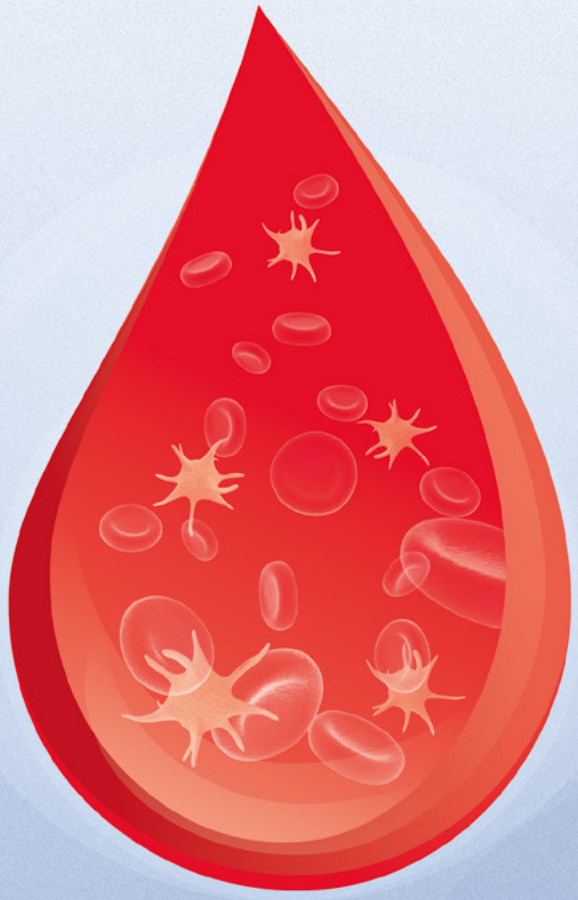
CytoSorbents™

Reduce bleeding complications in patients on ticagrelor[1]

CytoSorb Therapy in emergency cardiac surgery



NEW

CytoSorb therapy CE approved for intraoperative ticagrelor removal during cardiopulmonary bypass (CPB)[2]

Background

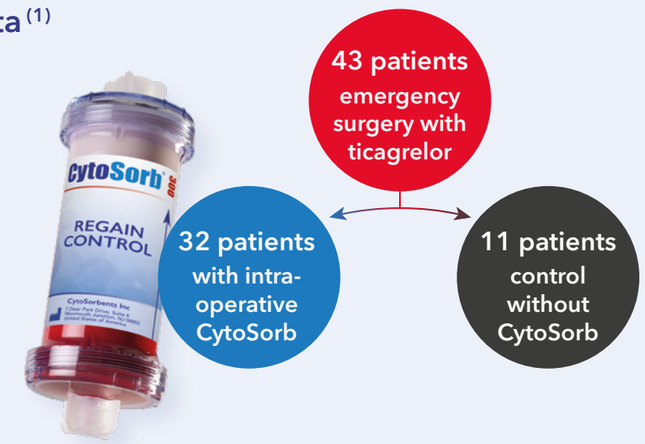
Ticagrelor is a platelet aggregation inhibitor and is recommended in the current European Guidelines for the treatment of acute coronary syndrome and prevention of stent thrombosis.[4,5]

Ticagrelor reversibly blocks the $P2Y_{12}$ ADP-receptor of platelets and should be discontinued 3-5 days prior to surgery.[5] However, in emergency surgery with no time to wait, ticagrelor can lead to a high risk of bleeding.[1,5,6]

CytoSorb reduces bleeding complications in emergency surgery patients by effectively removing ticagrelor from whole blood.[1,3]

The CytoSorb CE label now also includes intraoperative ticagrelor removal during cardiopulmonary bypass.[2,*]

Clinical outcome data[1]



	CPB + CytoSorb *(n=32)*	CPB alone *(n=11)*
Procedure duration** (min; mean ± SD)	288 ± *63*	353 ± *84*
Red blood cell transfusion needed	21.9% *(n=7)*	45.5% *(n=5)*
Platelet transfusion needed	34.4% *(n=11)*	100% *(n=11)*
Drainage volume/24hrs (ml; median [IQR])	350 *[300 - 450]*	890 *[630 - 1025]*
Re-thoracotomy rate	0% *(n=0)*	36.4% *(n=4)*
Days in intensive care (median [IQR])	2 *[1 - 3]*	3 *[2 - 4]*
Total length of stay (days; median [IQR])	11 *[9 - 12]*	14 *[10 - 16]*

* The CE label of CytoSorb does not cover removal of any other anti-thrombotic medications.
** Similar CPB/cross clamp time in both groups.

Health economic impact

- CytoSorb has a high probability of saving costs.[7]
- Cost savings derive from fewer transfusions of blood products and re-thoracotomies, and shorter stay in the hospital/intensive care unit.[7]

Operation time	Transfusions	Re-thoracotomies
-18%[1]	-72%[1]	-100%[1]

ICU days	Hospital days
-33%[1]	-22%[1]

Conclusions according to the authors

"The intraoperative use of the CytoSorb hemoadsorption in patients with ticagrelor treatment undergoing emergency open heart operations is a safe and effective method to reduce bleeding complications and to improve the postoperative outcome."[1]

"We recommend the use of CytoSorb adsorption for safety in patients undergoing emergency cardiac surgery and medication with ticagrelor."[1]

Study description[1]

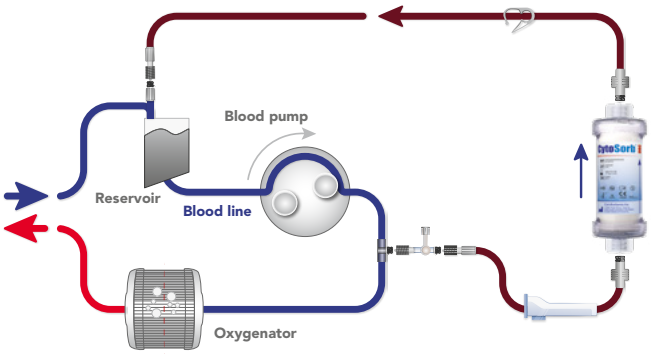
CytoSorb adsorption during emergency cardiac operations in patients at high risk of bleeding
Hassan K, Kannmacher J, Wohlmuth P, Budde U, Schmoeckel M, Geidel S
Annals of Thoracic Surgery 2019;108:45–51

This study included 55 consecutive patients undergoing emergency open-heart operations who were at high risk of bleeding due to prior treatment with anti-thrombotic medications (43 patients on ticagrelor, 12 on rivaroxaban). In 39 of 55 cases, CytoSorb adsorption was installed into the cardiopulmonary bypass. Bleeding complications during and after surgery were analyzed in detail and compared to the 16 patients without CytoSorb (11 patients on ticagrelor, 5 on rivaroxaban).

CytoSorbents™

CytoSorb integration into CPB

Click here to learn more about CytoSorb integration into CPB in our new QUICK SETUP GUIDE



Example setup

Watch Prof. Pascal Leprince and PD Dr. Stephan Geidel present the clinical outcome data

References (Clinical and *preclinical data):

1. Hassan K et al., Annals of Thoracic Surgery 2019;108(1):45-51
2. IFU CytoSorb 300, CytoSorbents Inc., USA, issue date 30-Jan-2020
3. Angheloiu GO et al., J Am Coll Cardiol Basic Trans Science 2017;2:135-45*
4. ESC Clinical Practice Guidelines on DAPT, European Heart Journal 2018;39:213-260
5. Hansson EC et al., European Heart Journal 2016;37:189-197
6. Kremke M et al., Eur J Cardiothorac Surg 2019;55(4):714-720
7. Javanbakht M et al., PharmacoEconomics Open 2019;epub

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