

MEETING ABSTRACT

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Miniaturized versus conventional cardiopulmonary bypass in patients undergoing coronary artery bypass surgery: impact on lymphocyte depletion and sternal wound healing

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Background/Introduction

To reduce deleterious effects of C-CPB novel concepts have been developed based on miniaturized cardiopulmonary bypass (Mini-CPB) with closed circuits, low priming volumes and optimized perfusion system. In CABG surgery, it has previously shown that the use of Mini-CPB can reduce systemic inflammation compared to C-CPB [25] and so attenuate the pathologic effects of C-CPB.

Aims/Objectives

The aim of this study was to compare miniaturized cardiopulmonary bypass (Mini-CPB) versus conventional cardiopulmonary bypass (C-CPB) in patients undergoing coronary artery bypass grafting (CABG) in term of sternal wound healing and lymphocyte depletion.

Method

A total of 847 patients undergoing isolated coronary artery bypass grafting (CABG) surgery were studied. Exclusion criteria were: redos, emergencies, CPB time longer than 180 min, antibiotic therapy within two weeks prior to surgery. Finally, 697 consecutive patients who underwent CABG, between January 2012 and September 2014, were studied prospectively. C-CPB was used in 397 (56.9%) patients (Group A) and Mini-CPB was used in 300 (43.1%) (Group B). Patients in the two groups were similar with respect to demographic and preoperative status. To detect lymphocyte depletion, blood was

sampled for lymphocyte measurements at three time points: preoperatively (T1), 24 (T2) and 72 h postoperatively (T3) The presence of infections was evaluated according to the ASEPSIS wound scoring system. Antibiotic prophylaxis with cefazolin was performed preoperatively, according to the routine of the institution.

Results

The study groups had similar EuroSCOREs. A total of 26/697 (3.7 %) patients had sternal wound infection (SWI). Patients from Group A showed a higher incidence of SWI compared to Group B (26/397, 56.5 % vs 0/300, 0% respectively, $p = 0.002$). In Group A 14/26 (54 %) patients developed deep SWI, and 12/26 (46 %) developed superficial SWI. The Group A but not the Group B showed significant lymphocyte depletion from preoperative during the 1st postoperative day (7.96 ± 4.85 % in Group A vs. 15.4 ± 4.8 % in Group B, $p < 0.0001$). Also in 3rd postoperative day, lymphocyte depletion was lesser in Group B (9.83 ± 6.61 % in Group A vs. 13.67 ± 5.41 % in Group B, respectively, $p < 0.0001$). The most frequently cultured isolated were *Staphylococcus epidermidis* (37%), *Staphylococcus aureus* (22.2%). 22 (85%) patients were treated by debridement and vacuum therapy and 4 (15%) patients underwent surgical sternal reconstruction.

Discussion/Conclusion

This study shows that Mini-CPB for patients undergoing isolated CABG is associated with a reduced risk of SWI occurrence. This may be related to the lesser inflammatory response of Mini-CPB compared to C-CPB and to

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the lesser lymphocyte depletion. Further studies are needed to confirm these findings.

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