2nd International Symposium on Minimal Invasive Extracorporeal Technologies

MiECT

ATHENS 9-11 JUNE 2016
Megaron Athens International Conference Center
PROGRAM
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Medtronic Hellas S.A. | Agias Varvaras 5, Chalandri, P.C. 15231 | Tel. 210 6779099
Welcome Message

Dear Colleagues and Friends,
We are proud and honored to announce the organization of the 2nd International Symposium on Minimal Invasive Extra-Corporeal Technologies (MiECT), which will be held in the historic City of Athens, a city that stands for more than 3000 years as the symbol of civilization, democracy, philosophy and culture.

The Symposium is organized by the Minimal invasive Extra-Corporeal Technologies international Society (MiECTiS), which was founded during the 1st MiECT International Symposium in Thessaloniki on June 2014.

We aim to introduce a multidisciplinary, up-to-date Scientific Program, in order to highlight this promising technology to both clinical practice and industry. Cardiothoracic Surgeons, Perfusionists, Cardiac Anesthesiologists and Industry Representatives are invited to create an International Forum for exchanging ideas, having as an ultimate goal to further progress this technology in clinical application and research.

We believe that this Symposium will prove to be a unique opportunity to meet each other, exchange views on Minimal invasive Extra-Corporeal Circulation (MiECC) and try to advance penetration of this technology to the scientific community. Besides, Athens, the host city, offers a spectacular combination of ancient and contemporary touristic attractions as well as a metropolitan lifestyle. Athens will be ready to welcome the 2nd MiECT Symposium and its Delegates and reward us with a memorable event.

We invite you all to be part of this event and the promising future of this technology.

On behalf of the MiECTiS Steering Committee

President
Kyriakos Anastasiadis
Greece
Steering Committee

Kyriakos Anastasiadis
President
Associate Professor of Cardiothoracic Surgery
Aristotle University of Thessaloniki
Head of Cardiothoracic Department
AHEPA University Hospital, Thessaloniki

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Clinical Perfusionist, Switzerland
Symposium President

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Aristotle University of Thessaloniki
Head of Cardiothoracic Department
AHEPA University Hospital, Thessaloniki

Symposium Secretary

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Faculty

Yasir Abu-Omar (UK) / Consultant Cardiothoracic and Transplant Surgeon, Department of Cardiothoracic Surgery, Papworth Hospital, Cambridge
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Auspices

The 2nd International Symposium on Minimal Invasive Extracorporeal Technologies (MiECT), was held under the Auspices of:

**Greek Ministry of Health**
**Greek Ministry of Economy, Development and Tourism**

"Aristotle" University of Thessaloniki

International Society for Minimally Invasive Cardiothoracic Surgery

Hellenic Society of Cardiovascular & Thoracic Surgeons

European Board of Cardiovascular Perfusion

European Association of Cardiothoracic Anaesthesiology

Euro Extracorporeal Life Support Organization

Accreditation

The 2nd International MiECT Symposium is accredited with **12 European CME credits** from European Accreditation Council for Continuing Medical Education (EACCME).
16:00 - 16:30  **Keynote Lecture 1**  
Moderator: **Thierry Carrel**  

Introduction to MiECTiS  
**Kyriakos Anastasiadis**

16:30 - 17:30  **Oral Presentations 1**  
Moderator: **Paschalis Tossios**

1. **SAFETY IN THE EVOLVING MINIATURISED EXTRACORPOREAL SYSTEM**  
Bell J., McLean L., Medlam W., Bennett R.T., Bennett R.V., Turner E., Wallhead A.  

Department of Clinical Perfusion Science,  
“Castle Hill Hospital”, Hull, East Yorkshire, UK  
Discussant: **Bernhardt Flörchinger**

2. **THE CHALLENGE OF CLOSED CIRCUIT SYSTEM FOR ALL CPB CASES**  
Yamamoto Y.  
Anjo Kosei Hospital, Anjo City, Japan  
Discussant: **Patrick Weerwind**

3. **THE USE OF A MINIMAL INVASIVE EXTRACORPOREAL CIRCUIT FOR REWARMING PATIENTS FROM ACCIDENTAL HYPOTHERMIA: A PROSPECTIVE STUDY**  
Jenni H., Winkler B.\(^1\), Erdös G.\(^2\), Eberle B., Carrel T.\(^1\)  

\(^1\) Department of Cardiovascular Surgery,  
University Hospital Bern, Switzerland  
\(^2\) Department of Anaesthesiology, University Hospital Bern, Switzerland  
Discussant: **Jan Belohlavek**
4. WHAT ARE THE LIMITATIONS OF MINIATURISED ADULT CARDIOPULMONARY BYPASS? OUR FINDINGS
Mclean L.A., Medlam W., Bell J., Bennett R.T., Bennett R.V., Wallhead A., Turner E.

Department of Clinical Perfusion Science, “Castle Hill Hospital”, Hull, East Yorkshire, UK

Discussant: Apostolos Deliopoulos

17:30 - 18:00 Lecture 1
Moderator: Francesco Formica

Does On-Pump Offer Better Coronary Grafts – is MiECC the best alternative for the future?
Adrian Bauer

Discussant: Valerio Mazzei

18:00 - 18:30 Break

18:30 - 19:30 Round Table 2
Optimizing MiECC strategy
Moderators: Erich Gygax, Yves Fromes

Optimization of venous drainage into the MiECC circuit
Mark Bennett

Venous return during MiECC. Should we look for better monitoring?
Filip De Somer

Is BMI a relevant aspect for using minimized circuit?
Bernhardt Flörchinger

Low anticoagulation protocol during biocompatible CPB
Christophe Baufreton
Thursday 9th June 2016 | Main Auditorium

19:30 - 20:00  **Keynote Lecture 2**  
Moderator: Kyriakos Anastasiadis

MiECC Quo vadis?  
Gianni Angelini

20:00 - 21:30  **Opening Ceremony - Presidential Address**

21:30 - 22:30  **Welcome Reception**

Thursday 9th June 2016 | Hall B

16:30 - 17:30  **Round Table 1**  
The evolution of MiECC: From type I to modular systems  
Moderator: Adrian Bauer, Mark Bennett

Conventional CPB versus MiECC - Current Scientific Evidence  
Oliver Liakopoulos

Conversion from Resting Heart to a closed-bag system  
James Ferguson

Modular MiECC: A rationale perspective  
Aschraf El-Essawi

Implementation Of Modular MiECC Systems (Type IV)  
Into Clinical Practice: Is This The Final Solution?  
Serdar Gunaydin
17:30 - 18:00  **Lecture 2**  
Moderator: Polychronis Antonitsis  
Extracorporeal Life Support: Inflammatory effects  
Christophe Baufreton

Discussant: Roberto Lorusso

18:00 - 18:30  **Break**

18:30 - 19:00  **Thematic Session**  
Moderator: Andreas Liebold  
The Antonius experience of 14 years using MiECC  
Frans Waanders  
Fifteen years perfusion experience with minimal invasive extracorporeal circulation: What lessons can we learn?  
Hansjörg Jenni

Discussant: Adrian Bauer

19:00 - 19:30  **Thematic Session**  
Moderator: Thomas Pühler  
MiECC for lung transplantation  
Cyril Serrick  
Mini-Bypass support in the first series of European DCD Heart Transplants  
Simon Colah

Discussant: Yasir Abu-Omar
Round Table 3
Is there Minimal-invasive Cardiac Surgery (MICS) without MiECC?
Moderators: Konstadinos Plestis, Michalis Argiriou

Minimally invasive cardiac surgery does not only mean keyhole surgery, but surgery with optimal support: considerations in perfusion technique.
Yuri Ganushchak

What is the less invasive technique for full myocardial revascularisation?
Farouk Oueida

Adjustments of an anticoagulation strategy along a minimally invasive approach
Yves Fromes

MiECC in the Cath Lab
Erich Gygax

Oral Presentations 2
Moderator: James Ferguson

5. AORTIC VALVE SURGERY AND CORONARY BYPASS SURGERY IN DIALYZED PATIENTS. MAY MiECC BE HELPFUL IN GETTING BETTER RESULTS?
Chiarella G., Benvenuto D., Ciano M., Losito G., Mazzei V.

Mater Dei Hospital, Department of Cardiac Surgery, Bari, Italy

Discussant: Filip De Somer
6. IMPACT OF MiECC IN OCTOGENARIANS UNDERGOING CABG. HAVE WE BEEN LOOKING IN THE WRONG DIRECTION?
El-Essawi A.¹, Breitenbach I.¹, Haupt B.², Morjan M.¹, Brouwer R.¹, Harringer W.¹

¹ Department of Thoracic and Cardiovascular Surgery, Klinikum Braunschweig, Germany
² Academy of Perfusion, German Heart Centre Berlin, Berlin, Germany

Discussant: Thomas Pühler

7. CORONARY ARTERY BYPASS GRAFTING ON BEATING HEART (OPCAB), ON CARDIOPULMONARY BYPASS (CPB) OR ON MINIMAL EXTRACORPOREAL CIRCULATION (MIECC)
Glendza D.¹, Dedieu F.¹, Crispin V.², Aunac S.², Guennaoui T.³, Van Ruyssevelt P.³

¹ Perfusion Service, Jolimont Hospital, Belgium;
² Department of Anesthesia, Jolimont Hospital, Belgium;
³ Department of Cardiovascular Surgery, Jolimont Hospital, Belgium

Discussant: Francesco Formica

8. MINIMAL INVASIVE EXTRACORPOREAL CIRCULATION (MIECC) IMPROVES QUALITY OF LIFE AFTER CORONARY ARTERY BYPASS GRAFTING
Antonitsis P., Kostarellou G., Argiriadou H., Kleontas A., Deliopoulos A., Grosomanidis V., Anastasiadis K.

Cardiothoracic Department, AHEPA University Hospital, Thessaloniki, Greece

Discussant: Chris Rogers
Friday 10th June 2016 | Main Auditorium

11:00 - 11:30  Break

11:30 - 12:30  EuroELSO – MiECTiS Joint Session
Moderators: Roberto Lorusso, Polychronis Antonitsis

Update on VA ECMO
Jan Belohlavek

Update on VV ECMO
Roberto Lorusso

ECLS for accidental hypothermia: an overview
Beat Walpoth

MiECC for resuscitation from accidental hypothermic cardiac arrest
Balthasar Eberle

12:30 - 13:00  Keynote Lecture 3
Moderator: Matthias Heringlake

Optimizing bypass for end organ preservation: Beyond miniCPB
John Murkin

13:00 - 14:00  Light Lunch

14:00 - 16:00  Break

16:00 - 16:30  Lecture 5
Moderator: Christos Papakonstantinou

Minimally invasive aortic surgery with emphasis on technical aspects, extracorporeal circulation management and cardioplegic techniques
Konstadinos Plestis

Discussant: Alaaddin Yilmaz
16:30 - 17:30  **Ask The Expert Session**  
Moderator: Gianni Angelini

Panel: Kyriakos Anastasiadis, Helena Argiriadou, Adrian Bauer, Thierry Carrel, Balthasar Eberle, Aschraf El-Essawi, James Ferguson, Marco Ranucci, Cyril Serrick

17:30 - 18:00  **MiECTiS General Assembly**

18:00 - 18:30  **Break**

18:30 - 19:30  **Multicentre Study Design Round Table**  
Moderators: Kyriakos Anastasiadis, Thierry Carrel, Gianni Angelini

Presenter: Chris Rogers

Discussants: Polychronis Antonitsis, Adrian Bauer, John Murkin, Marco Ranucci

19:30 - 20:00  **Keynote Lecture 4**  
Moderator: Gianni Angelini

Kidney function, hemodilution, and oxygen supply  
Marco Ranucci

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**Friday 10th June 2016 | Hall B**

09:00 - 10:00  **Round Table 4**  
**MiECC in congenital cardiac surgery**  
Moderators: Nikolaos Giannopoulos

Benefits of MiECC in congenital cardiac surgery  
Yves Durandy
Blood conservation strategies in pediatric cardiac surgery  
Serdar Gunaydin

Technologic advancements in pediatric mechanical circulatory support  
Panagiotis Zografos

Design of a MiECC circuit for pediatric cardiac surgery  
Alexander Kadner

10:00 - 11:00  
Round Table 5  
Microcirculation  
Moderators: Dimitrios Dougenis, Marco Ranucci

The role of hemodilution/blood viscosity in microcirculatory perfusion disturbances  
Crista Boer

The benefits of MiECC on human endothelium after CABG  
Bernhard Winkler

Humoral markers for early diagnosis of acute kidney injury after cardiac surgery - A solved problem?  
Matthias Heringlake

Microcirculation in MiECC perfusion  
Erich Gygax

11:00 - 11:30  
Break

11:30 - 12:00  
Lecture 3  
Moderator: Patrick Weerwind

Does pulsatility have a beneficial effect on cerebral perfusion in minimized circulation?  
Andreas Liebold

Discussant: John Murkin
12:00 - 12:30  Lecture 4  
Moderator: Stavroula Lakoumenda

MiECC and the Brain  
Helena Argiriadou

Discussant: Matthias Heringlake

13:00 - 14:00  Lunch Break

14:00 - 15:00  Industry-Sponsored Satellite Symposium (Terumo)  
MiECC vs. iPhone – A problem of diffusion!  
Moderator: Aschraf El-Essawi

MiECC for CABG: Perfusion physiological and technical aspects  
Hansjoerg Jenni

15:00 - 16:00  Industry-Sponsored Satellite Symposium (CSL Behring)  
Novel approaches in bleeding management in cardiovascular surgery  
Moderator: Stavroula Lakoumenta

Bleeding management and MiECC  
Helena Argiriadou

Hemostatic therapy without plasma transfusion in cardiac surgery  
Marco Ranucci

16:00 - 16:30  Lecture 6  
Moderator: Balthasar Eberle

Going against conventional wisdom: Lessons learned with MiECC  
Cyril Serrick

Discussant: Filip De Somer
09:00 - 09:30  **EBCP Lecture**  
Moderator: Adrian Bauer  
Comparison of risks between conventional cardiopulmonary bypass and MiECC  
**Frank Merkle**  
Discussant: James Ferguson

09:30 - 10:30  **Oral Presentations 3**  
Moderator: Marco Ranucci  

9. MINIMAL INVASIVE DETERMINATIONS OF OXYGEN DELIVERY (DO2) AND CONSUMPTION (VO2) IN CARDIAC SURGERY  
Boer C., Stolze A., Vonk A., Burtman D.  
Department of Anesthesiology, VU University Medical Center, Amsterdam, The Netherlands  
Discussant: Frank Merkle

10. CONTINUOUS MONITORING OF PERFUSION INDEX AND PULSE OXIMETRY DURING WARM PULSATILE PERFUSION IN PEDIATRICS.  
Durandy Y.  
Department of Intensive Care and Perfusion, Centre Chirurgical Marie Lannelongue, Le Plessis, Robinson, France  
Discussant: Polychronis Antonitsis
11. CEREBRAL MICROEMBOLIZATION IN PATIENTS UNDERGOING SURGICAL AORTIC VALVE REPLACEMENT ON MINIMAL INVASIVE OR CONVENTIONAL EXTRACORPOREAL CIRCULATION


Department of Anesthesiology and Pain Therapy, Department of Cardiovascular Surgery, Swiss Cardiovascular Center, Inselspital, Bern University Hospital, University of Bern, Switzerland

Discussant: Aschraf El-Essawi

12. ASSESSMENT OF AUTOMATED SSEP FOR DETECTION OF INTRAOPERATIVE POSITIONAL NEUROPRAXIA IN CARDIAC SURGERY

Murkin J.M., Turkstra T., Mayer R.

Anesthesiology and Perioperative Medicine, LHSC, Schulich School of Medicine, UWO, London, Ontario, Canada

Discussant: Matthias Heringlake

10:30 - 11:00 Lecture 8

Moderator: John Murkin

The quest for “physiologic” perfusion

Polychronis Antonitsis

Discussant: Marco Ranucci

11:00 - 11:30 Break
11:30 - 12:00  **Lecture 9**  
Moderator: Gianni Angelini  
Goal directed perfusion- the Berlin experience  
Christoph Starck  
Discussant: Alaaddin Yilmaz

12:00 - 12:30  **Lecture 10**  
Moderator: Christos Papakonstantinou  
Adverse effects of cardiopulmonary bypass  
Stephen Westaby  
Discussant: Frank Merkle

12:30 - 13:00  **Keynote Lecture 5**  
Moderator: Kyriakos Anastasiadis  
MIECT - Team Training and Implementation  
Thierry Carrel

13:00  End of Scientific Part

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09:00 - 10:00  **Round Table 6**  
MIECC in Valve Surgery  
Moderator: Harald Hausmann, Mazin Sarsam  
MiECC and valve surgery: an experts opinion  
Alaaddin Yilmaz  
MiECC in Aortic Surgery - the Bari experience  
Valerio Mazzei
MiECC in MIC AVR  
**Christoph Starck**

MiECC from an economic perspective  
**Nikolaos Maniadakis**

**10:00 - 11:00 Oral Presentations 4**  
Moderators: **Konstadinos Plestis**

13. **MiECC IN MINIMALLY INVASIVE AORTIC VALVE SURGERY**  
Starinieri P., Robic B., Wen W., Yilmaz A.  
Jessa Hospital, Hasselt, Belgium  
Discussant: **Paschalis Tossios**

14. **MiECC IN ENDOSCOPIC MITRAL VALVE SURGERY**  
Starinieri P., Robic B., Wen W., Yilmaz A.  
Jessa Hospital, Hasselt, Belgium  
Discussant: **Oliver Liakopoulos**

15. **AIR HANDLING CAPABILITY OF A CONVENTIONAL CARDIOPULMONARY BYPASS (CCPB) VS MINIMIZED EXTRACORPOREAL CIRCUIT (MiECC) USING THE FUSION OXYGENATOR**  
Spriel A., Nguyen-Vu M., Serrick C.  
University Health Network (Toronto General Hospital), Toronto, Canada.  
Discussant: **Adrian Bauer**
16. DOES MIECC AND CELL SALVAGE REDUCE INFLAMMATION AFTER CABG SURGERY?

Bauer A.¹, Hausmann H.², Eberle T.³, Troitzsch D.⁴, Johansen P.⁵, Nygaard H.⁵, Hasenkam J. M.⁵

¹ Department of Cardiovascular Perfusion, Coswig, Germany;
² Department of Cardiothoracic and Vascular Surgery, Coswig, Germany;
³ Department of Anesthesia, Coswig, Germany;
⁴ Zoll Lifebridge;
⁵ Aarhus University, Denmark

Discussant: Mark Bennett

11:00 - 11:30 Break

11:30 - 12:30 Round Table 7

End-organ protection
Moderators: Polychronis Antonitsis, Yasir Abu-Omar

The role of MiECC in modulating the systemic inflammatory response syndrome
Francesco Formica

Urinary biomarkers and renal function in MiECC compared to CECC and OPCAB
Andreas Liebold

Remote Ischaemic preconditioning and cardiopulmonary bypass
Prakash Punjabi

Extracorporeal circulation management and cardioplegic techniques
Thomas Pühler
Terumo Symposium at
MiECT 2016
Friday 10 June
14:00 – 15:00 · Hall B · Conference Suite II · MC3

Program

MiECC vs. iPhone – A problem of diffusion!
Dr. med. Aschraf El-Essawi, Germany
Chairman

MiECC for CABG:
Perfusion physiological and technical aspects
Hansjoerg Jenni, Switzerland

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Novel approaches in bleeding management in cardiovascular surgery

Chair:
Stavroula Lakoumenta
Head, Anesthesiology Department, Onassis Cardiac Surgery Centre, Athens

Speakers:
Elena Argyriadou
Assist. Professor Anesthesiology, AHEPA Hospital, Aristoteleon University Thessaloniki

Marco Ranucci
Professor, Head of the Department of Anesthesia and Intensive Care, IRCCS Policlinico San Donato, Milan

Bleeding management and MIECC
Elena Argyriadou

Hemostatic therapy without plasma transfusion in cardiac surgery
Marco Ranucci
ORAL PRESENTATIONS 1

Moderator: Paschalis Tossios

1. SAFETY IN THE EVOLVING MINIATURISED EXTRACORPOREAL SYSTEM
Bell J., McLean L., Medlam W., Bennett R.T., Bennett R.V., Turner E., Wallhead A.

Department of Clinical Perfusion Science, “Castle Hill Hospital”, Hull, East Yorkshire, UK

Background: As all cardiopulmonary pumps and systems have evolved the safety systems in place have increased. None more so than in the miniaturised extracorporeal system. With standard bypass the introduction of level sensors, bubble sensors and pressure sensors have over time become a minimum standard and vital to each perfusion. The introduction of the miniaturised extracorporeal system was seen by many perfusionists as an unnecessary danger to put the patients and perfusionists in to. This assumption cannot be based on full knowledge of the safety systems in place within the perfusion mini system circuit and with the electronic displays and devices that are part of the heart lung machine hardware. Work must be done to dispel these misconceptions.

Methods: In our mini system circuit which we have custom built, we include an air purge system which is then activated by a bubble sensor which will then activate an electric clamp isolating the air in the system. A separate bubble trap accepts vent blood before entering the main system. As the use of the mini system has evolved to be used on more complex cases we have necessitated the addition of low pressure suction to be added safely to the system.

Conclusions: Introduction of the mini system has increased the safety in perfusion as well as great clinical benefits. Advancing knowledge, experience and technologies are safety’s future.

Discussant: Bernhardt Flörchinger
2. THE CHALLENGE OF CLOSED CIRCUIT SYSTEM FOR ALL CPB CASES
Yamamoto Y.

Anjo Kosei Hospital, Anjo City, Japan

Background: A number of centres in Japan has considered introduction of a closed MiECC system in open heart surgery aiming towards simplification and easy setup of the circuit, as well as towards improving safety and clinical outcome. However, concerns have been raised by clinical perfusionists regarding air trapping in the venous line and volume management in case of massive bleeding. It is, therefore, currently used mainly for coronary procedures.

Methods: Our centre has developed since August 2010 a closed system that is being used for all adult cardiac cases since October 2011. The characteristics of our circuit include: a movable (level adjustable) level sensor, semi automated CPB volume control using closed soft-bag and a reservoir bladder in the venous line for visualization of the venous drainage condition.

Results: The major characteristics of our circuit are explained in detail together with the rationale which led us develop the current system.

Conclusions: There is a strong potential towards development of closed systems with enhanced safety features that could be utilized in all adult cardiac surgical procedures.

Discussant: Patrick Weerwind
3. THE USE OF A MINIMAL INVASIVE EXTRACORPOREAL CIRCUIT FOR REWARMING PATIENTS FROM ACCIDENTAL HYPOTHERMIA: A PROSPECTIVE STUDY

Jenni H.¹, Winkler B.¹, Erdös G.², Eberle B.², Carrel T.¹

¹ Department of Cardiovascular Surgery, University Hospital Bern, Switzerland
² Department of Anaesthesiology, University Hospital Bern, Switzerland

Background: Rewarming from accidental hypothermia by standard extracorporeal circulation or extracorporeal membrane oxygenation (ECMO) is an established technique. However, there is still no consensus about the best perfusion strategy as both systems have shortcomings especially in trauma patients. For this purpose, our institution uses a minimal invasive extracorporeal circuit (MiECC).

Methods: We analyzed the results obtained in 7 patients (5 males; 2 females) with a median age of 35.4 years (range 14-59 years) who underwent rewarming between 2010 – 2016. All patients were perfused with the Bern concept of MiECC that consists of an oxygenator with integrated arterial filter, a volume line and an optoelectrical suction device. 5 patients were victims from glacier accident whereas 2 patients were drowning victims without trauma.

Results: 3 patients were weaned from MiECC whereas 3 patients died in the operating room due to uncorrectable acidosis and/or hyperkaliemia. One patient was switched to ECMO and discharged to the ICU. One patient received abdominal surgery during rewarming. The minimal oesophageal temperature before rewarming was 25.1°C (±3) and before weaning of MiECC 36.0°C (±1). Extracorporeal rewarming was completed after 222 min (±112). The average volume substitution during extracorporeal circulation was 5466 ml (±2643)

Conclusions: The Bern concept of MiECC-system is safe and efficient for rewarming patients from accidental hypothermia. The integrated additional volume line is an important feature to maintain constant intravascular volume status during the progressive hypovolemia, especially in trauma patients. The integrated suction device permits an autologous shed blood retransfusion into the system during perfusion.

Discussant: Jan Balohlavek
4. WHAT ARE THE LIMITATIONS OF MINIATURISED ADULT CARDIOPULMONARY BYPASS? OUR FINDINGS
Mclean L.A., Medlam W., Bell J., Bennett R.T., Bennett R.V., Wallhead A., Turner E.
Department of Clinical Perfusion Science, “Castle Hill Hospital”, Hull, East Yorkshire, UK

Background: Miniaturised cardiopulmonary bypass has mainly been utilised for coronary artery bypass surgery, aortic valve surgery and a mixture of the two. Numerous papers have been published on its use for other forms of cardiac surgery, but these are relatively limited. We have developed a mini system that incorporates the use of a suction device allowing us to potentially use mini bypass for all cardiac cases.

Methods: We have designed a mini system with the use of a Medtronic Fusion oxygenator, bubble traps with automated air removal pumps, passive venting and a suction system with the use of roller pumps, bubble trap and safety level sensor. All of these disposables are attached to either a Stockert S3 or S5. In the event of massive uncontrolled bleeding we can quickly convert to standard bypass by adding a hard shell reservoir.

Results: With this mini system we have safely performed redo CABG, 3rd time redo aortic valve replacement, aortic root replacement, mitral valve replacement, redo mitral valve replacement, re attachment of innominate vein with hypothermic arrest, left atrial myxomas and tricuspid valve replacement.

Conclusions: With careful planning, an in-depth knowledge of mini bypass and an excellent team approach, it is possible to use mini bypass for all adult cardiac procedures. However, there is a need to increase the numbers treated and analyse the data to see if the results are more favourable when compared with conventional methods.

Discussant: Apostolos Deliopoulos
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ORAL PRESENTATIONS 2

Moderator: James Ferguson

5. AORTIC VALVE SURGERY AND CORONARY BYPASS SURGERY IN DIALYZED PATIENTS. MAY MiECC BE HELPFUL IN GETTING BETTER RESULTS?
Chiarella G., Benvenuto D., Ciano M., Losito G., Mazzei V.

Mater Dei Hospital, Department of Cardiac Surgery, Bari, Italy

Background: We applied in our institution MiECC in 210 dialyzed pts operated for aortic valve replacement with or without ascending aorta substitution and with or without coronary artery by-pass grafting or coronary artery bypass grafting alone. We used MiECC in attempt to achieve better results in these critically ill patients.

Methods: 210 dialyzed patients were operated with MiECC from January 2009 and December 2015 in our institution for aortic valve surgery (65 pts), aortic valve plus coronary artery bypass surgery (38 pts), aortic valve surgery plus ascending aorta aneurysm (6 pts), aortic valve surgery plus ascending aorta aneurysm plus coronary artery bypass grafting (4 pts), ascending aorta substitution (10 pts), ascending aorta substitution plus coronary artery bypass surgery (6 pts) and coronary artery bypass surgery (81 pts). 132 patients were males and 78 females. Median age was 62 + 15.5. Median sternotomy was used in 167 cases and upper ministernotomy in 43. In these latter patients was used EndoVent in 18 pts (mainly in the last two years). The duration of dialysis ranged from one month to 25 years before surgery with an average of 74 months. All patients were dialyzed the day before surgery, preferably in the afternoon. First session of postoperative dialysis was performed the day after operation (8 o’clock in the morning) and soon after the patient was extubated. There was no need of emergency dialysis in the first night post-op. The circuit of MiECC used was modified by inserting the hemofilter (Fig.1). Retro-priming was used in all patients in order to reduce the value of priming near zero. The average hematocrit at the entry of MiECC was 36,5 ± 6,3%.
**Results:** The mortality rate at 30 days was 1.9%. 2 patients died for ventricular arrhythmias in day postoperative 6th and 9th, 1 patient died for coma and subsequent MOF and 1 for broncho-pneumonia. 3 patients who died were on dialysis since more than 20 yrs. In all patients the average hematocrit post MiECC was 35.6 ± 4.5%. In 38 cases the value of hematocrit post MiECC was even higher than pre-MiECC. 2 patients were submitted to surgical revision for bleeding. There were no problems in patients with ministernotomy and EndoVent. Follow-up was complete at 98% (202/206). The follow-up period ranged from 3 months to 6 years. During follow-up 32 pts (15.53%) died; mainly for congestive heart failure and infective endocarditis.

**Conclusions:** MiECC demonstrated incremental benefit in the treatment of challenging patients such as dialyzed patients. The surgical results are excellent and better than standard extracorporeal circulation. The longer the period of preoperative dialysis, the worse the surgical result. Ministernotomy and EndoVent are safe techniques that don’t affect mortality. The survival rate in follow-up period remains lower than non-dialyzed surgical population.

![Figure 1. Modified MiECC circuit for aortic valve surgery in dialyzed patients](image)

**Discussant:** Filip De Somer
6. **IMPACT OF MiECC IN OCTOGENARIANS UNDERGOING CABG. HAVE WE BEEN LOOKING IN THE WRONG DIRECTION?**

El-Essawi A.\(^1\), Breitenbach I.\(^1\), Haupt B.\(^2\), Morjan M.\(^1\), Brouwer R.\(^1\), Harringer W.\(^1\)

\(^1\)Department of Thoracic and Cardiovascular Surgery, Klinikum Braunschweig, Germany
\(^2\)Academy of Perfusion, German Heart Centre Berlin, Berlin, Germany

**Background:** The minimal invasive conception of MiECC aims at the preservation of physiologic reserves, the impact of which is expected to be most evident in patients in whom these are depleted. In this context Octogenarians present a subpopulation of specific interest.

**Methods:** On the basis of the CPB utilized we performed a retrospective comparison between all Octogenarians (n= 324) who received an on pump CABG in our institution from 2005 till 2010.

**Results:** A MiECC was utilized in 52% of patients. Apart from a significant older age (83 ± 2 vs. 82 ± 2 years; p=<0.01) and a higher incidence of patients with moderately reduced left ventricular function (43 vs. 33%; p=<0.05) in the MiECC group, preoperative and operative variables showed no significant differences between both populations. The overall transfusion of packed RBC (2.3 ± 2.3 vs. 3.4 ± 3.2 units/pt.; p=<0.001), the rate of low cardiac output (0% vs. 5% ; p=<0.01), need for intra-aortic balloon pump support (0% vs. 3%; p=<0.05) and respiratory insufficiency needing re-intubation (0.6% vs. 4.5%; p=<0.05) were all in favor of the MiECC patients. The 30 days postoperative mortality was also in favor of the MiECC group (3.5% vs. 9,0%; p=<0.05).

**Conclusions:** The MiECC concept has shown its benefits regarding both morbidity and mortality in this high-risk patient group. We believe that this beneficial effect finds its reason in a better preservation of physiologic reserves that are essential for a positive outcome in this subpopulation of patients.

Discussant: **Thomas Pühler**
CORONARY ARTERY BYPASS GRAFTING ON BEATING HEART (OPCAB), ON CARDIOPULMONARY BYPASS (CPB) OR ON MINIMAL EXTRACORPOREAL CIRCULATION (MIECC)

Glendza D.¹, Dedieu F.¹, Crispin V.², Aunac S.², Guennaoui T.³, Van Ruyssevelt P.³

¹ Perfusion Service, Jolimont Hospital, Belgium
² Department of Anesthesia, Jolimont Hospital, Belgium
³ Department of Cardiovascular Surgery, Jolimont Hospital, Belgium

Background: The aim of this study was to compare three methods of coronary bypass grafting, using a beating heart (OPCAB), or a conventional cardiopulmonary bypass (cCPB) or a mini-extracorporeal circulation (MECC) technique. Simple parameters routinely used in cardiac surgery were recorded and analysed. Substantial advantages of MECC expected to be highlighted.

Methods: At our institution, from September 2012 and June 2014, sixty patients divided in three cohorts (n=20) underwent myocardial revascularization on beating or arrested heart. A prospective single blind study was carried out. We mainly analysed simple biological and clinical parameters (e.g. hemodilution, transfusion rate, hemoglobin, hematocrit, blood platelets, lactates, urea, creatinin levels, intensive care stay, hospital stay).

Results: At 24 hours postoperatively, the MECC group showed a higher hemoglobin level (11.17±1.26 g/dl vs 9.85±1.53 g/dl, p=<0.005 on cCPB and 10.13±0.56, p=<0.026 on OPCAB). Red blood cells transfusion rate was higher in the cCPB group (10 patients (50%), p=<0.041 vs 3 (15%) in the MECC and OPCAB groups. Patients in the cCPB group had a longer mechanical assisted ventilation time (9 patients (45%), p=<0.031, while only 2 patients (10%) in MECC group and 4 patients (20%), p=<0.088 in OPCAB group). Blood loss at 48 hours postoperatively were respectively 844±440 ml in MECC vs 845±415 ml in cCPB, p=<0.988 and 1222±639 ml, p=<0.035 in OPCAB group.
Conclusions: Despite the limitation of this study (small cohorts), the results showed that surgical multivessel revascularization can be performed with a mini-extracorporeal circulation avoiding hemodynamic instability, and with reduced transfusion needs. Compared to the other cohorts, patients of the MECC group were extubated earlier but without any reduction of length of hospital stay. However, this interesting observation and few encountered problems lead us to go further on our survey. Larger studies are warranted for more significant results.

Discussant: Franscesco Formica
8. MINIMAL INVASIVE EXTRACORPOREAL CIRCULATION (MIECC) IMPROVES QUALITY OF LIFE AFTER CORONARY ARTERY BYPASS GRAFTING
Antonitsis P., Kostarellou G., Argiriadou H., Kleontas A., Deliopoulos A., Grosomanidis V., Anastasiadis K.
Cardiothoracic Department, AHEPA University Hospital, Thessaloniki, Greece

Background: The effect on postoperative health related quality of life (HRQoL) after CABG surgery with conventional cardiopulmonary bypass (cCPB) and off-pump surgery has been investigated extensively; however, there are no studies focusing on HRQoL after surgery with minimal invasive extracorporeal circulation (MiECC). Therefore, we sought to prospectively investigate the effect of MiECC on postoperative HRQoL as compared to cCPB in patients undergoing CABG over a short-term (3-month) follow-up period.

Methods: Sixty patients scheduled for elective CABG surgery were randomly assigned into two groups; those who had surgery on MiECC system (n=30) and those who underwent CABG using cCPB (n=30). Quality of life assessment was performed preoperatively (baseline-T0), at first postoperative month (T1) and at 3-month follow-up (T3). The RAND SF-36 scale was used for data collection, which included both sociodemographic and clinical characteristics of patients. The primary outcome of the study was quantitative measurement of postoperative HRQoL at 3-month follow-up.

Results: Both groups were balanced in terms of demographic, socioeconomic and operative characteristics. At 3-month follow-up mean SF-36 component and summary scores in each group were higher in absolute values than the respective mean baseline scores, apart from role physical score in patients operated with cCPB. Patients operated on MiECC showed uniformly significantly higher values in all individual and summary domains, while patients operated on cCPB showed significant improvement in 6/8 individual domains. Patients operated on MiECC showed a more pronounced increase in SF-36 individual domains scores from the first to the third postoperative month as compared to cCPB, which was statistically significant regarding physical functioning ($p = 0.001$), role physical ($p < 0.001$), vitality ($p = 0.01$) and role emotional ($p = 0.004$). This resulted in a significant improvement in physical ($p = 0.002$) and mental ($p = 0.01$) summary scores.
Conclusions: The current study proves that MiECC significantly improves HRQoL after coronary surgery compared with cCPB. This finding, combined with results from large-scale studies showing superior clinical outcomes from its use, enhances the role of MiECC as a dominant technique in coronary revascularization surgery.

Discussant: Barney Reeves
Cut through complexity: simplified procedures, better outcomes.

Shorter ICU & Hospital Stay
In a cost-constrained environment, both length of ICU and hospital stay are critical factors that impact healthcare budget and resources; accordingly, there is an objective need for solutions that permit faster patient recovery and lower the costs of healthcare.

To overcome such limitations, we have created innovative surgical devices and perfusion systems that allow for faster patient recovery, thus lowering overall costs.
ORAL PRESENTATIONS 3

Moderator: Marco Ranucci

9. MINIMAL INVASIVE DETERMINATIONS OF OXYGEN DELIVERY (DO2) AND CONSUMPTION (VO2) IN CARDIAC SURGERY
Boer C., Stolze A., Vonk A., Burtman D.

Department of Anesthesiology,
VU University Medical Center, Amsterdam,
The Netherlands

Background: Oxygen delivery (DO2) and consumption (VO2) measurements during cardiac surgery are frequently limited to patients with a pulmonary artery catheter (PAC). The aim of this study was to evaluate an alternative method for DO2 and VO2 measurements using a minimally invasive approach.

Methods: Parallel measurements of invasive and minimally invasive parameters for the calculation of DO2 and VO2 were performed after anesthesia induction and PAC placement in adults undergoing cardiac surgery. The invasive approach included arterial and PAC-derived blood sampling and cardiac output (CO) measurements. The minimally invasive approach included pulse oximetry, point-of-care hemoglobin, non-invasive, Nexfin-based CO and central venous line-derived blood sampling. Level of agreement was determined using Bland-Altman analysis.

Results: DO2 and VO2 levels were determined in 18 male and 4 female patients aging 72 ± 8 years. The mean DO2 and VO2 levels assessed by the invasive approach were 641.5 ± 191.6 ml/min and 148.8 ± 41.2 ml/min, respectively. The bias for DO2 was 26.2 ± 160.3 ml/min with levels of agreement (LOA) ranging from -134.1 to 186.6 ml/min and a precision error of 25.0%. The bias for VO2 was 14.0 ± 52.6 ml/min with LOAs ranging from -38.6 to 66.5 ml/min and a precision error of 35.3%.
Conclusions: Minimally invasive determinations of DO2 levels showed a good agreement with invasive DO2 levels. The agreement between minimally invasive and invasive VO2 measurements was however poor. Further elaboration of the value of non-invasive DO2 measurements may extend its value to patients admitted to the normal ward.

Discussant: Frank Merkle
CONTINUOUS MONITORING OF PERFUSION INDEX AND PULSE OXIMETRY DURING WARM PULSATILE PERFUSION IN PEDIATRICS.
Durandy Y.

Department of Intensive Care and Perfusion, Centre Chirurgical Marie Lannelongue, Le Plessis, Robinson, France

**Background:** Oxygenation and quality of perfusion are major concern during cardiopulmonary bypass, but there is no common tool to monitor adequacy of distal perfusion. Hyperoxia should be avoided, in cyanotic patients for whom controlled reperfusion is associated with reoxygenation injury. Perfusion index, displayed as a numerical value on oximeters, is a relative assessment of the pulse strength. There is evidence that it can be used to monitor peripheral perfusion. In patients, with normal vascular bed, distal perfusion index coupled with pulse oximetry are likely to reflect quality of end organ perfusion and oxygenation.

**Methods:** We continuously monitored unilateral distal (great toe) to assess perfusion of abdominal organs.

**Results:** The signal obtain during warm pulsatile perfusion was satisfactory and there was a close correlation between pulse frequency and RPM of the arterial pump.

Pulse oximetry, allows to set the smallest FIO2 needed in preoperative deeply cyanotic patients. We are working on bilateral ear lobe sensor pulse oximetry, to assess brain perfusion and oxygenation, and equivalence of right and left ear signal during aortic arch surgery. In neonates, the quality of flow in the external carotid artery could be a surrogate for the quality of flow in the brain vessels. As a consequence, pulse oximetry could be a valid alternative to NIRS.

**Conclusions:** Normothermic pulsatile flow allows a simple and cost effective tool for continuous monitoring of pulse oximetry and perfusion index during pediatric cardiac surgery.

**Discussant:** Erich Gygax
11. CEREBRAL MICROEMBOLIZATION IN PATIENTS UNDERGOING SURGICAL AORTIC VALVE REPLACEMENT ON MINIMAL INVASIVE OR CONVENTIONAL EXTRACORPOREAL CIRCULATION

Department of Anesthesiology and Pain Therapy, Department of Cardiovascular Surgery, Swiss Cardiovascular Center, Inselspital, Bern University Hospital, University of Bern, Switzerland

Background: Evidence about the incidence of cerebral microembolization (CME) on minimal invasive extracorporeal circulation (MiECC) when compared to conventional ECC (cCPB), is not conclusive. Theoretically, less CME may be expected with MiECC, since numerous factors promoting CME are avoided.

Methods: The primary outcome was the procedural phase-related rate of high-intensity transient signals (HITS) on transcranial Doppler ultrasound. HITS rate was used as a surrogate of CME in defined procedural phases during surgical aortic valve replacement (SAVR) using MiECC or cCPB with (+F) or without (-F) an oxygenator with integrated arterial filter.

Results: Forty-eight patients were randomized in a 1:1 ratio to MiECC or cCPB. Due to intraprocedural Doppler signal loss (n=3), 45 patients were included in final analysis. MiECC perfusion regimen showed a significantly increased HITS rate compared to cCPB (by a factor of 1.75; 95% CI: 1.19 to 2.56). This was due to different HITS rates in procedural phases from aortic cross-clamping until declamping [phase 4 (p=0.01), and from aortic declamping until stop of extracorporeal perfusion [phase 5] (p=0.05). Post-hoc analysis revealed that MiECC-F generated a higher HITS rate than cCPB+F (p=0.005), cCPB-F (p=0.05) in phase 4, and cCPB-F (p=0.03) in phase 5, respectively.

Conclusions: In open-heart surgery, MiECC is not superior to cCPB with regard to gaseous cerebral microembolism. When using MiECC for SAVR, the use of oxygenators with integrated arterial line filter appears highly advisable. Only with this precaution, MiECC confers a cerebral microembolic load comparable to cCPB during this type of open heart surgery.

Discussant: Aschraf El-Essawi
12. ASSESSMENT OF AUTOMATED SSEP FOR DETECTION OF INTRAOPERATIVE POSITIONAL NEUROPRAXIA IN CARDIAC SURGERY
Murkin J.M., Turkstra T., Mayer R.

Anesthesiology and Perioperative Medicine, LHSC, Schulich School of Medicine, UWO, London, Ontario, Canada

Background: Clinically apparent upper limb neuropraxia has been estimated to occur in up to 37.5% of cardiac surgical patients and is variably influenced by patient comorbidities, type and duration of retractor usage and patient positioning. Peripheral nerve function can be monitored using somatosensory evoked potentials (SSEP). Our initial experiences with a non-invasive, miniaturized and automated SSEP device (EPAD, SafeOp-Surgical, Hunt Valley, MD) are described.

Methods: Seventeen patients undergoing cardiac surgery with median sternotomy and cardiopulmonary bypass were enrolled following review board approval and written patient consent. Adhesive stimulating electrodes were placed on bilateral wrist in median and ulnar nerve distribution with adhesive receiving electrode placed on posterior neck in C5 position and adhesive ground electrode placed on forehead. Patient’s arms were padded and placed neutral (thumbs vertical) at sides. The SSEP screen displays a time-based array of current SSEP data for each nerve, with ‘alert’ threshold trigger at > 10% increase from baseline latency or 50% decrease in signal amplitude.

Results: Of 13 surviving patients with complete SSEP data, ‘alert’ was detected and persisted through end of surgery in 2 patients both of whom complained of numbness and/or tingling in ipsilateral hand. Electromyography studies were performed in these patients one of which demonstrated mild left ulnar neuropathy and other showed bilateral ulnar neuropathies worse on symptomatic left side.

Conclusions: This pilot study shows efficacy and ease of use of a non-invasive automated SSEP device and demonstrates intraoperative neuropraxia is associated with a 15% incidence of clinical symptomatology.

Discussant: Matthias Heringlake
ORAL PRESENTATIONS 4

Moderator: Konstadinos Plestis

13. MIECC IN MINIMALLY INVASIVE AORTIC VALVE SURGERY
Starinieri P., Robic B., Wen W., Yilmaz A.
Jessa Hospital, Hasselt, Belgium

Background: The number of cardiac surgical procedures increases worldwide with improvements focused mainly on reducing surgical trauma. The use of cardiopulmonary bypass still remains the gold standard performing cardiac surgery, but is associated with adverse effects (e.g. haemodilution and blood-air interface). Minimally invasive extracorporeal circulation (MiECC) has been developed to integrate all advantages in CPB technology in one single circuit. The combination of surgical and perfusion attempts in minimal invasive approach could lead to better outcomes in an ageing and more comorbid population.

Methods: Prospective collected retrospective data from three hundred patients undergoing isolated aortic valve replacement with use of MiECC (n=250) or conventional system (cCPB) (n=50). Patients were operated by minimal access upper J-sternotomy approach with groin cannulation.

Results: No significant differences in mortality or hospital stay (MiECC: 9.5±7.9 days vs cCPB: 10.7±6.1 days, P = .45) were seen. No difference in inflammatory response as judged from leucocyte counts (MiECC: 7.9±5.5 103/μL vs cCPB: 7.8±4.9 103/μL, P = .30) were shown. Intraoperative blood product requirements were significantly lower in the MiECC group than in the cCPB group (0.3±0.8 units vs 0.9±1.2 units, P= .004). No significant differences in postoperative blood loss (MiECC: 202.7±139.4 mL vs cCPB: 189.7±156.1 mL, P = .28).

Conclusions: Based on the feasibility and safety aspects of our system, MiECC provides clinical results equivalent to cCPB without compromising operative morbidity or mortality resulting in significantly less transfusion requirements.

Discussant: Paschalis Tossios
14. **MiECC IN ENDOSCOPIC MITRAL VALVE SURGERY**
Starinieri P., Robic B., Wen W., Yilmaz A.

Jessa Hospital, Hasselt, Belgium

**Background:** Improvements in cardiac surgery are mainly focused on minimizing the trauma in surgical access. Also in perfusion technology, many advances are seen in modern circuits. Safety features similar as in conventional systems will create an enlargement of surgical procedures that can be performed with (modular) MiECC leading to the first endoscopic mitral valve repair with the use of modular MiECC (Inspire mini JESSA). This 360° minimal invasive approach should mean better outcomes and patient satisfaction.

**Methods:** A 78-year-old male Jehovah’s Witness in cardiogenic shock underwent mitral valve repair and coronary artery bypass grafting through minimal invasive approach. Direct closure of PFO and mitral valve annuloplasty, due to P3 prolapse, was completed through 3 small incisions. Fully arterial revascularization (three distal anastomoses) was performed through left thoracotomy after endoscopic harvesting both internal thoracic arteries.

**Results:** After the operation, hemoglobin dropped 1.0 g/dl since arriving in theatre. No complications occurred perioperative. After 6 days, the patient was discharged from the hospital in good condition with resumption of normal daily activities.

**Conclusions:** Modular MiECC provides a safe and feasible technique for real minimal invasive cardiac surgery in more complex surgeries.

**Discussant:** Oliver Liakopoulos
15. AIR HANDLING CAPABILITY OF A CONVENTIONAL CARDIOPULMONARY BYPASS (cCPB) VS MINIMIZED EXTRACORPOREAL CIRCUIT (MiECC) USING THE FUSION OXYGENATOR
Spriel A., Nguyen-Vu M., Serrick C.
University Health Network (Toronto General Hospital), Toronto, Canada

**Background:** One of the main concerns for centers considering mini-bypass is the fear that MiECC will not handle the common occurrence of venous air entrainment as well as cCPB resulting in air emboli. The purpose of this study was to compare the air handling of both circuits.

**Methods:** An open cCPB circuit was compared to a MiECC system utilizing the Medtronic Fusion oxygenator and centrifugal pump. Both circuits were tested for micro-air emboli in a controlled setting mimicking normal clinical conditions (blood flow 5 LPM, HCT 26%, sweep 2 LPM @ FiO₂ 1.0, arterial temp 36°C). A constant flow of room air was delivered down the venous line at clinically relevant (400 and 1200 ml/min) and extreme rates (5000 ml/min). Air emboli counts were measured over 5 minutes pre-oxygenator and post-oxygenator using the Spectrum monitoring system with an emboli detection level of 1.3%.

**Results:** The average total air emboli counts are summarized below.

<table>
<thead>
<tr>
<th>Venous Air Injection Rate (ml/ min)</th>
<th>400</th>
<th>1200</th>
<th>5000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE-OXY</td>
<td>POST-OXY</td>
<td>PRE-OXY</td>
</tr>
<tr>
<td>cCPB</td>
<td>1</td>
<td>ND</td>
<td>652</td>
</tr>
<tr>
<td>MiECC</td>
<td>12</td>
<td>ND</td>
<td>351</td>
</tr>
</tbody>
</table>

**Conclusions:** Even though both cCPB and MiECC have different air evacuation mechanisms, they are both efficient at minimizing arterial air emboli during CPB at clinically relevant venous air entraining rates.

**Discussant:** Adrian Bauer
16. DOES MIECC AND CELL SALVAGE REDUCE INFLAMMATION AFTER CABG SURGERY?

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3 Department of Anesthesia, Coswig, Germany
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5 Aarhus University, Denmark

Background: Cardiopulmonary Bypass (CPB) triggers a systemic inflammatory response syndrome (SIRS) largely caused by the contact of blood with foreign surfaces and by recirculation of activated shed mediastinal blood, a main cause of blood cell activation and cytokine release. Minimal invasive Extracorporeal Circulation (MiECC) comprises a completely closed (no blood-air contact) circuit, coated surfaces (biocompatible treatment) and the separation of suction blood. All three aspects have the potential to reduce this activation. This study investigates the impact of washed or unwashed shed blood on initiating of inflammatory processes. Study hypothesis is: The separation and cell salvage of shed blood during MiECC procedures reduces inflammatory response compared to MiECC with direct retransfusion. Mean difference for tumor necrosis factor alpha (TNF-α) as marker for SIRS is reduced by at least 7.5 ng/l in the cell savage group 10 minutes after CPB.

Methods: All patients receive MiECC. All aspects of the surgical procedures and CPB remain completely identical. Patients are divided into two groups, a direct re-transfusion (DRT; control group) receiving untreated blood and a cell salvage (CS; study group) receiving washed blood. Based on a recent study (TNF-α after conclusion of CPB: 17.8±15.4 vs. 10.1±5.6, p=0.002) and the design of a two-tailed t-test with alpha = 5% and a common standard deviation of 11 ng/ dl 70 patients will be required to achieve a power of 80%.
Results: Seventy patients were investigated. No differences in the preoperative characteristics of the patients were apparent except patients suffering from diabetes were more present in the DRT group 6 (20%) vs. 17 (47%), p=0.037 in the CS group. There was a significant rise in TNF-α in the group without cell savage 10 minutes after ECC, 9.5 ± 3.5 vs. 19.7 ± 14.5, p<0.000. Six hours after ECC the difference was still significant, 11.5 ± 11.0 vs. 17.4 ± 8.54, p=0.02.

Conclusions: The results of this study support the theory that cell savage might reduce inflammatory response after CABG surgery.

Discussant: Mark Bennett

All abstracts will be published in the Interactive Cardiovascular and Thoracic Surgery (ICVTS) Journal.
Symposium Venue

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Dear Colleagues,
As you know, the Minimal invasive Extracorporeal Circulation Technologies international Society (MiECTiS) was founded during the 1st International Symposium on Minimal Invasive Extracorporeal Technologies which took place in Thessaloniki on June 2014. More than 120 founding members from all parts of the world, including cardiac surgeons, cardiac anesthesiologists, clinical perfusionists as well as other scientists dealing with Minimal invasive Extracorporeal Circulation (MiECC), agreed to introduce a multidisciplinary Scientific Community in order to promote this emerging technology and work towards its penetration in to clinical practice. Throughout the period, a web-site was created and a Consensus Meeting, which was held in Bern on December 2014, was organized. After this Meeting a position paper so as to define this technology and summarize the literature was published.

MiECTiS is set to strive for collaborations and affiliations with other related Scientific Societies aiming to co-organize Scientific Sessions and Symposia during Meetings. It is also interested in creating collaborations and affiliations with other related Scientific Societies aiming to co-organize Scientific Sessions and Symposia during Meetings. Moreover, it takes the initiative to promote specialist training in MiECC technology through collaboration with the industry.

Therefore, we invite scientists who deal with MiECC technology to join the Society by applying for membership. Any individual who possesses the title of cardiac surgeon, cardiac anesthesiologist as well as clinical perfusionist and shows a proven interest in the field of minimal invasive extracorporeal technologies is eligible to apply for membership, which is complimentary and hence does not require any fees. Full details about the criteria for membership, aims of the Society and the organization can be found at the MiECTiS web-page (www.miectis.org).

On behalf of the Steering Committee,

Kyriakos Anastasiadis
President MiECTiS
Symposium PCO

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