

Evidence-based Medicine Category

Best Poster

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Utilisation of a Novel Oxygenator Reduces Hemodilution and Blood Transfusion in Patients Undergoing Cardiac Surgery

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Aims: Hemodilution associated with the use of cardiopulmonary bypass (CPB) in most cardiac surgeries predispose patients to red blood cell (RBC) transfusion. A new generation oxygenator with an integrated arterial filter allows the latter to be eliminated from the bypass circuit thereby minimising hemodilution. Since 2015, we had transitioned to this new oxygenator in our adult CPB. In this study, we evaluate the Terumo CAPIOX® FX oxygenator with respect to its ability to limit hemodilution and RBC transfusion rates.

Methodology: Between February to October 2015, 354 consecutive patients underwent elective first time coronary artery bypass grafting (CABG) with the use of CPB in our Centre. The following data were collected: body surface area (BSA), pre CPB haemoglobin (Hb), first Hb and minimum Hb on CPB, post CPB Hb and number of RBC units transfused intra-operatively. These data were compared against similar data from 358 patients who underwent CABG utilising the conventional oxygenator in 2014.

Result: The BSA and pre CPB Hb were similar between the 2 groups. The 2015 group had significantly higher first Hb and minimum Hb on CPB than the 2014 group, 8.85 ± 1.33 vs. 8.52 ± 1.25 ($p=0.000$) and 8.47 ± 1.19 vs. 8.17 ± 1.21 ($p=0.001$) respectively. The 2015 group also had significantly higher post CPB Hb, 8.64 ± 1.148 vs. 8.36 ± 1.14 ($p=0.002$). Patients in the 2015 group had a relative risk for receiving RBC transfusions of 0.53 vs. patients in the 2014 group ($p=0.016$) and also a relative risk of receiving two or more RBC units of 0.29 ($p=0.001$).

Conclusion: The utilisation of oxygenator with an integrated arterial filter reduces hemodilution. This is translated into a higher Hb during and after CPB and also a reduction in the risk of patients receiving RBC transfusion during surgery.