

342

EXTRA-ANATOMICAL AORTO-AXILLARY BYPASS TO REVASCULARIZE THE SUBCLAVIAN ARTERY DURING MAJOR AORTIC SURGERIES: A RELIABLE SOLUTION TO A COMPLEX PROBLEM**F Dagenais, E Dumont, S Mohammadi, P Voisine***Sainte-Foy, Québec*

BACKGROUND: Management of the subclavian artery during complex surgeries of the thoracic aorta may be difficult to deal in situ. The alternatives remain to ligate the subclavian artery or to perform a carotid-subclavian bypass. We have proposed the use of an aorto-axillary extra-anatomical (AAEAB) bypass to revascularize the subclavian artery in such circumstances. We herein report our technique and mid-term outcomes.

METHODS: Operative technique: The axillary artery is exposed in a standard subclavicular incision before sternal opening. An 8 mm Dacron graft is tunnelled over the second rib and anastomosed between the main aortic graft and the axillary artery in an end to side fashion.

RESULTS: Twenty-eight subclavian arteries were bypassed using an AAEAB during complex surgeries of the thoracic aorta. Indications to use the technique were either the presence of a severely displaced left subclavian artery rendering in situ revascularisation difficult or the presence of an aberrant subclavian artery requiring revascularisation. All patients were followed prospectively with enhanced chest CT in a dedicated clinic. Three year survival was 84.8%. At a mean follow-up of 2.4 ± 2.0 years, all AAEAB grafts were patent; no stenosis \geq was documented. One patient in whom reoperation was required suffered graft trauma during sternal re-entry.

CONCLUSION: An AAEAB is an excellent option to revascularize a difficult subclavian artery during complex aortic surgeries. Mid-term patency is excellent. Injury during sternal re-entry should be prevented by covering the bypass at the initial procedure.

343

IMMEDIATE CLINICAL OUTCOME OF ROBOTIC ASSISTED CABG IN PATIENTS WITH PREVIOUS HEART SURGERY**J Catrip, H AlHabib, M Chu, S Swinamer, R Rayman, B Kiaii***London, Ontario*

BACKGROUND: Redo Coronary artery bypass graft surgery on cardiopulmonary bypass is associated with significant morbidity and mortality in patients with previous heart surgery. In high risk patients like this, minimally invasive robotic-assisted surgical techniques can reduce adverse events, having a faster recovery and return to their normal activities. We evaluate the postoperative evolution of three patients with previous heart surgery that were treated with robotic-assisted coronary artery bypass grafting.

METHODS: We perform single coronary artery bypass graft surgery off pump in three male patients, between 2008 and 2013, using the DaVinci Si System. The three of them had previous aortocoronary bypass surgery without the utilization of Leith internal thoracic artery (LITA).

RESULTS: Average age was 72.99 ± 5.99 years old. The three procedures were urgent, and the patients were one in CCS Class 4a, other in CCS Class 4b and other in CCS Class 4c. All of them were diabetics, with no renal dysfunction. Surgery was performed using off pump technique, harvesting the LITA with the robot, and performing the anastomosis of IMA to LAD through a small left anterior minithoracotomy. No patient died or had any postoperative complication. The average ICU stay was of 1.3 ± 0.58 days with a maximum ICU days of 2. The average hospital stay was of 3.3 ± 0.58 days with a maximum hospital days of 4.

CONCLUSION: The immediate postoperative results of robotic assisted single coronary artery bypass surgery in patients with previous heart surgery demonstrate great reproducible and efficacious results. This alternative approach enables possibility of reduce morbidity and mortality, with a faster recovery and return to their daily activities. Though our experience needs to evaluate more patients with this condition, the future results seem promising.

344

IS RECIPIENT BMI A RISK FACTOR FOR ADVERSE LONG-TERM SURVIVAL POST-CARDIAC TRANSPLANTATION?**A Khani-Hanjani, J Nagendran, M Moore, C Norris, J Mullen, D Kim, D Freed, J Nagendran***Edmonton, Alberta*

BACKGROUND: Obesity rates continue to rise in Canada and on a global scale. This trend is especially important in cardiac surgery with obesity being a relative contraindication to cardiac transplantation. However, there have been inconsistent results regarding the effects of obesity on cardiac transplantation outcomes. This study will attempt to bridge the divide using data from the APPROACH database.

METHODS: Cardiac transplantations (n=220) data occurring in Alberta, Canada from January, 2004-April, 2013 were captured from the APPROACH database. Patients were grouped based on BMI into five groups: <20 (n=17), 20-24 (n=73), 25-29 (n=81), 30-34 (n=39), and ≥ 35 (n=10). Pre- and peri-operative characteristics were collected from the patients. Kaplan-Meier and Cox proportional hazard modeling were completed for survival and independent risk factor assessment, respectively.

RESULTS: Out of the 220 patients' pre-operative characteristics there were significant ($p < 0.05$) differences in recipient age, hypertension, hyperlipidemia, type 2 diabetes, prior MI, prior CABG, and prior cerebrovascular disease. Pump time was the only peri-operative characteristic between the five

groups that was of significance. In terms of survival, there were significant differences between the <20 and 20-24 groups as well as the ≥35 group with respect to all other groupings.

CONCLUSION: Thus, over weight and obese (BMI=25-34) patients are reasonable to be listed for heart transplantation, while caution should be taken in listing patients with a BMI>35.

345

READMISSION RATES AND DIAGNOSES FOR PROLONGED INTENSIVE UNIT CARE STAY SURVIVORS FOLLOWING CARDIAC SURGERY

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BACKGROUND: There are an increasing number of patients that have a prolonged length of stay (defined as a stay ≥ 5 days) in the intensive care unit (prLOSICU) post cardiac surgery (CS). Rate of hospital readmission and primary readmission diagnosis in prLOSICU survivors has not been well characterized.

OBJECTIVE: To determine the readmission rates to hospital and primary readmission diagnosis post discharge home of patients with prLOSICU post CS.

METHODS: Data of CS patients with prLOSICU from January 1, 2000 to September 30, 2011 was extracted from clinical and administrative provincial hospital readmission databases. The data were reported with the number of patients alive at the various points in time.

RESULTS: There were a total of 9711 unique and province specific CS patients admitted to the ICU during the time period of which 862 patients (8.9%) had prLOSICU. There were 699/862 (81.1%) patients eventually discharged home. The cumulative readmissions at 1 mo, 1, 3 and 5 years were: 116/699 (16.6%), 232/571 (40.6%), 205/377 (54.4%) and 156/235 (66.4%) respectively. The readmission rates from 0-30 days post discharge home was 16.6%/mo, from 31-60 days was 4.8%/mo, from 61-90 days was 5.1%/mo, from 91-180 days was 1.3%/mo, from 181-270 days was 1.1%/mo and from 271 - 365 days post discharge home was 0.3%/mo. Table I demonstrates that the most common primary reasons for readmission to hospital were related to cardiovascular disease (accounting for 30-40% of the readmission diagnoses), followed by respiratory/gastrointestinal disorders (accounting for 10-15% of the readmission diagnoses), infectious disorders (accounting for 5-10% of the readmission diagnoses) and then “failure to thrive” type diagnoses (accounting for ~ 5% of the readmission diagnoses).

CONCLUSION: Our data suggest that patients surviving a prLOSICU following cardiac surgery have a relatively high rate of readmission soon after discharge home but this decreases relatively quickly. The most common reason for readmission to hospital is related to cardiovascular disease.

Table I: Hospital Readmission Diagnoses and Frequencies for Patients With Prolonged LOS Post Cardiac Surgery

Time Period Discharge Home To Readmission	0-30 days	31-90 days	91-180 days	181-365 days	1-2 years	2-3 years	3-4 years	4-5 years
Total Patients with Data at Time Point	699	661	639	571	473	377	313	235
No. of Hospitalizations During Time Period	130	125	125	200	254	194	154	140
Rehospitalization Rate/month	130/mo	62.5/mo	41.7/mo	33.3/mo	21.2/mo	16.2/mo	12.8/mo	11.7/mo
Time Interval Specific Readmission with:								
Cardiovascular Readmit Diagnosis* - (n/mo) - %	49 (37.7%)	25.5 (40.8%)	12 (28.8%)	11.5 (34.5%)	6 (28.3%)	4.1 (25.3%)	4.3 (33.6%)	4.1 (35.0%)
Respiratory Readmit Diagnosis** - (n/mo) - %	12 (9.2%)	6 (9.6%)	4.3 (10.3%)	1.5 (4.3%)	2.2 (10.4%)	1.8 (11.1%)	0.6 (4.7%)	1.2 (10.3%)
Gastrointestinal Readmit Diagnosis*** - (n/mo) - %	14 (10.8%)	6.5 (10.4%)	5 (12.0%)	3 (9.0%)	1.9 (9.0%)	1.3 (8.0%)	1.8 (14.1%)	1.6 (13.7%)
Infectious Disease Readmit Diagnosis**** - (n/mo) - %	10 (7.7%)	4.5 (7.2%)	4.3 (10.3%)	2.7 (8.1%)	2.8 (13.2%)	1.5 (9.3%)	1.3 (10.2%)	0.8 (6.8%)
Failure to Thrive***** Readmit Diagnosis - (n/mo) - %	8 (6.2%)	3.5 (5.6%)	1.3 (3.1%)	1.8 (5.4%)	0.6 (2.8%)	0.7 (4.3%)	0.4 (3.1%)	0.7 (6.0%)
Neurological Readmit Diagnosis - (n/mo) - %	0 (0%)	0 (0%)	3 (7.2%)	2 (6.0%)	0.7 (3.3%)	0.9 (5.6%)	1.1 (8.6%)	0.3 (2.6%)
Renal Readmit Diagnosis**** - (n/mo) - %	0 (0%)	0 (0%)	0 (0%)	3.2 (9.6%)	1.3 (6.1%)	1.2 (7.4%)	0.9 (7.0%)	0.6 (5.1%)
Hematology Readmit Diagnosis - (n/mo) - %	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0.8 (3.8%)	0.3 (1.9%)	0.2 (1.6%)	0.2 (1.7%)

* Cardiovascular diagnoses include heart failure/pulmonary edema, rhythm disorders, wound problems, ischemic heart disease, peripheral vascular disease related, other
 ** Respiratory diagnoses include chronic lung problems (COPD, asthma), pleural effusions, other
 *** Gastrointestinal diagnoses include peptic ulcer disease, pancreatitis, renal and bowel obstruction, mesenteric vascular disease, gall bladder disease and other
 **** Infectious disease diagnoses include respiratory tract infections, cellulitis, gastrointestinal infections (pharyngitis, appendicitis, peritonitis, other), other
 ***** Failure to Thrive diagnoses include weakness/failure to thrive/muscle/mobility/spain NOS/ rehab/ consciousness related
 ***** Renal diagnoses include acute and chronic renal failure, fluid and electrolyte disorders and other renal/urinary/prostate related

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346

INTRAOPERATIVE CELL SALVAGE IS A SAFE AND EFFECTIVE METHOD OF DECREASING PERIOPERATIVE BLOOD TRANSFUSION RATES

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BACKGROUND: Intraoperative cell salvage (ICS) has been used during cardiac surgery to improve blood conservation and reduce rates of perioperative transfusion. Despite this, data regarding its safety and efficacy are conflicting. The objective of this study was to evaluate the impact of ICS on rates of perioperative blood product transfusion in patients undergoing cardiac surgery.

METHODS: All patients who underwent non-emergent cardiac surgery 18 months prior to and 18 months following the implementation of routine ICS by a single surgeon were identified. Rates of perioperative blood product transfusion were compared between patients who received ICS and those who did not. Perioperative transfusion was defined as the administration of packed red blood cells (pRBC) and/or coagulation products, including fresh frozen plasma, platelets, cryoprecipitate and Factor VIII Inhibiting Bypass Activity (FEIBA), both intraoperatively and within the first 24 hours postoperatively. In addition, 12-hour chest tube drainage, pre- and post-operative hematocrit levels, and rates of in-hospital mortality and morbidity, including re-operation, infection, atrial fibrillation, renal dysfunction, stroke and prolonged ventilation were examined. Multiple logistic regression modeling was used to determine the risk-adjusted effect of ICS on perioperative transfusion rates.

RESULTS: A total of 399 patients formed the final study population (ICS: n=196; control: n=203). Baseline characteristics differed between the ICS group vs. control with regards to redo operations (5.1% vs. 0%, $p < 0.001$), NYHA IV symptoms (65.3% vs. 41.4%, $p < 0.0001$), and urgent status (60.7% vs. 49.8%, $p = 0.03$). ICS patients experienced lower perioperative transfusion rates of pRBC, coagulation products and any blood product (Table 1). In addition, ICS patients experienced reduced mediastinal chest tube drainage at 12 hours (320mL [230mL, 560mL] vs. 400mL [260mL, 690mL], $p = 0.02$). ICS was associated with an increased postoperative hematocrit level ($30.4\% \pm 3.5\%$ vs. $28.3\% \pm 3.5\%$, $p < 0.0001$). No significant