* [6] *Division of Vascular and Endovascular Therapy, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA;* [7] *Department of Clinical Sciences and Community Health, Università degli Studi di Milano, Milan, Italy;* [8] *Division of Vascular Surgery and Endovascular Therapy, University of Florida College of Medicine, Gainesville, FL, USA*

Objectives
In patients undergoing elective TEVAR and LSA coverage, routine preoperative LSA revascularization is recommended. However, in the current endovascular era, the optimal surgical approach is debated. We compared baseline characteristics, procedural details, and perioperative outcomes of patients undergoing open or endovascular LSA revascularization in the setting of TEVAR.

Methods
Adult patients undergoing zone 2 TEVAR and LSA revascularization between 2013-2023 were identified in the Vascular Quality Initiative. We stratified based on revascularization type (open *vs.* any endovascular). Primary outcomes were stroke, spinal cord ischemia, and perioperative mortality. Multivariable logistic regression was used to evaluate associations between revascularization type and primary outcomes. Secondarily, we studied other in-hospital complications, 5-year mortality, and trends in approaches over time.

Results
Of 2,489 patients, 1,842 (74%) underwent open and 647 (26%) endovascular LSA revascularization. Compared with open, endovascular patients experienced lower stroke rates (2.6% *vs.* 4.8%, p=.026; aOR 0.50[95%C.I., 0.25-0.90]), but had comparable spinal cord ischemia (2.9% *vs.* 3.5%, p=.60; 0.64[0.31-1.22]) and perioperative mortality (3.1% *vs.* 3.3%, p=.94; 0.71[0.34-1.37]). Compared with open, endovascular LSA revascularization had lower rates of overall composite in-hospital complications (20% *vs.* 27%, p<.001; 0.64[0.49-0.84]). After adjustment, 5-year mortality was similar among groups (aHR 0.85[0.64-1.13], p=.27). From 2013 to 2023, open revascularization decreased (100% to 22%, p<.001) while endovascular revascularization increased (0% to 78%, p<.001).

Conclusion

In patients undergoing zone 2 TEVAR, endovascular LSA revascularization had lower rates of postoperative stroke and overall composite in-hospital complications, but similar spinal cord ischemia, perioperative and 5-year mortality rates compared with open LSA revascularization.

Table 1. Univariable and multivariable outcomes of in-hospital complications and perioperative mortality in 2,489 patients undergoing zone 2 TEVAR stratified by open surgical or endovascular LSA revascularization.

Variable	Open LSA (n = 1,842)		Endo LSA (n = 647)		P-value*	aOR [95% C.I.] (Ref: Open LSA)	P-value
Stroke	88	(4.8%)	17	(2.6%)	**.026**	**0.50 [0.25-0.90]**	**.030**
Stroke type (brain location)					.23	-	-
Right carotid ischemic stroke	7	(0.4%)	0	(0%)		-	-
Left carotid ischemic stroke	18	(1.0%)	2	(0.3%)		-	-
Right vertebrobasilar ischemic stroke	8	(0.4%)	1	(0.2%)		-	-
Left vertebrobasilar ischemic stroke	11	(0.6%)	2	(0.3%)		-	-
Bilateral ischemic stroke	39	(2.1%)	9	(1.4%)		-	-
Hemorrhagic stroke	5	(0.3%)	3	(0.5%)		-	-
Spinal cord ischemia	64	(3.5%)	19	(2.9%)	.60	0.64 [0.31-1.22]	.20
Perioperative mortality	60	(3.3%)	20	(3.1%)	.94	0.71 [0.34-1.37]	.33
Any complication	493	(27%)	128	(20%)	**< .001**	**0.64 [0.49-0.84]**	**.002**
Acute kidney injury	172	(9.3%)	62	(9.6%)	.91	0.96 [0.65-1.39]	.82
Reintubation	134	(7.3%)	20	(3.1%)	**< .001**	**0.41 [0.22-0.71]**	**.003**
Pneumonia	61	(3.3%)	14	(2.2%)	.18	0.78 [0.35-1.58]	.51
Myocardial infarction	25	(1.4%)	7	(1.1%)	.74	-	-
Congestive heart failure	15	(0.8%)	2	(0.3%)	.29	-	-
In-hospital reintervention	217	(12%)	53	(8.2%)	**.014**	**0.60 [0.40-0.86]**	**.007**
Length of stay, ICU	3	[2-5]	3	[2-5]	.28	-	-
Length of hospital stay	8	[4-13]	7	[4-12]	**< .001**	-	-

*Wilcoxon rank sum test, or Pearson's χ^2-test where appropriate. Data are reported as median [interquartile range] for continuous variables and as number (percentage) for categorical variables. Models were adjusted for age (continuous/year), sex (male/female), race (white/black/asian/hispanic/other), aortic diameter (continuous/mm), renal function (eGFR <30, eGFR 30-45, eGFR 45-60, eGFR >60), overall TEVAR center volume (low/medium/high), treatment urgency (elective/urgent/emergent), aortic coverage length (number of aortic zones covered), and surgery year.
Abbreviations: ICU: Intensive Care Unit; Ref.: Reference.

Pitch

10.15 – 10.50 uur

EARLY EXPERIENCE WITH THE CASTORTM SINGLE-BRANCHED UNIBODY STENT-GRAFT FOR THE TREATMENT OF DISTAL AORTIC ARCH DISEASE

Daniela Votano[1], Tim Smith[1], Jan-Albert Vos[2], Uday Sonker[1], Hans G. Smeenk[1]
[1]*Department of Cardiothoracic Surgery, St. Antonius Hospital, Nieuwegein, The Netherlands*
[2]*Department of Radiology, St. Antonius Hospital, Nieuwegein, The Netherlands*

Objectives
To evaluate the early outcome of patients treated with the Castor™ single-branched unibody stent-graft (Microport Medical).

Methods
Observational study. All patients treated with the Castor™ stent-graft between September 2023 and November 2024 were included.

Results
Fourteen patients with a mean age of 72±7 years (57% male) were treated because of degenerative aneurysmal disease in 11 (78.6%), complicated type-B dissection in 2 (14.3%) and sutureline aneurysm in 1 patient (7.1%). All procedures were performed under general anesthesia. Access to the brachial artery was achieved by surgical cut-down. The stent-graft was deployed in Ishimaru zone 2 in all patients (100%). All procedures were technically successful (100%). Completion angiogram confirmed patency of the side-branch to the left subclavian artery in all patients (100%). No peri-procedural mortality occured; no spinal chord ischemia or peri-operative stroke was observed either. One peri-procedural minimal type IA endoleak occurred in one patient with gothic arch conformation, successfully treated conservately. Iatrogenic retrograde type-A dissection occurred post-operatively in one patient, necessitating prompt repair. Perforation of a tortuous aorta with guidewire led to multi-organ failure and eventually mortality in one patient. CT-scan, routinely perfomed before discharge, showed type III endoleak in one patient and type IB endoleak in three patients. Side-branch patency was confirmed in all patients. During a mean follow-up of 5 months (range 1-13), no further occurence of endoleak or migration was observed.

Conclusion
We describe promising early results of distal aortic arch treatment with the Castor™ system. Longer follow-up data will need to be awaited.

Pitch

10.15 – 10.50 uur

INITIAL EXPERIENCE WITH THE NOVEL GORE THORACIC BRANCH ENDOPROSTHESIS: 21 CONSECUTIVE CASES

Kinsing Ko[1], Guillaume S.C. Geuzebroek[1], Mark Dirven[2], Foeke J.H. Nauta[1], Sjoerd F.M. Jenniskens[3] and Robin H. Heijmen[1]
[1] *Radboud University Medical Center, Department of Cardiothoracic Surgery, Nijmegen, the Netherlands;* [2] *Radboud University Medical Center, Department of Vascular Surgery, Nijmegen, the Netherlands;* [3] *Radboud University Medical Center, Department of Intervention Radiology, Nijmegen, the Netherlands*

Objectives
To analyse our initial experience with the GORE® TAG® thoracic branched endoprosthesis (TBE). The TBE is the first 'off-the-shelf' single branch thoracic aortic endoprosthesis and became commercially available in 2024 in Europe.

Methods
From June 2024 until now, we have treated 21 patients with the TBE. All patients were operated by the same dedicated team, including a cardiothoracic surgeon, a vascular surgeon and an interventional radiologist. These 21 consecutive patients were analysed.

Results
All 21 patients underwent successful implantation of the TBE. The mean age was 71±8 years. Indication for the TBE were: (post-dissection/saccular/fusiform) aortic aneurysm with the side branch into the left subclavian artery (LSA) in 17, isolated LSA aneurysm with the side branch in the LSA in 1, zone 2 aneurysm with the side branch into the left common carotid artery in 1 and acute type A aortic dissections with the side branch into the brachiocephalic trunk in 2. There was no 30-day mortality, stroke or spinal cord ischaemia.
The mean follow-up was 2 (0-8) months. All TBE endoprosthesis were implanted in the desired position with a patent branch during the follow-up.
Unfortunately, two patients suddenly diseased seven and eight weeks postoperatively. The CT-scan at six weeks showed in both patients no abnormalities concerning the aorta and TBE.

Conclusion
The present study demonstrates promising results with the GORE® TAG® TBE which was successfully and uncomplicated implanted in all patients for several different indications of aortic arch pathology. Longer follow-up is needed to verify durable results.

Pitch

10.15 – 10.50 uur

A VIRTUAL REALITY EXTRACORPOREAL MEMBRANE OXYGENATOR SIMULATOR VERSUS CONVENTIONAL PERFUSION EDUCATION: A RANDOMISED CONTROLLED TRIAL

Samuel A. Max[1], Priscilla Westbroek[2], Zaheer U.D. Babar[2], Daniel van der Mee Mendes[1,2], Andre van der Mee Mendes[1], Antony van Dijk[2], Denise Hoogzaad[2], Jerry Braun[1], Robert J.M. Klautz[1], Edris A.F. Mahtab[1]
[1]*Department of Cardiothoracic Surgery, Leiden University Medical Center, Leiden, The Netherlands*
[2]*Department of Cardiothoracic Surgery Erasmus MC University Medical Center, Rotterdam, The Netherlands*

Objectives
This randomised controlled trial aimed to compare the effectiveness of a Virtual Reality (VR) Extracorporeal Membrane Oxygenator (ECMO) simulator with conventional video training in instructing ICU nurses to perform an ECMO circuit check. The study's rationale was to explore innovative training modalities that can enhance procedural accuracy and overall learning outcomes.

Methods
Thirty-five cardiothoracic and ICU nurses with no prior ECMO experience were randomised to either standard video training or VR-ECMO simulator training. Both groups were given the opportunity to see a real ECMO machine, and the conventional group was allowed to ask questions during the session. After completing their respective training sessions, all participants performed an ECMO circuit check on a test setup. Performance was assessed based on the number of mistakes and completion time. Additionally, VR-trained participants completed a Usefulness, Satisfaction, and Ease of Use (USE) questionnaire.

Results
The VR group demonstrated a significant reduction in errors (mean 1.1 mistakes per test) compared to the video training group (mean 2.1 mistakes; p=0.006). Although the VR group completed the circuit check faster (mean 212 seconds) than the control group (mean 237 seconds), this difference was not statistically significant. Questionnaire responses indicated high levels of perceived learning, enjoyment, and realism, with 97% of participants expressing satisfaction and 100% reporting that the simulator was realistic.

Conclusion
The VR-ECMO simulator provided superior educational outcomes for ECMO circuit checks relative to conventional video training, as evidenced by significantly fewer mistakes and high participant satisfaction. This innovative approach shows promise for enhancing training in critical care settings.

Abstract

11.15 uur

EFFECTIVENESS OF CATHETER AND STANDALONE SURGICAL ABLATION PROCEDURES FOR ATRIAL FIBRILLATION: A BAYESIAN NETWORK META-ANALYSIS

Luca Aerts[1,2], Michal J. Kawczynski[1,2], Justin Luermans[2,3], Elham Bidar[1,2], Dominik Linz[2,3], Mariusz Kowalewski[2,4], Roberto Lorusso[1,2], Laurent Pison[5], Mark La Meir[6], Bart Maesen[1,2,*], Samuel Heuts[1,2,*]
*[1] Department of Cardiothoracic Surgery, Maastricht University Medical Centre, Maastricht, The Netherlands; [2] Cardiovascular Research Institute Maastricht (CARIM), Maastricht University, Maastricht, The Netherlands; [3] Department of Cardiology, Maastricht University Medical Centre, Maastricht, The Netherlands; [4] Clinical Department of Cardiac Surgery and Transplantology, National Medical Institute of the Ministry of Interior and Administration, Centre of Postgraduate Medical Education, Warsaw, Poland; [5] Department of Cardiology, Ziekenhuis Oost-Limburg, Genk, Belgium [6] Department of Cardiac Surgery, University Hospital Brussels, Brussels, Belgium; *These authors share last authorship*

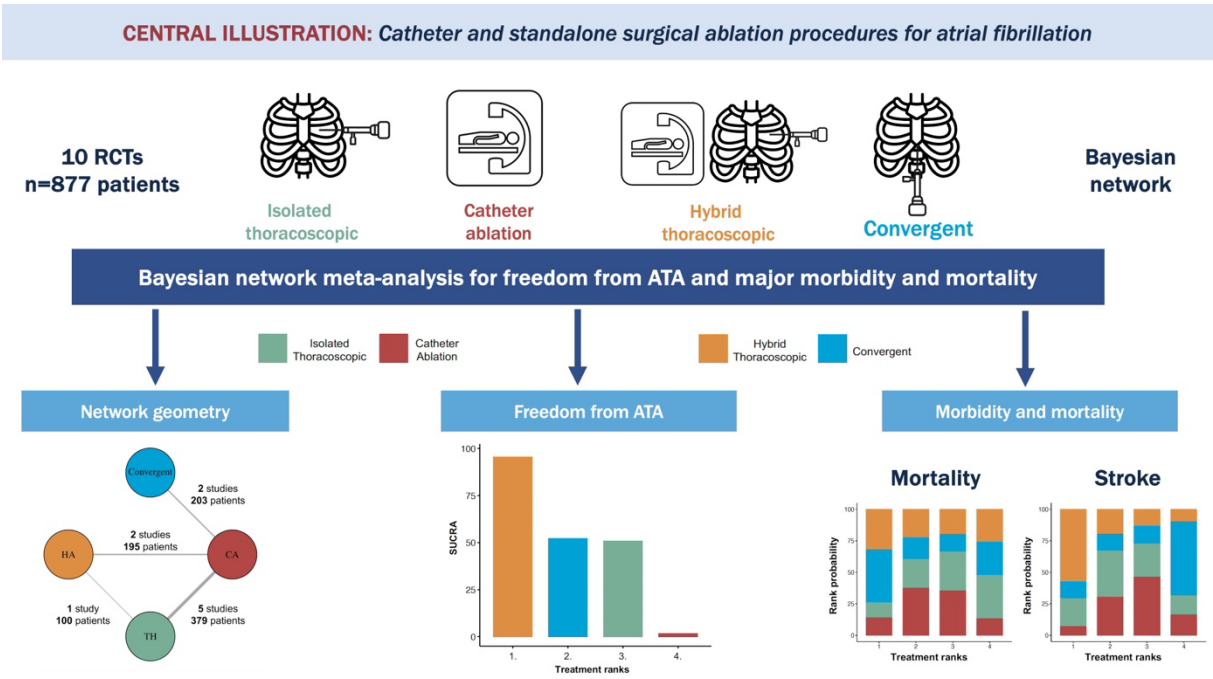
Objectives
Ablation procedures for atrial fibrillation (AF), including catheter ablation (CA) and surgical ablation, are effective rhythm control therapies. The current study is a Bayesian network meta-analysis evaluating the randomized evidence on the invasive treatment of AF, focusing on freedom from atrial tachyarrhythmias (ATA), while evaluating the potential trade-off in morbidity and mortality.

Methods
This study was registered in PROSPERO (CRD42025632171). Randomized controlled trials (RCTs) were included comparing any of the four treatment strategies; CA, isolated thoracoscopic ablation, hybrid thoracoscopic ablation, and the Convergent procedure. The primary outcome was freedom from ATA at 12-months. Secondary outcomes were mortality, stroke, and bleeding. A hierarchical Bayesian network meta-analysis was performed. The combined effects of the primary and secondary outcomes were studied in a bivariate analysis. Treatments were ranked and their effects were summarized using surface under the cumulative ranking curves (SUCRAs, **Figure**).

Results
Ten RCTs were included in the analysis (n=877 patients, predominantly persistent AF). Using CA as a reference, the pooled network ORs for freedom from ATA for hybrid thoracoscopic, isolated thoracoscopic, and Convergent were 4.95 (95%CrI 2.16-13.46), 2.23 (95%CrI 1.23-4.48), and 2.23 (95%CrI 0.90-6.69), with SUCRAs for hybrid thoracoscopic, isolated thoracoscopic, Convergent, and CA of 95.5%, 50.8%, 52.1%, and 1.5%, respectively. No increase in periprocedural morbidity or mortality was observed. Results were robust across various sensitivity analyses.

Conclusion
Surgical ablation in general, but hybrid thoracoscopic ablation in particular, provides superior outcome in terms one-year freedom from ATA. Both CA and surgical procedures are characterized by a favourable safety profile.

Figure



ATA: atrial tachyarrhythmia, RCTs: randomized controlled trials, SUCRA: surface under the cumulative ranking curves.

Abstract

11.30 uur

ENDOSCOPIC-ASSISTED, MINIMALLY INVASIVE VERSUS STERNOTOMY TOTAL ARTERIAL MULTIVESSEL BYPASS GRAFTING

De Qing Görtzen[1], Fleur Sampon[1], Naomi Timmermans[1], Joost Ter Woorst[1], Ferdi Akca[1]
[1]*Catharina ziekenhuis Eindhoven*

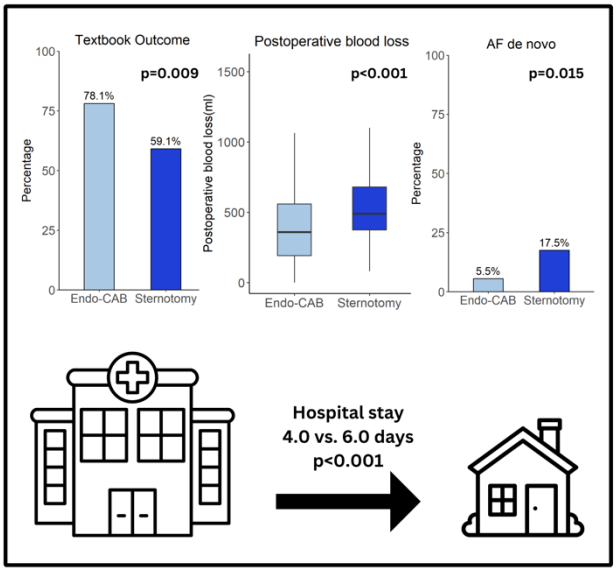
Objectives
This single-centre study compared the perioperative outcomes after total arterial multivessel revascularization through endoscopic-assisted, minimally invasive surgery compared to a conventional sternotomy approach.

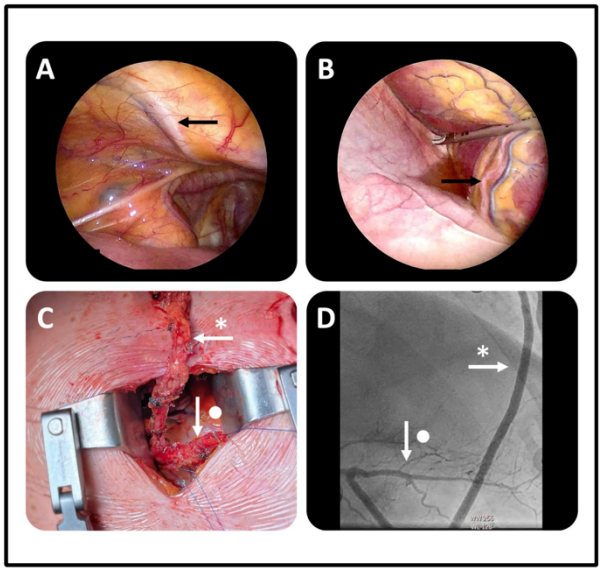
Methods
In this retrospective, propensity score-matched (PSM) cohort study, a total of 740 patients were analysed [endoscopic coronary artery bypass grafting (Endo-CAB), N = 92; Sternotomy, N = 648]. After PSM (1:2 ratio), 73 Endo-CAB and 137 sternotomy patients were compared with an equal number of distal anastomoses (Endo-CAB 2.3 versus Sternotomy 2.4 anastomoses per patient, P = 0.082). We used 'textbook outcome' as a patient-orientated outcome measure, defined as the absence of 30-day mortality, re-exploration for bleeding, postoperative ischaemia, cardiac tamponade, cerebrovascular events, wound infection, new onset arrhythmias, pneumonia, placement of chest drains and prolonged hospital stay (>7 days).

Results
Patients undergoing Endo-CAB had significantly more often a textbook outcome compared to the sternotomy group (78.1% vs 59.1%, P = 0.009). Endo-CAB patients had shorter hospital stay (4.0 vs 6.0 days, P < 0.001), less postoperative blood loss (360 vs 490 ml, P < 0.001) and a significant reduction of new onset postoperative atrial fibrillation (5.5% vs 17.5%, P = 0.015). Other postoperative outcomes were comparable for both groups.

Conclusions
Total arterial Endo-CAB demonstrates excellent postoperative outcomes compared to a sternotomy approach for multivessel coronary artery disease. These findings provide a strong basis for further expanding the multivessel Endo-CAB programme.

Endoscopically-Assisted, Minimally Invasive Versus Sternotomy Total Arterial Multivessel Bypass Grafting - A Propensity Matched Analysis





Abstract

11.45 uur

AORTIC VALVE REPLACEMENT IN CLINICAL TRIALS: EVALUATING THE EXTERNAL VALIDITY OF SURGICAL CONTROLS

Anton Tomšič, MD, PhD[1]; Bart J.J. Velders, MD, PhD[2*]; Michal J. Kawczynski, MD[3,4]; Jan W. Schoones, MA[5]; Robert J.M. Klautz, MD, PhD[2,6]; Meindert Palmen, MD, PhD[2,6]; Peyman Sardari Nia, MD, PhD[3,4]; Tamer Owais, MD[1]; Evaldas Girdauskas, MD[1]; Samuel Heuts, MD, PhD[3,4]
[1]Department of Cardiothoracic Surgery, Augsburg University Medical Center, Augsburg, Germany; [2]Department of Cardiothoracic Surgery, Leiden University Medical Center, Leiden, the Netherlands; [3]Department of Cardiothoracic Surgery, Maastricht University Medical Centre (MUMC+), Maastricht, the Netherlands; [4]Cardiovascular Research Institute Maastricht (CARIM), Maastricht University, Maastricht, the Netherlands; [5]Directorate of Research Policy, Leiden University Medical Centre, Leiden, the Netherlands; [6]Department of Cardiothoracic Surgery, Amsterdam University Medical Center, Amsterdam, the Netherlands; [*] Presenter

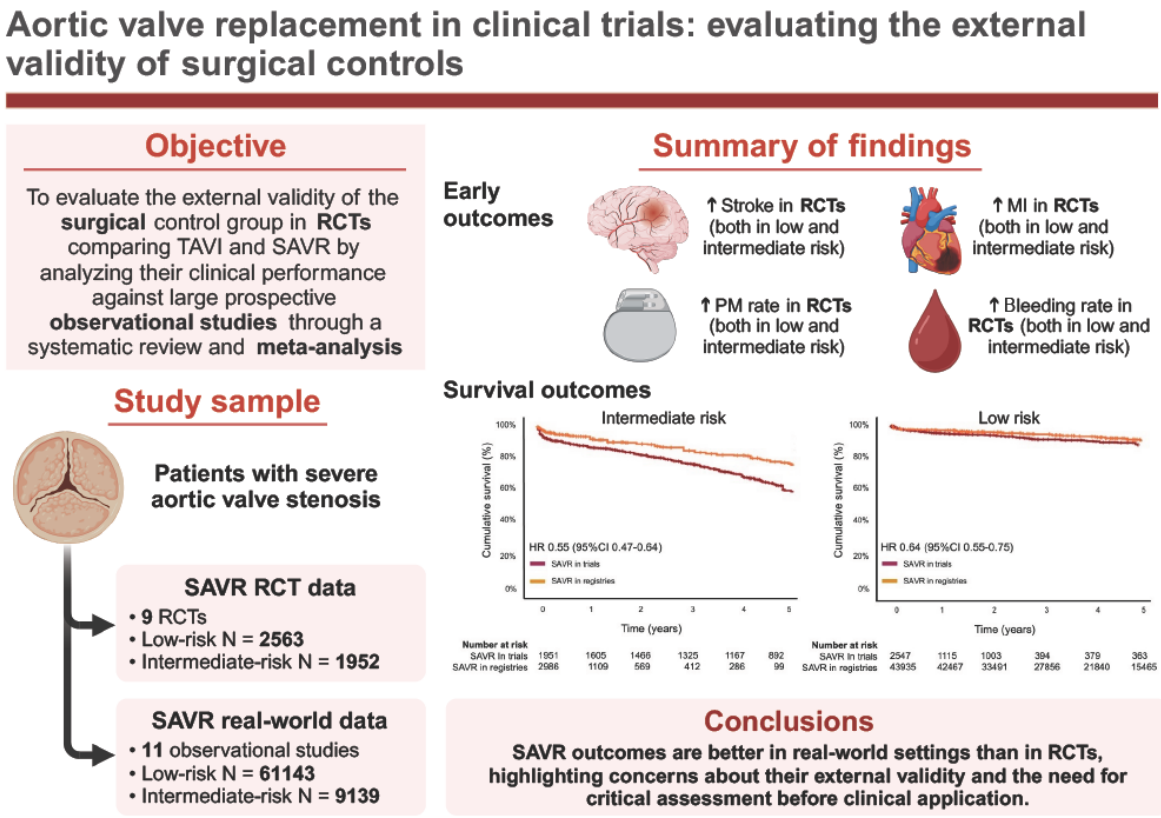
Objectives
Several randomized controlled trials (RCTs) comparing transcatheter aortic valve implantation to surgical aortic valve replacement (SAVR) have been published. The external validity of the SAVR in these trials is yet to be evaluated.

Methods
A systematic review of the literature was conducted by searching PubMed, Embase, Web of Science, Emcare, and the Cochrane Library, for RCTs or large prospective studies (n≥500) involving patients undergoing SAVR at low- or intermediate-risk. Pooled RCT and real-world data were compared. The primary endpoint was 5-year freedom from all-cause mortality, while secondary endpoints included early mortality and periprocedural complications.

Results
Nineteen studies, including 9 RCTs and 10 non-randomized studies, met the eligibility criteria (n=74,797). Data from real-world studies showed comparable early mortality, but fewer periprocedural complications, including lower rates of stroke, permanent pacemaker implantation, and myocardial infarction (Figure 1). At 5 years post-surgery, overall survival of patients included in real-world studies was significantly better than the survival of patients included in RCTs, both for low-risk (hazard ratio 0.64, 95% confidence interval: 0.55–0.75) and intermediate-risk patients (hazard ratio 0.55, 95% confidence interval: 0.47–0.64).

Conclusions
The results of our study indicate that the outcomes of SAVR are more favorable in the real-world setting compared to those observed in RCTs. These findings raise concerns about the external validity of the trials conducted to date and suggest that data from these trials should be critically assessed before being applied to routine clinical practice.

Figure 1. Graphical abstract.



Abstract

12.00 uur

"CONCOMITANT SURGICAL ABLATION IN ATRIAL FIBRILLATION PATIENTS UNDERGOING CARDIAC SURGERY FOR CORONARY AND AORTIC VALVE DISEASE: A MULTICENTRE STUDY FROM THE NETHERLANDS HEART REGISTRATION"

M. Agustina Bayon[1], Miriam A. Scheurwater[2], Niels J. Verberkmoes[2], Massimo A. Mariani[3], Maaike M. Roefs[4], Lukas R.C. Dekker[2], Yuri Blaauw[3], Thomas J. van Brakel[2]; on behalf of the Cardiothoracic Surgery Registration Committee of the Netherlands Heart Registration.
[1]Medisch Spectrum Twente, Enschede; [2]Catharina Ziekenhuis, Eindhoven; [3]Universitair Medisch Centrum Groningen, Groningen; [4]Netherlands Heart Registration, Utrecht

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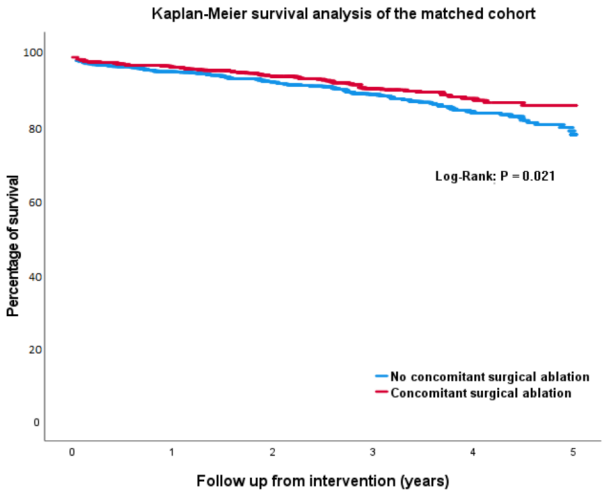
Objectives
Concomitant surgical ablation (CSA) is recommended for atrial fibrillation (AF) patients undergoing cardiac surgery due to its association with improved outcomes. However, its effects in non-mitral valve surgeries, specifically coronary artery bypass grafting (CABG) and aortic valve replacement (AVR), are less studied. This study aims to analyze outcomes and trends of CSA performance in the Netherlands.

Methods
This nationwide multicentre study utilized data from the Netherlands Heart Registration. AF patients undergoing CABG or AVR between 2013 and 2021 were included. Temporal trends in CSA performance were analyzed and propensity score matching (PSM) adjusted for confounders when comparing CSA and no-CSA.

Results
A total of 3,260 patients were included, of which 1,081 underwent CSA. PSM created 1,079 matched pairs. CSA patients had longer cardiopulmonary bypass (CPB) (107 [80 – 139] vs 88 [67 - 109] minutes, P <0.001) and aortic cross-clamping (AoX) times (64 [46 – 89] vs 58 [42-37 73] minutes, P <0.001) along with slightly longer hospital stays (5 [4 - 8] vs 5 [4 – 7] days, P = 0.024]. CSA patients showed higher survival rates (92.1% vs 87.8%, P = 0.021) and greater improvements in quality of life (QoL). CSA performance during CABG and AVR has increased significantly, from 29.7% in 2018 to 44.4% in 2021.



Conclusions
CSA resulted in slightly longer CPB, AoX times and hospital stays without significant differences in major complications. PSM analysis indicated that CSA is associated with better survival rates and improved QoL. CSA performance in CABG and AVR has increased in the Netherlands.

Pitch

12.15 – 12.50 uur

ACHIEVING OPTIMAL RESULTS IN MITRAL VALVE SURGERY: THE TEXTBOOK OUTCOME. RESULTS FROM THE NETHERLANDS HEART REGISTRATION

Kinsing Ko[1,2], Samuel Heuts[3], Andrew Tjon Joek Tjien[4], Saskia Houterman[5], Sandeep K. Singh[1], Rody Boon[1], Niels Verberkmoes[4] and Jules R. Olsthoorn[1,4]
[1] Department of Cardiothoracic Surgery, Isala Hospital, Zwolle; [2] Department of Cardiothoracic Surgery, Radboud University Medical Center, Nijmegen; [3] Department of Cardiothoracic Surgery, Maastricht University Medical Center, Maastricht; [4] Department of Cardiothoracic Surgery, Catharina Hospital Eindhoven, Eindhoven; [5] Netherlands Heart Registry, Utrecht

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Objectives
Surgical outcomes have traditionally been assessed using individual morbidity and mortality indicators. However, patients increasingly value comprehensive, complication-free recoveries as indicators of successful treatment. Textbook Outcome (TO) has recently emerged as a composite quality metric to capture this expectation, defined by the absence of major postoperative complications and survival without reintervention at one year. This study evaluates the association between surgical approach and TO in mitral valve (MV) surgery.

Methods
A retrospective registry-based cohort study was conducted using data from the Netherlands Heart Registry (NHR). Between 2013 and 2021, a total of 3026 patients who underwent mitral valve (MV) surgery across 15 centers were included. Patients were stratified according to surgical approach: minimally invasive MV surgery (MIMVS; n=1381) and full sternotomy (FS; n=1645). The primary endpoint, Textbook Outcome (TO), was defined as the absence of postoperative stroke, renal failure, major vascular complications, and reintervention for bleeding, as well as survival without reintervention at one-year follow-up. Univariable and multivariable logistic regression analyses were performed to evaluate the association between surgical approach and the achievement of TO, and to identify additional factors associated with TO.

Results
TO was achieved in 87.1% of patients. MIMVS had a higher TO rate (89.1%) than FS (85.5%, p=0.01). In multivariable analysis, MIMVS remained significantly associated with TO (OR=0.79, 95%CI 0.63–0.99, p=0.04). Factors negatively associated with TO included older age, reduced left ventricular function, pulmonary hypertension, recent myocardial infarction, MV replacement, and rhythm surgery.

Conclusion
TO represents a clinically meaningful, patient-centered outcome. In MV surgery, minimally invasive approaches are associated with improved TO and may serve as a benchmark for surgical quality.

Table 1 Multivariable Logistic Regression Analysis For Riskfactor For Non-Textbook Outcome After Mital Valve Surgery.

	Univariate		Multivariate	
	OR (95% CI)	P-value	OR (95% CI)	P-value
Minimally Invasive Surgical approach	0.72 [0.58 - 0.89]	**0.01**	0.79 [0.63 - 0.99]	**0.04**
Female gender	1.22 [0.99 - 1.51]	**0.07**	0.97 [0.77 - 1.22]	0.80
Age	1.03 [1.01 -1.04]	**<0.001**	1.02 [1.01 - 1.03]	**0.01**
BMI	1.03 [1.00 - 1.06]	**0.02**	1.02 [0.99 -1.04]	0.23
LV ejection fraction <50%	1.64 [1.29 - 2.10]	**<0.001**	1.31 [1.01 - 1.70]	**0.04**
Diabetes mellitus	1.74 [1.20 - 2.54]	**0.01**	1.27 [0.85 - 1.90]	0.25
Chronic lung disease	1.69 [1.23 - 2.34]	**0.01**	1.35 [0.96 - 1.89]	0.08
Pulmonary hypertension	1.69 [1.33 - 2.14]	**<0.001**	1.31 [1.02 - 1.69]	**0.04**
Extracardiac arteriopathy	1.43 [0.811 - 2.52]	0.19	0.94 [0.52 - 1.71]	0.85
Recent Myocardial infarction	5.51 [2.16 - 14.06]	**<0.001**	4.59 [1.76 - 12.01]	**0.02**
Serum creatinine (>200um/L)	3.24 [1.39 - 7.55]	**0.01**	2.13 [0.88 - 5.13]	0.09
Mitral valve replacement	2.08 [1.66 - 2.61]	**<0.001**	1.88 [1.47 -2.40]	**<0.001**
Rhythm surgery	1.42 [1.12 - 1.80]	**0.01**	1.35 [1.05 - 1.73]	**0.02**
ASD closure	0.80 [0.42 - 1.50]	0.48	-	-
Tricuspid valve surgery	1.54 [1.21 - 1.96]	**<0.001**	1.11 [0.85 - 1.45]	0.45

Pitch

12.15 – 12.50 uur

STARTING A ROBOTIC MITRAL VALVE PROGRAM: FOCUS ON SAFETY AND LEARNING CURVE

Rahul A. Bhoera[1], Anton Tomšič[1, 4], Maurice A. P. Oudeman[2], Jerry Braun[1], Linda de Heer[3], Robert J. M. Klautz[1,2], Meindert Palmen[1]
[1]Department of Cardiothoracic Surgery Leiden University Medical Centre, Leiden, the Netherlands; [2]Department of Cardiothoracic Surgery Amsterdam University Medical Centre, Amsterdam, the Netherlands; [3]Department of Cardiothoracic Surgery Utrecht University Medical Centre, Utrecht, the Netherlands; [4]Department of Cardiothoracic Surgery University Hospital Augsburg, Augsburg, the Netherlands

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Objectives
Mitral valve repair through median sternotomy has been the gold standard for treatment of severe primary mitral regurgitation. However, aiming to reduce surgical impact on patients while preserving safety and surgical outcome, robotic mitral valve surgery has emerged as a widely adopted approach. To ensure optimal outcomes and maintain efficacy, the entire surgical team has to master the mandatory learning curve.

Methods
A dedicated robotic mitral repair team in a high-volume mitral repair center, with no prior experience with port-access mitral valve repair, followed an extensive training program. After training and performing a prospective risk analysis in order to identify possible risks in the initiation phase, the first 9 procedures were accompanied by an experienced proctor. 88 Patients underwent robotic mitral valve surgery since the initiation.

Results
The initial repair rate was 100% and no mortality, postoperative stroke or myocardial infarction were observed. Over time, we observed a decrease in mean cardiopulmonary bypass times (first 20 cases: 299 minutes vs. last 20 cases: 191 minutes), aortic cross-clamp times (first 20 cases: 184 minutes vs. last 20 cases: 117 minutes) and operating times (first 20 cases: 415 minutes vs. last 20 cases 252 minutes). At mid-term follow-up, repair rates were excellent (MR < 1+ 77%, MR < 2+ 96%).

Conclusions
A robotic mitral valve repair program can be safely implemented in a high-volume mitral valve repair center with excellent short- and mid-term results. It may be considered a valuable alternative to port-access mitral valve repair surgery for selected patients.

Outcome	Early robotic (44)	Late robotic (44)
Conversion rate, n (%)	1 (2.3)	0
Operating time, min (median + SD)	336 (102.8)	248 (65)
Post operative atrial rhythm disturbances:	17 (38.6)	12 (27.3)
Postoperative transfusion, n (%)	6 (13.6)	0
Postoperative reoperation, n (%)	4 (9.1)	4 (9.1)
Postoperative mechanical ventilation duration, hours (median + SD)	5.0 (49.1)	0 (11.4)
Days on rhythm monitoring, days (median + SD)	6.0 (3.9)	5.0 (2.6)
ICU length of stay, days (median + SD)	1.0 (2.3)	1.0 (1.6)
Hospital length of stay, days (median + SD)	6.0 (4.2)	6.0 (4.5)

TABLE 1. Postoperative results for the early and late robotic groups.

Pitch

12.15 – 12.50 uur

THE OPTIMAL AGE TO PERFORM MITRAL VALVE REPAIR OR REPLACEMENT: RESULTS FROM THE NETHERLANDS HEART REGISTRATION

Samuel Heuts[1,2], Andrew Tjon Joek Tjien[3], Michal J. Kawczynski[1,2], Peyman Sardari Nia[1,2], Saskia Houterman[4], Jos G. Maessen[1,2], PhD, Niels Verberkmoes[3] and Jules R. Olsthoorn[3,5,*], on behalf of the Cardiothoracic Surgery Registration Committee of the Netherlands Heart Registration
[1] Department of Cardiothoracic Surgery, Maastricht University Medical Center+; [2] Cardiovascular Research Institute Maastricht (CARIM), Maastricht University; [3] Department of Cardiothoracic Surgery, Catharina Hospital Eindhoven, Eindhoven; [4] Netherlands Heart Registration, Utrecht; [5] Department of Cardiothoracic Surgery, Isala Zwolle; [*] Presenter

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Objectives
Mitral valve (MV) surgery is increasingly performed for a variety of MV pathologies. MV repair is generally associated with improved survival over MV replacement, including in elderly patients. However, it remains unclear whether this benefit diminishes with age. This study aimed to analyze 5-year survival following MV repair versus replacement, with a focus on how age influences the survival difference between the two procedures.

Methods
A retrospective analysis was performed using data from the Netherlands Heart Registration (2007–2021), including all patients undergoing isolated MV surgery—either as stand-alone procedures or combined with atrial septal defect closure, rhythm surgery, or tricuspid valve surgery. Patients were stratified by surgery type. Baseline characteristics, including logistic EuroSCORE, were collected. Five-year survival was assessed using Cox proportional-hazards models, both unadjusted and adjusted for age and EuroSCORE. An interaction term between age (modeled as a restricted cubic spline) and surgery type was included to evaluate age-specific survival differences.

Results
Among 13,331 patients (MV repair: 10,734; MV replacement: 2,597), median 5-year survival was 95.0% for MV repair and 88.1% for MV replacement. MV repair showed a significant survival benefit (adjusted HR 2.22, 95% CI 1.91–2.58), sustained up to age 82 (HR 1.28, 95% CI 0.96–1.72). The greatest difference was seen at age 60 (HR 3.48, 95% CI 2.75–4.40).

Conclusion
MV repair provides a significant 5-year survival advantage over replacement, most prominent at age 60 and maintained until age 82, beyond which survival outcomes are comparable.

Table 1. Adjusted association for 5-year survival between MV repair and MV replacement for different ages at the time of procedure

Age (years)	***Hazard ratio***	***95% CI***	***p-value***
45	2.07	1.13-3.80	0.0184
50	2.56	1.68-3.93	<0.0001
55	3.10	2.32-4.14	<0.0001
60	3.48	2.75-4.40	<0.0001
65	3.44	2.74-4.31	<0.0001
70	2.87	2.37-3.48	<0.0001
75	2.11	1.79-2.50	<0.0001
80	1.48	1.16-1.89	0.0015
82	**1.28**	**0.96-1.72**	**0.0907**
85	1.04	0.72-1.50	0.8497

CI: confidence interval, MV: mitral valve.

Pitch

12.15 – 12.50 uur

THE OCTOCON®: A NOVEL SUTURELESS CONNECTOR FOR DISTAL CORONARY CONNECTIONS REPRODUCING HAND-SEWN GEOMETRY

Monica Gianoli[1], Harmen M. Wassink[2], Leonard J. van Schelven[2], Paul F. Gründeman[1], Willem J.L. Suyker[1*]
[1]Cardiothoracic Surgery, Heart and Lungs Division, UMC Utrecht, Netherlands; [2]Medical Technology & Clinical Physics, UMC Utrecht, Netherlands; [*]Presenter

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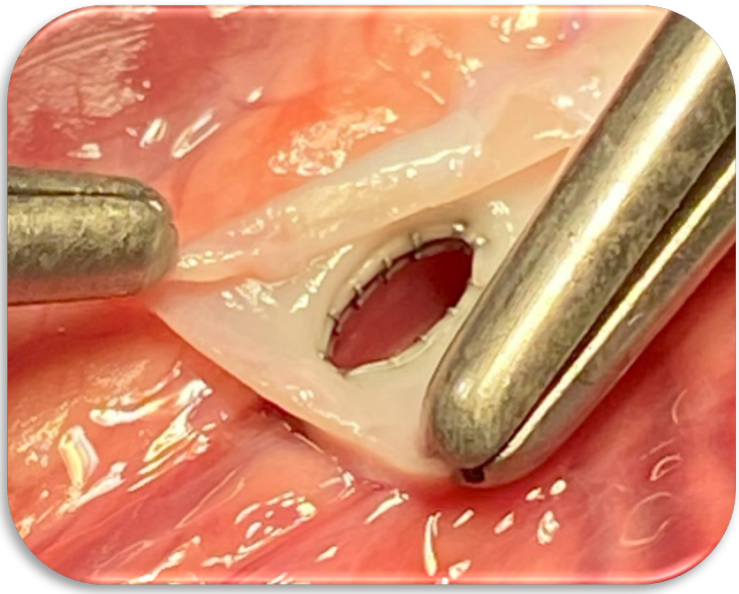
Objectives
In an era shifting to minimally invasive procedures, coronary artery bypass grafting (CABG) has lagged due to the technical complexity of distal anastomosis. Key determinants of long-term graft patency are achieving an optimal anastomotic orifice area (AOA) and minimizing blood-exposed non-intimal surface (BENIS). Building on prior research, we developed the Octocon®—a novel sutureless connector designed to replicate hand-sewn anastomotic characteristics while enabling efficient, reproducible deployment suitable for minimally invasive and robotic applications.

Methods
Octocon® employs a three-step microstapling process to join graft and target vessels using externally deployed titanium connector halves. Designed for vessels with internal diameters of 1.3–3.5 mm, it delivers an AOA of ~7 mm² with only ~3 mm² of metallic BENIS. Its functionality was evaluated in direct-access ex vivo porcine and human coronary procedures, assessing morphologic results and hydrostatic integrity. A parallel robotic feasibility study assessed Octocon's performance under simulated closed-chest conditions.

Results
All direct-access anastomoses (n=13) showed fully patent morphology and were leak-free at pressures ≤300 mmHg. In robotic simulations (n=18), 96% of anastomoses were successfully completed on first attempt, with procedural time consistently under five minutes. Octocon demonstrated intuitive deployment, robust handling, and versatility for complex graft configurations (e.g., jump and Y-grafts) across anterior and posterior heart walls.



Conclusion
Octocon® reliably reproduced hand-sewn anastomotic geometry with minimal metallic surface exposure and broad vessel compatibility. Its intuitive deployment and user-friendliness in robotic closed-chest simulations highlight its potential to transform minimally invasive coronary revascularization. Further in-vivo studies are warranted to prepare for clinical introduction.

Pitch

12.15 – 12.50 uur

UNILATERAL CEREBRAL PERFUSION: A NON-INFERIOR ALTERNATIVE TO BILATERAL CEREBRAL PERFUSION DURING AORTIC ARCH SURGERY?

Eefke Polling[a], Emma van der Weijde [a], Arjan A.J.P.F. Verhaegh[a], Michiel Kuijpers[a], Gianclaudio Mecozzi [a], Massimo A. Mariani [a].
[a]*University Medical Centre Groningen (UMCG)*

Objectives
To assess the difference in neurological outcome between unilateral and bilateral antegrade cerebral perfusion (ACP) during aortic arch surgery.

Method
Data from our single-center database on all aortic arch surgeries requiring ACP from January 2019 to December 2024 was requested and analyzed retrospectively. The statistical significance of the association was analyzed using Fisher's exact Test. Multivariable logistic regression analysis was performed to identify predictors of neurologic events.

Results
A total of 214 patients underwent aortic arch surgery requiring ACP (aged 66 years; 56,5% male). Bilateral ACP (b-ACP) was used in 123 patients (57,5%), while unilateral ACP (u-ACP) was used in 91 patients (42,5%). Stroke rates (12,1% vs 9,9%; p=0.663) were not significantly different in patients with bilateral vs unilateral ACP, respectively. In hospital mortality was 8,4% (n=18). Multivariable logistic regression showed that there was no statistical difference between the type of brain perfusion and the occurrence of stroke (p=0.883). The regression analysis showed that age and extracorporeal circulation (ECC) time are significant predictors of stroke (p= 0.016, and p=0.001, respectively). Cannulation site, deep hypothermic circulation arrest time (DHCA), minimum temperature, aortic clamp time, ACP time and emergency setting were tested, but were eliminated from the model through a backward stepwise elimination process, as their inclusion did not improve the model or statistical fit.

Conclusion
B-UCP and u-ACP showed no significant difference in stroke rates. Multivariable analysis revealed age and ECC time as the primary predictors of stroke, suggesting that perfusion technique may be less critical than patient-specific factors and that b-UCP is not superior to u-ACP.

Table 1: Multivariate Logistic Regression Model for Stroke

Variable	Odds Ratio	Lower 95% CI	Upper 95% CI	P-Value
(Intercept)	0.000	0.000	0.008	<0.001
ACP	0.905	0.349	2.260	0.833
Age	1.068	1.016	1.132	0.016
ECC-time	1.010	1.004	1.015	0.001

Pitch

12.15 – 12.50 uur

THE PROGNOSTIC IMPACT OF PREVAILLING DEFINITIONS OF PERIPROCEDURAL MYOCARDIAL INFARCTION IN PATIENT UNDERGOING CORONARY ARTERY BYPASS GRAFTING

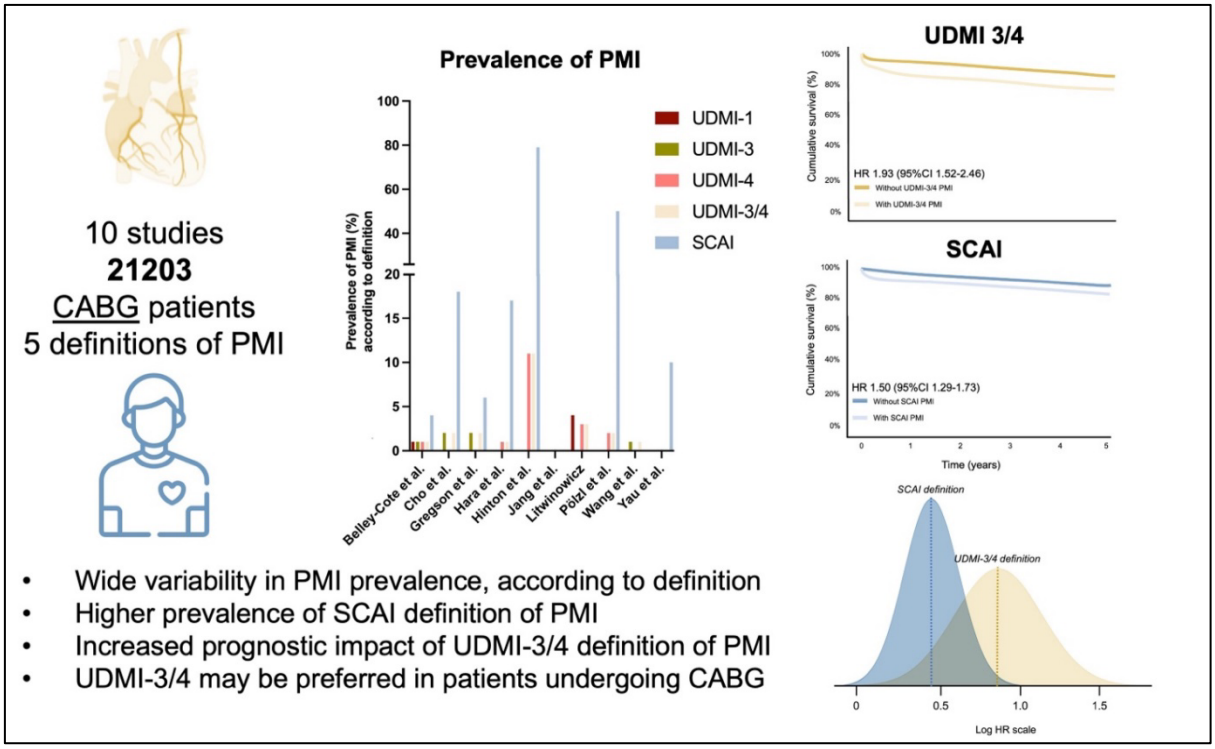
Brian Swinnen[1,2,3], Michal J. Kawczynski[1,3], Alma M.A. Mingels, PhD[3,4], Joachim E. Wildberger[2,3], Casper Mihl[2,3], Martijn W. Smulders[2,3,5], Jos G. Maessen[1,3], Can Gollmann-Tepeköylü[6], and Samuel Heuts[1,3]
[1] Department of Cardiothoracic Surgery, Maastricht University Medical Centre (MUMC+), Maastricht, the Netherlands; [2] Department of Radiology and Nuclear Medicine, Maastricht University Medical Centre (MUMC+), Maastricht, the Netherlands; [3] Cardiovascular Research Institute Maastricht (CARIM), Maastricht University, Maastricht, the Netherlands; [4] Central Diagnostic Laboratory, Maastricht University Medical Centre (MUMC+), Maastricht, the Netherlands; [5] Department of Cardiology, Maastricht University Medical Centre (MUMC+), Maastricht, the Netherlands; [6] Department of Cardiac Surgery, Innsbruck Medical University, Innsbruck, Austria

Objectives
Several contradictory definitions have been proposed regarding the diagnosis of periprocedural myocardial infarction (PMI) after coronary artery bypass grafting (CABG). The aim of the current study was to assess the prevalence of PMI and to identify the definition of PMI with the most relevant prognostic impact.

Methods
The study was designed as a systematic review and meta-analysis. The primary definitions of interest comprised the universal definition of myocardial infarction (UDMI; UDMI-3/4) and Society for Cardiovascular Angiography and Interventions (SCAI) definition. The primary outcomes were the prevalence of PMI and its prognostic impact, expressed in hazard ratios (HRs) and 95% confidence intervals (CIs). This analysis was performed under a frequentist framework and a secondary analysis was performed using a Bayesian hierarchical random-effects model.

Results
Ten studies were included, encompassing 21203 patients undergoing isolated CABG. The pooled prevalence of PMI was 17.5% (95%CI 9.5-29.8%) according to SCAI, and 3.2% (95%CI 1.6-6.2%) according to UDMI-3/4. The pooled HR of the SCAI definition for freedom from all-cause mortality was 1.60 (95%CI 1.18-2.16) and the HR was 2.54 (1.62-4.00) for UDMI-3/4 (p-for-interaction=0.097). The posterior probability of exceeding an HR of 1 was >99% for both definitions, while the probability of the UDMI-3/4 exceeding the mean HR of SCAI was 96.4%. The results were robust across sensitivity analyses.

Conclusion
The prevalence of PMI is markedly higher when diagnosed according to SCAI criteria. The criteria as proposed by the UDMI define PMI with the most relevant prognostic impact.


10 studies
21203
CABG patients
5 definitions of PMI
Prevalence of PMI
Prevalence of PMI (%) according to definition
UDMI-1
UDMI-3
UDMI-4
UDMI-3/4
SCAI
Belley-Cote et al.
Cho et al.
Gregson et al.
Hara et al.
Hinton et al.
Jang et al.
Litwinowicz
Pölzl et al.
Wang et al.
Yau et al.
UDMI 3/4
Cumulative survival (%)
HR 1.93 (95%CI 1.52-2.46)
Without UDMI-3/4 PMI
With UDMI-3/4 PMI
SCAI
HR 1.50 (95%CI 1.29-1.73)
Without SCAI PMI
With SCAI PMI
Time (years)
SCAI definition
UDMI-3/4 definition
Log HR scale
• Wide variability in PMI prevalence, according to definition
• Higher prevalence of SCAI definition of PMI
• Increased prognostic impact of UDMI-3/4 definition of PMI
• UDMI-3/4 may be preferred in patients undergoing CABG

Abstract

15.50 uur

THE OPTIMAL REVASCULARIZATION STRATEGY FOR STABLE CORONARY ARTERY DISEASE

Michal J. Kawczynski[1,2], Fabio Barili[3,4], James M. Brophy[5], Raffaele De Caterina[6], Giuseppe Biondi-Zoccai[7], Amedeo Anselmi[8], William E. Boden[9], Alessandro Parolari[3,10*], and Samuel Heuts[1,2]on behalf of the INTEGRITTY initiative[13]

[1] Maastricht University Medical Centre+, Maastricht, the Netherlands; [2] Cardiovascular Research Institute Maastricht (CARIM); [3] Università Degli Studi Di Milano, Milan, Italy; [4] IRCCS Ospedale Galeazzi - Sant'Ambrogio, Milan, Italy; [5] McGill University Health Centre, Montreal, Quebec, Canada [6] Pisa University Hospital, Pisa, Italy; [7] Sapienza University of Rome, Rome, Italy; [8] Pontchaillou University Hospital, Rennes, France; [9] Boston University School of Medicine, Boston, MA, USA; [10] IRCCS Policlinico San Donato, Milan, Italy; [13] International Evidence Grading Research Initiative Targeting Transparency and Quality

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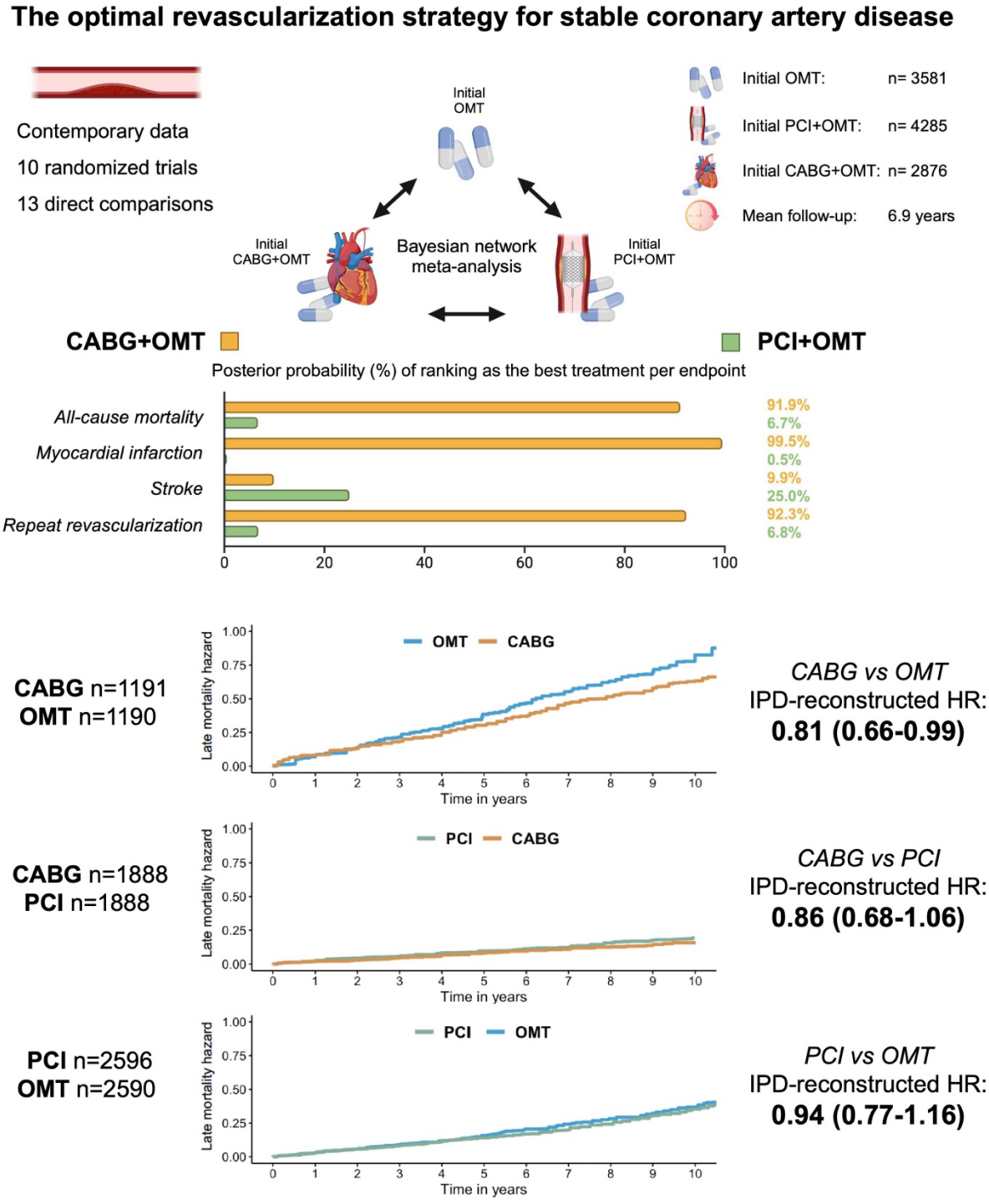
Background
Contemporary American guidelines for the treatment of stable coronary artery disease (SCAD) dispute the value of revascularization, and markedly differ from European guidelines in their recommendation to perform revascularization. A Bayesian network meta-analysis was performed, evaluating the strength of evidence for the comparative incremental effectiveness of coronary artery bypass graft (CABG) versus percutaneous coronary intervention (PCI) over medical therapy on clinical endpoints.

Methods
A Bayesian network meta-analysis was designed (PROSPERO CRD42024541215, date May 20th, 2024), including randomized controlled trials (RCTs) on SCAD patients, published between 2005 and May 1st, 2024. The analysis consisted of three initial treatment modalities: optimal medical therapy (OMT) alone, PCI+OMT, and CABG+OMT. The primary outcome was all-cause mortality; secondary outcomes were myocardial infarction, stroke and re-revascularization, expressed in hazard ratios (HRs) and 95% credible intervals (CrIs), accompanied by posterior ranking probabilities.

Results
Ten RCTs, comprising 10,742 patients, were included. For all-cause mortality, the median HR of CABG+OMT versus OMT was 0.84 (95%CrI 0.67-1.08), the HR of PCI+OMT vs OMT was 0.94 (0.79-1.16), and the HR of CABG+OMT vs PCI+OMT was 0.90 (0.70-1.13). The posterior probability of a CABG+OMT strategy ranking as the optimal revascularization treatment regarding mortality, myocardial infarction, stroke, and re-revascularization was 91.9%, 99.5%, 9.9%, and 92.4%. Results were consistent across sensitivity analyses, including those with reconstructed individual patient data (**Figure**).

Conclusions
This study found that an initial CABG revascularization strategy as opposed to PCI+OMT or OMT alone was associated with higher (>90%) probabilities of optimal outcomes in SCAD, with the exception of stroke.

FIGURE


The optimal revascularization strategy for stable coronary artery disease
Contemporary data
10 randomized trials
13 direct comparisons
Initial OMT
Initial CABG+OMT
Initial PCI+OMT
Bayesian network meta-analysis
Initial OMT: n= 3581
Initial PCI+OMT: n= 4285
Initial CABG+OMT: n= 2876
Mean follow-up: 6.9 years
CABG+OMT
PCI+OMT
Posterior probability (%) of ranking as the best treatment per endpoint
All-cause mortality
Myocardial infarction
Stroke
Repeat revascularization
91.9%
6.7%
99.5%
0.5%
9.9%
25.0%
92.3%
6.8%
0
20
40
60
80
100
CABG n=1191
OMT n=1190
OMT
CABG
Late mortality hazard
Time in years
CABG vs OMT
IPD-reconstructed HR:
0.81 (0.66-0.99)
CABG n=1888
PCI n=1888
PCI
CABG
Late mortality hazard
Time in years
CABG vs PCI
IPD-reconstructed HR:
0.86 (0.68-1.06)
PCI n=2596
OMT n=2590
PCI
OMT
Late mortality hazard
Time in years
PCI vs OMT
IPD-reconstructed HR:
0.94 (0.77-1.16)

Abstract

16.05 uur

OPEN SURGERY OF THE DESCENDING THORACIC AORTA IN THE CURRENT ENDOVASCULAR ERA: SINGLE CENTRE EXPERIENCE IN 95 CONSECUTIVE CASES

Nesar A. Hasami, Michelle Smulders, Michel W.A. Verkroost, Wilson W.L. Li, F.J.H. Nauta, Guillaume S.C. Geuzebroek, Nabil Saouti, Robin H. Heijmen
Department of Cardiothoracic Surgery, Radboud University Medical Centre, Nijmegen, The Netherlands

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Objectives
While most patients are currently treated by thoracic endovascular aortic repair (TEVAR), in selected patients open surgery for descending thoracic aorta (DTA) pathology remains the only valid option. This study reports the outcomes of open DTA repair performed in our high-volume tertiary aortic center.

Methods
From a prospectively maintained single-center database, data were retrospectively collected for patients who underwent open repair for DTA pathology from 2013 to 2024.

Results
Among 340 patients undergoing open thoraco-(abdominal) aortic repair, 95 (55 males, 57.9%) underwent open DTA repair, with a mean age of 56.1 ± 14.0 years. Sixteen patients (16.8%) had a connective tissue disorder. Indications for surgery varied widely, with the vast majority for post-dissection aneurysm (n=50, 52.6%). Six (6.3%) patients were operated because of stent-graft infection. All patients underwent repair via posterolateral thoracotomy only. Extracorporeal circulation (ECC) was used in all cases: left heart bypass (n=57, 60.0%), deep hypothermic circulatory arrest with conventional ECC (n=30, 31.6%), or partial femoral bypass (n=8, 8.4%). Major complications occurred in 1 patient each (1.1%) for stroke, paraplegia, paraparesis, and need for dialysis. No tracheostomies were needed. Thirty-day and 90-day mortality rates were 3.2% (n=3) and 5.3% (n=5), respectively.

Conclusion
Open DTA repair remains essential in selected patients, particularly in cases unsuitable or after failed TEVAR. In a specialized aortic center, this approach yields very low mortality and complication rates despite its invasive nature, and should therefore (even in the current endovascular era) still be taken into account when weighing various treatment options

Abstract

16.20 uur

BIOMARKERS OF STANDARD CRITERIA AND MARGINAL DONOR LUNGS DURING EX VIVO LUNG PERFUSION: A COMPARATIVE STUDY

Michiel A. Hu[1], Zhang L. Zhang[1], Roland F. Hoffmann[1], Tji C. Gan[2], Erik A.M. Verschuuren[2], Caroline Van De Wauwer[1], Henri G.D. Leuvenink[3], Michiel E. Erasmus[1]
[1]*Department of Cardiothoracic Surgery, University Medical Center Groningen, Groningen, Netherlands*
[2] *Department of Pulmonary Diseases and Lung Transplantation, University Medical Center Groningen, Groningen, Netherlands*
[3] *Department of Surgery, University Medical Center Groningen, Groningen, Netherlands*

Objective
Ex Vivo Lung Perfusion (EVLP) has become an established method to assess and recondition donor lungs before lung transplantation (LTx). In this study, we explored several biomarkers of standard criteria and marginal donor lungs during EVLP. Novel findings could guide future interventions, such as thrombolysis, to enhance lung quality and expand the donor lung pool.

Methods
EVLP was performed for minimal 180 min with 18 standard criteria (logistical) and 15 marginal (medical) donor lungs. The following biomarkers were measured in perfusate after 90 and 180 min: d-dimer, Prothrombin Fragment 1+2 (F1+2), Plasminogen Activator Inhibitor-1 (PAI-1), urokinase Plasminogen Activator Receptor (uPAR), IL-1β, IL-6, IL-8, TNF-α, syndecan-1, hyaluronan and Vascular Cell Adhesion Molecule-1 (VCAM-1).

Results
In the logistical and medical group, 16/18 and 12/15 were transplanted respectively. Both groups showed significantly increased levels of all measured biomarkers. Remarkably, d-dimer, F1+2, uPAR, IL-6, IL-8, syndecan-1, hyaluronan and VCAM-1 were significantly higher in the medical group. Declined donor lungs had significantly higher levels of syndecan-1 and hyaluronan and lower pO_2 compared to all transplanted donor lungs. Lung function during EVLP was similar between the transplanted logistical and medical groups, as primary graft dysfunction (PGD). No significant correlations between PGD were observed.

Conclusion
Marginal donor lungs sustained more injury as reflected in higher levels of fibrin degradation, pro-inflammatory cytokines, glycocalyx shedding and endothelial activation. Declined donor lungs exhibited significantly higher glycocalyx shedding. Therefore, (marginal) donor lungs could potentially benefit from thrombolysis, reducing inflammation and endothelial preservation during EVLP to further enhance lung quality.

Abstract

16.35 uur

ETIOLOGY OF CORONARY REINTERVENTION AFTER CORONARY ARTERY BYPASS SURGERY

Ikram Achbar[a], De Qing F.N. Görtzen[a], Joost F.J. ter Woorst[a], Koen Teeuwen[b], Pim A.L. Tonino[b,c], Ferdi Akca[a]

[a] *Department of Cardiothoracic Surgery, Catharina Hospital Eindhoven, the Netherlands*

[b] *Department of Interventional Cardiology, Catharina Hospital Eindhoven, the Netherlands*

[c] *Department of Biomedical Engineering, Technical University Eindhoven, the Netherlands*

Objectives

Coronary artery bypass grafting (CABG) reduces the risk of target vessel revascularization (TVR) compared to percutaneous coronary intervention (PCI), yet coronary reintervention may still occur. This study aims to evaluate the incidence and underlying etiology of reintervention after CABG.

Methods

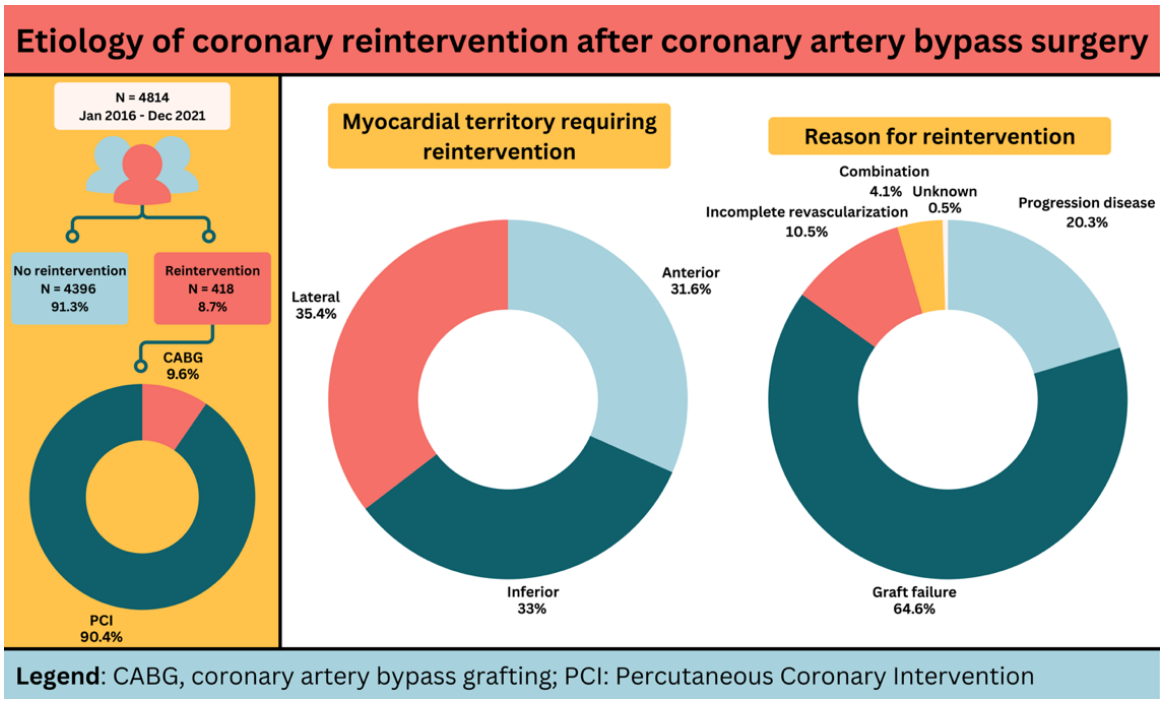
A single-center retrospective cohort study was performed, including all patients who underwent isolated initial CABG between January 2016 and December 2021. All surgical or percutaneous reintervention-procedures were analyzed until December 2022. Data were sourced from our center's database connected to the Netherlands Heart Registration (NHR), supplemented by data obtained through chart review.

Results

A total of 4,814 patients who underwent CABG were included, of which 8.7% (n=418) underwent coronary reintervention during a mean follow-up of 4.1 years. The suspected cause of symptoms requiring reintervention was graft failure in 64.6% (n=270), progression of coronary artery disease (CAD) in 20.3% (n=85), incomplete revascularization in 10.5% (n=44), or a combination of the aforementioned reasons in 4.1% (n=17). Overall, there was no significant difference in mortality for patients with or without reintervention (10.8% vs. 7.9%, p=0.095). After multivariate analysis, female gender (OR 1.36, p=0.026), prior PCI (OR 1.35, p=0.007), and prolonged postoperative ventilation (OR 1.86, p=0.045) were identified as independent risk factors for coronary reintervention.

Conclusion

After CABG, 8.7% of patients underwent coronary reintervention at mid-term follow-up. Bypass graft failure was the most prevalent underlying etiology followed by progression of CAD. Overall survival did not differ between patients with or without reintervention.



Legend: CABG, coronary artery bypass grafting; PCI: Percutaneous Coronary Intervention