

Emergency Cardiac Operations in Patients at High Risk of Bleeding – a single centre experience

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Introduction

Open heart operations are always at high risk of bleeding due to treatment with coagulation-active substances. Patients requiring coronary artery bypass grafting (CABG) are often loaded with antithrombotic drugs (AT) and have an increased risk of perioperative bleeding complications. Active AT removal by hemoadsorption (CytoSorb®) integrated in the cardiopulmonary bypass circuit (CPB) is increasingly used in this setting to reduce bleeding. The aim of our study is to analyse the impact of CytoSorb® and evaluate the results.

Methods

We investigated 55 consecutive patients who underwent emergency cardiac surgery for CABG at our institution between January 2023 and January 2025. 14 patients were receiving Ticagrelor (n = 10) or Rivaroxaban (n = 4). AT were discontinued one day before surgery in nine patients and on the day of surgery in one patient. In 7 cases we installed CytoSorb® into CPB. Bleeding complications and drainage volumes during and after surgery were analysed in detail, and compared with 7 patients without adsorption.

Results

In the CytoSorb® group no re-thoracotomies had to be performed. Drainage volumes in 24 hours were 300 mL (IQ: 300-450 mL) 350 mL (IQ: 280-400 mL) for patients on Ticagrelor and Rivaroxaban, respectively. Mean operation time was 184 ± 35 min. One patient had a minor bleeding event and there were no surgical re-explorations for bleeding. In most of patients, transfusions of blood products were not needed. Compared with control group, multiple bleeding complications occurred. These were associated with longer total operation time ($p = 0.0040$), higher drainage volumes ($p = 0.0037$), more transfusions of red blood cells ($p = 0.0118$) and platelets ($p = 0.0470$), a significantly higher re-thoracotomy rate ($p = 0.0003$), significantly prolonged stay in the intensive care unit ($p = 0.0140$), and a longer hospital stay ($p = 0.0240$).

Conclusion

The use of CytoSorb® for removal of Ticagrelor and Rivaroxaban in emergency open heart operations is a fundamental and safety therapeutical strategy. The data show how this effective method can reduce bleeding complications.

The use of CytoSorb® with a scheduled approach is recommended for life-threatening patients in Ticagrelor or Rivaroxaban therapy undergoing emergency cardiac surgery.