102 **SMA treated bypass circuits improve perfusion pressure following initiation of cardiopulmonary bypass (CPB)**

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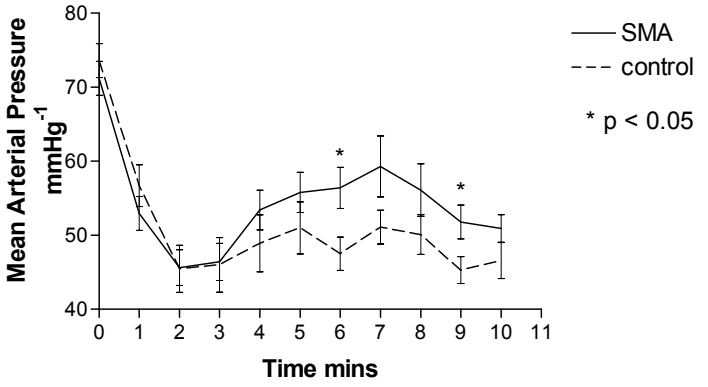
Introduction: Falls in blood pressure following initiation of cardiopulmonary bypass (CPB) have been attributed to expression of bradykinins [1]. Recently biomaterials have been developed which incorporate a copolymer into the surface of the material (Surface Modifying Additives SMA). The use of this material in bypass circuits has been shown to reduce platelet adhesion and to preserve blood pressure on bypass [2]. Since that work was performed patients increasingly present for surgery on multiple vasodilators such as ACE Inhibitors. We wished to see whether the use of SMA treated circuits in a randomly recruited population of patients would still lead to a preservation of blood pressure following commencement of CPB.

Method: Forty ASA grade III-IV patients undergoing elective coronary artery bypass grafting were randomly allocated to SMA or non- SMA CPB circuits. Baseline mean arterial pressure(MAP) and MAP at 1-10 minutes following institution of CPB were measured via the radial artery. Phenylephrine was administered according to a local protocol and the total dose recorded. Results were assayed using *t* test between groups, $P<0.05$ was considered significant. Subgroup analysis was performed on the basis of preoperative ACE inhibition.

Results: Mean arterial pressure varied as in figure 1. MAP was significantly higher in the SMA group at 6 and 9 minutes following institution of CPB. Subgroup analysis demonstrated significantly higher BP at 6, 7 and 9 minutes in those patients in the SMA group who used ACE inhibitors preoperatively.



Discussion: The use of the SMA treated circuit resulted in amelioration of the drop in perfusion pressure after institution of CPB. This phenomenon was particularly important in the subgroup of patients receiving ACE inhibitors. Our work suggests that in the modern patient population where preoperative therapy renders CPB hypotension common, SMA circuits may be beneficial.

References:

1 Cugno M, Nussberger J, Biglioli P, et al. Increase of bradykinin in plasma of patients undergoing cardiopulmonary bypass: the importance of lung exclusion. *Chest* 2001; **120** (6): 1776-1782.

2 Rubens FD, Ruel M, Lavallee G, et al. Circuits with surface modifying additive alter the hemodynamic response to cardiopulmonary bypass. *Eur J Thorac Surg* 1999; **15** (3): 353-358.