

Press release

Basic information

Name: Adrian Bauer
Email: adrian.bauer@clin.au.dk
Phone: +49 163 2516003

Department of: Clinical Medicine

Main supervisor: J. Michael Hasenkam

Title of dissertation: Minimal Invasive Extracorporeal Circulation Impact on Inflammation and Coagulation

Date for defence: 11.09.2018
Time of day: 14:00 – 15:30
Place: Aarhus Universitet Hospital,
Auditorium B, Entrance G,
Palle Juul-Jensens Boulevard 99,
8200 Aarhus C

Press release (Danish)

Minimal invasiv ekstrakorporeal cirkulation påvirkning af inflammation og koagulation

Under åben hjertekirurgi standses hjertet og såvel kredsløb som åndedræt varetages af en hjerte-lunge-maskine. Selv om denne procedure har været anvendt i mere end 60 år er den ikke uden bivirkninger. Blandt andet er det endnu ikke lykkedes at gøre kredsløbet uden for kroppen helt biokompatibelt.

Èt af de tiltag man har anvendt i de seneste 15 år, for at øge biokompatibiliteten er anvendelse af det minimalt invasive hjerte-lunge-maskine udstyr. Dette udstyr er karakteriseret ved specielle overfladebehandlinger for de flader blodet kommer i kontakt med. Desuden er håndteringen af blodet i hjertelungemaskinen mere skånsom ved brug af særlige sug og "blodfortyndende" medicinsk behandling. På trods af disse potentielle fordele har den minimalt invasive hjerte-lunge-maskine endnu ikke vundet større udbredelse. En af årsagerne hertil er svag videnskabelig evidens for de forventede fordele.

Denne afhandling blev gennemført for at belyse de mulige fordele ved det minimalt invasive system ved en prospektivt randomiseret sammenligning af to elementer. Først undersøgte den muligt reducerede systemiske reaktion (inflammation) ved brug af to forskellige metoder til opsamling af blodet til hjertelungemaskinen. Dernæst undersøgte 2 forskellige grader af "blodfortynding" i det minimalt invasive system.

I alt blev 166 patienter behandlet i to grupper, hvor den mere skånsomme metode blev undersøgt i forhold til den konventionelle metode ved en række laboratorieparametre og ved sammenligning af de kliniske forløb.

Den ph.d. studerende, som selv varetog hjerte-lunge-maskine-behandlingen fandt både mindre systemisk reaktion og mindre blødning ved anvendelse af de mere skånsomme metoder.

Selvom yderligere forskning er påkrævet indikerer disse undersøgelser, at der er potentielle fordele ved optimering af den minimalt invasive hjerte-lunge-maskine-behandling

Forsvaret er offentligt og finder sted den 11. september kl. 14.00 i Aarhus Universitets Hospital, Auditorium B, Entré G, Palle Juul-Jensens Boulevard 99, 8200 Aarhus C.

Projektets titel er "Minimal Invasive Extracorporeal Circulation Impact on Inflammation and Coagulation". For yderligere information kontakt Ph.d.-studerende Adrian Bauer, email: adrian.bauer@clin.au.dk, Telefon +49 163 25 16 003.

Press release (English)

Minimal Invasive Extracorporeal Circulation Impact on Inflammation and Coagulation.

During open heart surgery where the heart is arrested, a heart-lung machine (or Extracorporeal Circulation, ECC) must take over the hearts function. This heart-lung machine has been essential in open heart surgery for more than 60 years, yet the technique is not without side effects, and biocompatibility of this artificial circuit can be improved.

The minimally invasive extracorporeal circulation (MiECC) strategy was developed 15 years ago by experts in the field of heart-lung machines in order to minimize the side effects on the human body. These novel systems are smaller, specially coated, and use alternative procedures in the treatment of the suction blood and anticoagulation therapy approach. However to date, the use of MiECC systems is not routine in the clinical setting. This may be due to a lack of knowledge and scientific evidence.

The doctorate dealt with two important aspects of this procedure. Firstly, when MiECC is utilised instead of a conventional heart-lung machine, it results in reduced infection rates post heart surgery, and secondly, reduced bleeding complications when compared with the traditional technique. In total, 166 patients were randomly divided into 2 groups and infection and bleeding complications were examined by means of clinical observation and laboratory results. The PhD student, a clinical perfusionist, was able to show both reduced infection and bleeding complications post cardiac surgery. Although more research is needed, these findings allow us to confidently develop this method and continue to improve patient care and outcomes when undergoing cardiac surgery.

The defense is public and takes place on 11/09 at 14:00 in Aarhus Universitet Hospital, Auditorium B, Entrance G, Palle Juul-Jensens Boulevard 99, 8200 Aarhus C.

The title of the project is "Minimal Invasive Extracorporeal Circulations Impact on Inflammation and Coagulation". For more information, please contact PhD student Adrian Bauer, email: adrian.bauer@clin.au.dk, Phone +49 163 25 16 003.

Assessment committee:

Associate Professor Peter Juhl-Olsen - chairman of the committee
Department of Anaesthesiology & Intensive Care
Aarhus University Hospital
Denmark

Professor Hans Peter Wendel
Clinical Research Laboratory
Dept. of Thoracic, Cardiac and Vascular Surgery
University Hospital Tuebingen
Germany

Professor Kim Christian Houliind
Department of Vascular Surgery
University of Southern Denmark
Denmark

Professor John Michael Hasenkam - main supervisor, non-voting member of the committee
Department of Cardiac Surgery
Aarhus Universith Hospital
Denmark

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