



## The role of CytoSorb® Therapy in aortic surgery

Aortic surgery is one of the most complex and demanding procedures in adult cardiac surgery. Aortic surgery is generally long lasting, requiring a significant duration of hypothermic circulatory arrest. Open aortic repair is still a common treatment option.

### Aorta now recognised as own organ system, based on the new EACTS/STS guidelines.

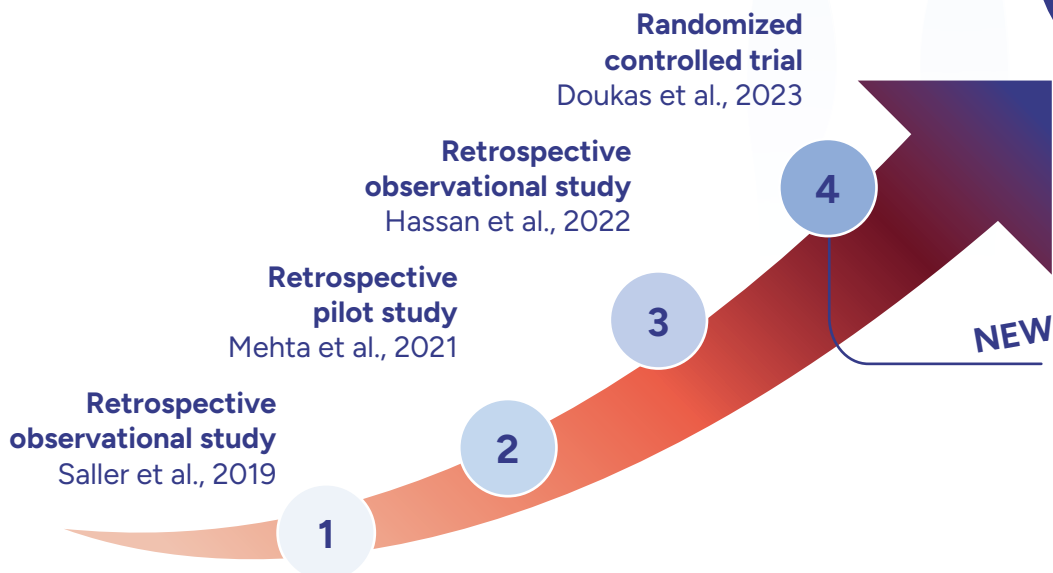
*"The view upon the aorta as an organ will help to reach a better platform for understanding pathophysiology, establishing diagnoses, planning and performing treatment and surveillance, in other words, better patient care."*

Prof. Martin Czerny\*

\* Clinic for Cardiovascular Surgery, Department University Heart Center Freiburg Bad Krozingen, University Clinic Freiburg, Freiburg, Germany



### Evolution of evidence



Pseudo-RCT 30 vs. 30 major aortic surgery patients presented @ EACTS 2023 ... to be published soon

# Key study outcomes

1

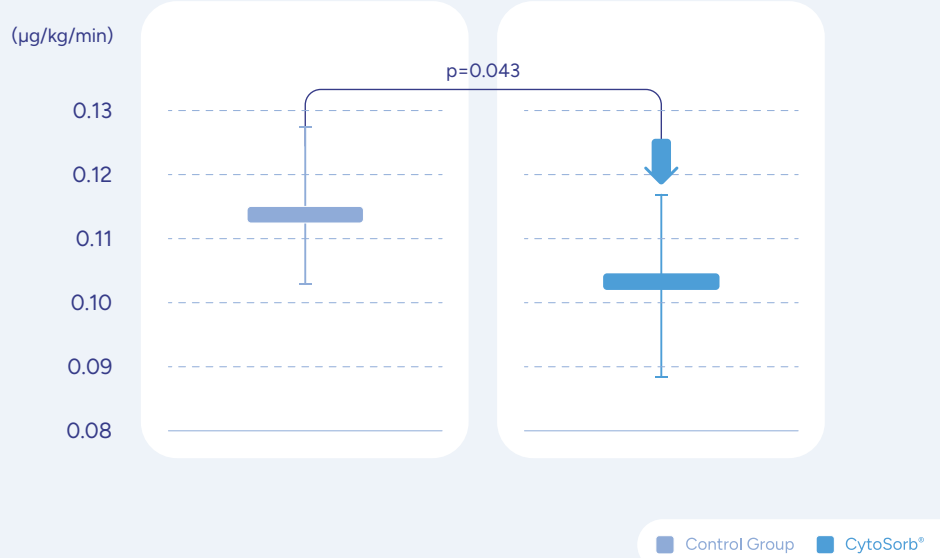
**Saller et al.,**  
Eur J Cardiothorac Surg 2019;  
56(4): 731 - 737

Significantly reduced postoperative vasopressors in line with significantly reduced postoperative blood products



**Lower postoperative intervention**

## Intraoperative dose of norepinephrine



2

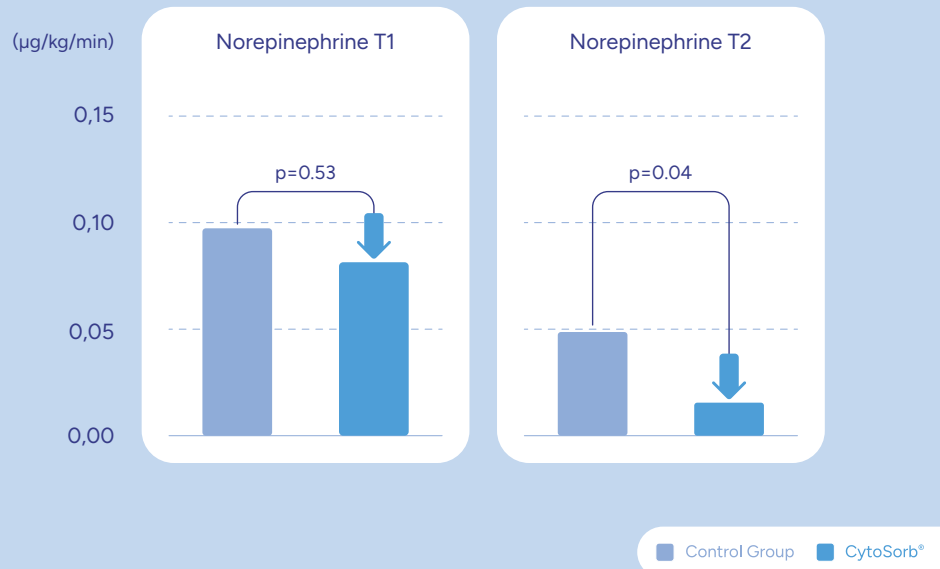
**Mehta et al.,**  
Journal Cardiothor & Vasc Anesth  
2021; 35(2): 673 - 675

Reduced IL-6 levels, less norepinephrine requirements and better P/F ratio



**Better hemodynamic parameters**

## Norepinephrine levels at different timepoints



3

**Hassan et al.,**

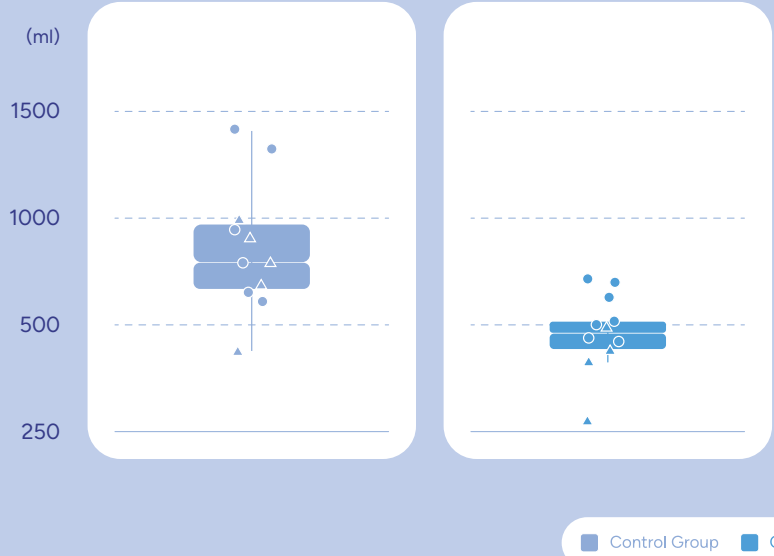
Annals of Thoracic and Cardiovascular Surgery 2022; 28(3):186-192

Aortic type A dissections under antithrombotics treated with hemoadsorption resulted in reduced rethoracotomy rate and significantly reduced chest tube drainage



**Fewer surgical complications**

**Drainage volume / 24 h (ml) p-value < 0.001**



4

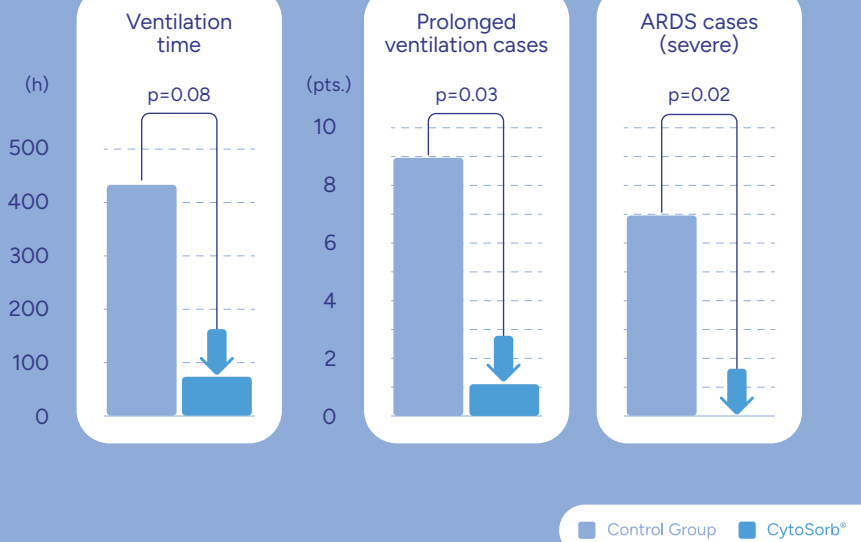
**Doukas et al.,**

J Clin Med 2023; 12:546

Significant reduction of prolonged ventilation and acute respiratory distress syndrome (ARDS)



**Improved respiratory outcomes**



**Conclusion**

**Increasing evidence for safe and effective usage of CytoSorb® in complex aortic surgery**

## Key study facts

1

**Saller et al.,**  
Eur J Cardiothorac Surg 2019; 56(4):  
731 - 737

**Title** Haemadsorption improves intraoperative haemodynamics and metabolic changes during aortic surgery with hypothermic circulatory arrest.

**Aim** Compare patients having aortic surgery & hypothermic circulatory arrest plus CytoSorb® to those receiving the same operation but without CytoSorb®.

**Patients** 168 matched pairs

**Type of study** Retrospective observational study

2

**Mehta et al.,**  
Journal Cardiothor & Vasc Anesth  
2021; 35(2): 673 - 675

Modulating the inflammatory response with hemadsorption (CytoSorb®) in patients undergoing major aortic surgery.

To evaluate the effect of CytoSorb® used intra-operatively in patients ungoing elective major aortic surgery.

8 vs. 8

Retrospective pilot study

3

**Hassan et al.,**  
Annals of Thoracic and Cardiovascular  
Surgery 2022; 28(3):186-192

**Title** Hemoadsorption of Rivaroxaban and Ticagrelor during Acute Type A Aortic Dissection Operations

**Aim** To analyze the results of hemoadsorption in patients requiring thoracic aortic surgery, who had been loaded beforehand with either Factor Xa inhibitor rivaroxaban or P2Y12 receptor antagonist ticagrelor

**Patients** 11 vs. 10

**Type of study** Retrospective observational study

4

**Doukas et al.,**  
J Clin Med 2023; 12:546

Intraoperative Hemoadsorption (Cytosorb®) during open thoracoabdominal aortic repair: A pilot randomized controlled trial

Compare pts treated with intraop CytoSorb® with controls

27 (10 vs. 17)

RCT