

SCA 45

DOES OFF-PUMP CORONARY ARTERY BYPASS SURGERY WITH A CONNECTOR DEVICE REDUCE POSTOPERATIVE RENAL DYSFUNCTION?

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Introduction: Renal dysfunction is a serious complication of cardiac surgery. In our preliminary study we found off pump coronary artery (OPCAB) surgery did not reduce the incidence of postoperative acute renal injury (ARI)(1). Although evidence is emerging that the etiology of ARI is multifactorial, atherosclerosis of the ascending aorta is a powerful independent predictor. Use of aortic connector devices for proximal anastomosis of coronary grafts may reduce atheroembolic renal insult by minimizing aortic manipulation. Therefore we tested the hypothesis that OPCAB performed using connector devices is associated with less ARI compared to conventional OPCAB or on-pump coronary bypass (CABG) surgery.

Methods: With IRB approval, we gathered data for all adult, consecutive coronary bypass surgeries performed at our institute from Sept 1998 to Sept 2003. Data pertaining to demographic, procedural, postoperative and laboratory variables was collected. The marker for renal injury in all series was serum creatinine (Cr). Peak fractional change in Cr (%Cr) was defined as the difference between peak postoperative Cr and preoperative Cr (CrPre) expressed as a percentage of CrPre. Patients were divided into three groups; Group A: OPCAB with aortic connector device (connector group), Group B: OPCAB with aortic side clamp(no connector group), Group C: conventional CABG surgery(CABG group). We performed a stepwise multivariable linear regression analysis to test the relationship of procedure type and %Cr. Post-hoc between-group comparisons were performed on the adjusted means. Significance was assessed at a p value of <0.05.

Results: Univariate comparisons of %Cr demonstrated no between group differences (Figure 1). Similarly, our multivariable analysis did not indicate that type of surgery is an independent predictor of

%Cr(F value 1.15, p=0.32). However, significant associations between PreCr, age, diabetes, IABP and BMI were confirmed. A non-significant finding can sometimes be related to limited power due to sample size or effect size. A sample size analysis shows us that a study with 113 patients in each group, would have 80% power to detect a difference in %Cr of 15% - assuming that the common standard deviation is 40%, using a two group t-test with a 0.05 two sided significance level.

Discussion: We did not confirm our hypothesis that OPCAB surgery using an aortic connector reduces acute renal injury compared to standard OPCAB; in fact procedures using a connector demonstrated a trend towards more renal injury. We conclude that aortic connectors do not appear to be associated with reduced renal injury, relative to standard OPCAB surgery. Interestingly, we also observed a trend towards reduced renal injury with a standard OPCAB versus CABG surgery not noted in our previous study of the first cases at our institution.

References: 1. Anesth Analg 2000;91:1080-4

Figure1: Means %•Creatinine

