Chronic Kidney Disease is Associated with Poor Outcomes after Isolated Coronary Artery Bypass Grafting

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Purpose: To examine the effect of different stages of chronic kidney disease (CKD) on the postoperative mortality and complications after isolated coronary artery bypass grafting (CABG), using a large cohort from the Australian and New Zealand Society of Cardiac and Thoracic Surgeons (ANZSCTS) database.

Methods: Data from 31,250 patients who underwent CABG between 2001 and 2011 was analysed. Following calculation of the preoperative glomerular filtration rate (eGFR) patients were classified into 5 stages of CKD: normal (eGFR > 90 ml/min/1.73m2), mild renal impairment (eGFR 60 to 89), moderate (eGFR 30 to 59), severe (eGFR < 30 ml/min/1.73m2) and dialysis dependent. The relationship between the stage and outcomes was analysed by univariate regression, and then by multivariable logistic and Cox regression using the known risk factors in the AusScore II model, a predictive model of 30-day mortality developed from the same database.

Results: Almost 77% of isolated CABG cases had some degree of CKD - mild 50.3%, moderate 22.7%, severe 2.3%, and dialysis-dependent 1.5%. Compared to patients with normal eGFR, the adjusted risk for 30-day mortality increased with stage of CKD from mild (1.8 fold, 95% CI: 1.3-2.6) to dialysis dependent (4.4 fold, 95% CI: 2.4-8.2). The return to OR, prolonged ventilation, prolonged hospital stay, sepsis and need for transfusion were all increased with the stage of CKD. Late survival also decreased with CKD stage, from 10-year survival of 85% in normal eGFR to 45.5% for severe CKD. Patients on dialysis had a better outcome on some measures than those with severe CKD without dialysis.

Conclusions: Poor kidney function was a strong independent predictor for 30-day mortality and for many postoperative complications. In addition, late survival was significantly reduced. The high frequency of CKD means that these findings should be considered in all discussions and decisions regarding CABG surgery.

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The Non-Ejecting Heart on VA ECMO: Strategies for Venting the Left Heart

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Background: Veno-Arterial Extracorporeal Membrane Oxygenation (VA-ECMO) is a potentially life-saving, cardio-respiratory support intervention for patients in refractory cardiogenic shock. VA-ECMO provides end organ perfusion, enabling bridging to recovery, durable assist device implantation or cardiac transplantation. VA-ECMO patients with minimal, cardiac contractility and inadequate left ventricular (LV) ejection are prone to elevated LV pressures, LV distension and pulmonary oedema. Furthermore, the high afterload on the distending LV may severely impair myocardial recovery and significantly increase the risk of intra-cardiac thrombus formation. Direct venting of the left heart is usually required in these circumstances. Currently, there is no clear consensus for the optimal venting timing or strategy.

Methodology: We reviewed the prospective database of VA-ECMO cases at our institution from 2009-2016. The methods for venting, the patient characteristics and outcomes were determined with a review of notes, radiology and echocardiography.

Results: A total of 213 patients required VA-ECMO. 11 patients (5.2%) required venting. 11 vents were inserted surgically and 1 percutaneously. 8 patients (73%) had no ejection seen on echo with closed aortic valves. Mean duration of venting was 76.2 ± 17.2 hours. Predicted survival for this cohort was 38.5 ± 4.3%, as calculated their SAVE-ECMO risk score. Actual survival was 6 of 11 patients (55%).

Conclusion: LV distention on VA-ECMO delays myocardial recovery and increases risk of life threatening complications. Monitoring LV function is imperative and the non-ejecting heart requires prompt venting. Overall, non-ejecting hearts on VA-ECMO predict severe myocardial injury and poor prognosis.

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Deep Sternal Wound Infections – Immediate Sternal Fixation or VAC and Flap?

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Purpose: Deep sternal wound infections (DSWI) following cardiac surgery are associated with increased mortality, morbidity, length of hospitalisation and cost. The optimal management of DSWI is controversial. We sought to investigate the results of immediate sternal fixation versus negative-pressure wound therapy (NPWT) and delayed flap closure.

Methodology: A retrospective review of patients treated for DSWI between 1 June 2013 and 31 May 2016 at the Green Lane Cardiothoracic Unit, Auckland City Hospital was performed. Patients were divided according to treatment modality: immediate sternal fixation or NPWT and flap closure. An intention to treat analysis was performed comparing continuous variables with the Wilcoxon Rank Sum test and categorical variables with the Fisher's Exact test.

Results: The incidence of DSWI during the study period was 1.57% (44/2808). 24 patients underwent immediate ster-