TRANSLATIONAL AND MISCELLANEOUS

EVALUATION OF RIGHT VENTRICULAR SYSTOLIC FUNCTION AFTER CORONARY ARTERY BYPASS GRAFTING: THE IMPACT OF DEL NIDO CARDIOPLEGIA.

M. G. Romeo[1], V. Parisi[2], M. Conte[3], S. Baiano[4], E. Pilato[5]
[1]Department of Translational Medical Sciences, Cardiac Surgery Unit, University "Federico II" Naples, [2]Department of Translational Medical Sciences, University "Federico II" Naples, [3]Department of Translational Medical Sciences, University "Federico II" Naples, [4] School of Medicine and Surgery, University "Federico II" Naples, [5]Department of Advanced Biomedical Science, Cardiac Surgery Unit, University "Federico II" Naples

Background and Aim: We aimed to investigate the effects on postoperative right ventricular systolic function (RSVF) using different cardioplegic solutions and to evaluate the efficacy of Del Nido cardioplegia (DNC), compared with conventional crystalloid cardioplegia (CC), in adult patients undergoing coronary artery bypass grafting (CABG). TAPSE is a reliable, rapidly measurable, and easily replicable echocardiographic parameter for assessing longitudinal RVSF and, consequently, postoperative outcome in CABG surgery. RVSF is a major determinant of postoperative surgical outcome, so estimating the impact of cardioplegic solution on the reduction of ischemic damage is crucial.

Methods: Our retrospective study included 118 patients treated with CABG. The population, homogeneous in terms of age, comorbidities, ejection fraction and operative timing, was divided into two groups according to the type of cardioplegia used during extracorporeal circulation (ECC): Group 1 consisting of 57 patients using CC, Group 2 consisting of 61 patients using DNC. RVSF was evaluated by echocardiography, assessing the tricuspid annular plane systolic excursion (TAPSE) pre and post-operatively.

Results: Both groups showed a normal pre-operative TAPSE value (CC: 23 ± 2 mm vs DNC: 22.7 ± 2,4 mm; p=0.51). Postoperatively, in both groups the TAPSE was significantly reduced, as expected (CC: 13,3 ± 1,96 mm vs DNC: 14,7 ± 2,9 mm). Comparing the post-operative TAPSE value between groups, Group 2 showed a significantly higher value than Group 1 (p=0.003).

Conclusions: The use of DNC in patients undergoing CABG improves short-term RVSF outcome, compared with the CC solution. In DNC-treated patients, the postoperative TAPSE showed a better RVSF.

LONG-TERM IMPACT OF CHRONIC KIDNEY DISEASE ON CLINICAL OUTCOMES OF PATIENTS UNDERGOING CORONARY ARTERY BYPASS GRAFTING

E. Gastino[1], A. Garatti[2], M. Scarpanti[1], G. Buttiglione[1], M. D'Ovidio[3], A. Canziani[1], A. Daprati[2], C. de Vincentiis[2], A. Parolari[1], L. Menicanti[2]
[1]University Unit of Cardiac Surgery, IRCCS Policlinico S. Donato, Università Degli Studi Di Milano, Milan, Italy. San Donato Milanese, [2]Cardiac Surgery Unit, IRCCS Policlinico S. Donato, Milan, Italy. San Donato Milanese, [3]Department of Epidemiology – Lazio, Rome, Italy Roma

Background and Aim: Chronic kidney disease (CKD) is one of the major comorbidities in patients undergoing coronary artery bypass grafting (CABG). Its effect on adverse events after surgery is well established, however, the impact of CKD even at early stages on long-term outcomes after CABG is unclear.

Methods: We analyze 4493 patients who underwent isolated CABG between 2005 and 2018. They were divided into five classes according to the KDIGO definition based on eGFR. Record linkage with the NHIS codes allowed identification of long-term outcomes.

Results: There was a clear trend of worsening risk profile in patients from Class 1 to 4, while Class 5 showed a reverse pattern, most likely reflecting a prevalent primary end-stage renal disease (ESRD). There was no significant difference in intra-operative variables from classes 1 to 5. Short-term postoperative outcomes progressively declined from class 1 to 4, with class 5 presenting less overall complications. On the other hand, patients in class 5 had a significantly higher 30-day mortality. At 5 and 10 years follow-up, we observed an overall survival decreasing from Class 1 to 3 (p<0.001). Accordingly, Classes 4 and 5 showed dramatically worse long-term survival (49%-21% and 41%-18% respectively, p=n.s.). Classes 4 and 5 did not show a statistically significant difference in the rate of MACCE when compared to Classes 1-3.

Conclusion: In our experience, The dramatic decrease in survival for ESRD patients can be attributed to the natural history the disease. Further studies are warranted to better clarify the topic.

RELATIONSHIP BETWEEN DIABETES AND LONG-TERM OUTCOMES IN PATIENTS UNDERGOING ISOLATED CORONARY ARTERY BYPASS GRAFTING.

N. Vitale[1], F. barili[2], P. d'errigo[3], G. baglio[4], A. daprati[1], G. badoni[3], G. duranti[4], F. donatelli[2], A. parolari[1], S. rosato[5]
[1]cardiochirurgia universitaria policlinico san donato Milano, [2]cardiochirurgia universitaria IRCCS Ospedale Galeazzi - Sant'Ambrogio, Milan, Italy. Milano, [3]National Centre for Global Health, Italian Health Institute, Rome, Italy. roma, [4]Agenzia Regionale per i Servizi Sanitari Regionali, Rome, Italy. roma, [5]Department of Biomedical and Clinical Sciences, Università Degli Studi Di Milano, Milan, Italy Milano

Background and Aim: Diabetes is a known risk factor for coronary artery disease, but its impact after coronary artery bypass grafting (CABG) remains uncertain, with limited data on long-term outcomes. This study aims to assess how diabetes affects 10-year outcomes following CABG.

Methods: The PRedictIng long term Outcomes afteR Isolated coronary arTery bypass surgery (PRIORITY) project is an observational cohort study that combines two prospective multicenter studies from 2002-2004 and 2007-2008 on isolated CABG. Follow-up data were gathered from administrative databases and extended up to 10 years post-surgery. Primary outcome was a composite of Major Adverse Cardiac and Cerebrovascular Events (MACCE). Baseline differences between patients with and without diabetes were adjusted using propensity score inverse probability of treatment. Time-to-event data were analyzed through Cox- regression and competing risk analysis.

Results: The study included 10989 patients with complete follow-up information who had isolated CABG, with 32.3% having diabetes. Diabetic patients exhibited a higher 10-year risk for MACCE (weighted HR 1.22, 95% CI 1.17 - 1.27, p<0.001), mortality (HR 1.39, 95% CI 1.32 - 1.47, p<0.001), stroke (HR 1.33, 95% CI 1.21 - 1.47), and myocardial infarction (MI) (HR 1.16, 95% CI 1.07 - 1.25, p<0.001). However, diabetes was not linked to higher incidence of repeat revascularization (HR 1.03, 95% CI 0.95 - 1.12, p=0.41).

Conclusions: Diabetic patients faced poorer outcomes, with a higher 10-year incidence of myocardial infarction and a lower rate of repeat revascularization, suggesting that diabetes may have a more detrimental effect on microvascular health rather than on the grafts.

THE IMPACT OF FEMALE GENDER ON EARLY AND LONG-TERM OUTCOMES AFTER CORONARY ARTERY BYPASS GRAFTING SURGERY

P. Nardi[1], C. Altieri[2], V. Labriola[1], E. Latini[1], F. Cipullo[3], A. C. Salvati[1], M. Scognamiglio[1], C. Bassano[1], A. D'Onofrio[1]
[1]Cardiac Surgery Division, Department of Surgical Sciences Tor Vergata University, Rome, [2]Cardiology Unit of the Cardiac Surgery Division, Tor Vergata University Polyclinic, Rome, [3]Graduated Technical Cardio-circulatory Pathophysiology and Cardiovascular Perfusion, Tor Vergata University, Rome

Aim: Data on female gender differences on clinical prognosis after coronary artery bypass grafting (CABG) are still controversial. We retrospectively evaluated the impact of women patients in comparison with men undergoing CABG on long-term outcome.

Methods: Between December 2014 and March 2022, 1044 consecutive patients (162 females, 15.5%, 882 males, 84.5%) underwent isolated CABG. The mean follow-up was 40±27 (median 38) months. Logistic and Cox model analysis regressions were used to assess the risk of female gender and other variables, Kaplan-Meier estimates to assess survival rates.

Results: Baseline characteristics were similar, Euroscore-2 was higher in women (3.23% vs 2.63%; P=0.04). There was no difference in the use of left internal mammary artery (95.5% vs 94.9%; P>0.80). Women did not have a significant higher operative mortality than men (n=5, 3.08% vs n=17, 1.93%; P=0.37). Independent predictors of early mortality were emergency CABG (P<0.0001), PCI within 30 days (P=0.002), and the higher Euroscore-2 (P=0.016). At 7.5 years, actuarial survival was 87%±3.6% for female gender vs 88%±1.9% for male gender, freedom from cardiac death 97%±1.8% vs 96.6%±1.0%, from MACE 87%±6.2% vs 90%±2.5% (P-values>0.5). Independent predictor of all-causes death and cardiac death was the advanced age (74 years in dead patients vs 64 years in survivors; P<0.0001). Female gender was not a predictor of neither operative mortality (P=0.34) nor worse long-term outcome (P=0.41).

Conclusions: Women undergoing CABG do not appear to be associated with worse early prognosis. Freedom from late all-causes mortality, cardiac death and cardiac events are equally satisfactory, highlighting the positive protective effect of CABG over time also in women.

THE PROTECTIVE BENEFITS OF MINIMAL INVASIVE EXTRACORPOREAL CIRCULATION IN CORONARY ARTERY BYPASS SURGERY: A SINGLE-CENTER EXPERIENCE

S. Snaidero[1], C. Mariani[1], L. Fabiani[1], I. Tammaro[1], G. Folesani[1], G. Barberio[1], D. Pacini[1]
[1]IRCSS Policlinico di Sant'Orsola, dipartimento di Cardiochirrugia Bologna

Background and Aim: Minimal invasive extracorporeal circulation (MiECC) is an advanced CPB technology that reduces complications compared to standard CPB. The study aims to evaluate the effectiveness of MiECC in coronary artery bypass (CABG) surgery, focusing on outcomes like inflammation, blood transfusion and organ protection.

Methods: From April 2016 to June 2024, 63 patients underwent CABG procedure with MiECC at our center. A 1:1 propensity-matching algorithm was employed to match the patients with 63 patients who underwent CABG procedure with standard ECC. The variables used for matching were age, sex, BMI, LVEF, presence of diabetes mellitus, renal insufficiency, cross-clamp time and number of distal anastomosis.

Results: Intra-operative outcomes demonstrated lower levels of lactates and glycemia in MiECC group with a statistical significance (2.1±0.8 vs 1.4±0.7, p<0.001 and 164±35.8 vs 124.4±31.5, p<0.001, respectively).
Early postoperative outcomes were similar between MiECC and standard ECC groups regarding renal and liver impairment and bleeding. LDH values were statistically inferior in MiECC group (419.9±239.8 vs 210.6±42.1, p<0.001). Needing of inotropes over 24-hours and MOF were higher in standard ECC group, without a statistical significance. 30-day mortality was higher in standard ECC group (3 vs 0, p=0.08).

Conclusions: The use of MiECC for CABG surgery in our analysis showed a significant lower alteration in metabolic parameters such as lactate and blood glucose levels, suggesting a better overall patients' perfusion during the procedure. Clinically, this translates in a shorter intubation time anf reduced ICU stay for the MiECC group.

DETERMINANTS OF POSTOPERATIVE INFECTIONS AND IMPACT ON PERIOPERATIVE HEART TRANSPLANTATION OUTCOMES

F. Londi[1], V. Santamaria[1], S. Snaidero[1], S. Castagnini[1], M. Bellomare[1], A. Leone[2], M. Pagliaro[2], S. Martin-Suarez[2], D. Pacini[3]
[1]DIMEC - Alma Mater Studiorum – Università di Bologna, Dipartimento di Scienze Mediche e Chirurgiche Bologna, [2]U.O. Cardiochirurgia, IRCCS Azienda Ospedaliero-Universitaria di Bologna Bologna, [3]DIMEC - Alma Mater Studiorum – Università di Bologna, Dipartimento di Scienze Mediche e Chirurgiche - U.O. Cardiochirurgia, IRCCS Azienda Ospedaliero- Universitaria di Bologna Bologna

Background and Aim: Outcome of patients undergoing heart transplantation (HTX) can be severely affected by post- operative infections. The present study is aimed at identifying their determinants and at analyse short-term outcomes.

Methods: Through a retrospective analysis, adults undergoing HTX at Bologna University Hospital from January 2013 to December 2023 (n=231) were either assigned to group 1 (n=63) or group 2 (n=168), according to a positive or negative postoperative infection history, respectively.

Results: Among preoperative recipient characteristics, no significant difference regarding sex, obesity (defined as BMI >30 kg/m^2), history of diabetes mellitus and of device or drive-line infection (in patients implanted with VAD) was found. Instead, incidence of postoperative infections was significantly higher in patients undergoing HTX on IABP (p=0.012), ECMO (p=0.036), mechanical ventilation (p=0.041) or with a history of cardiac surgery (p=0.002).
Furthermore, a significant difference in postoperative infection rates was observed among patients requiring postoperative early CRRT (p<0.001), ECMO (p=0.001) or surgical revision (p<0.001).
Moreover, patients developing postoperative infections had significantly longer ICU stay (p<0.001) and hospital stays (p<0.001).
Lastly, 30-day mortality was significantly higher among patients developing postoperative infections (p=0.037); 1-year mortality was, instead, not affected, with Kaplan-Meier survival analysis showing no significant difference (p=0.323 log-rank).

Conclusions: A critical perioperative state appears linked to a higher rate of postoperative infections, which significantly affect short-term outcomes and length of hospitalization. No significant impact of postoperative infections on 1-year survival was identified.

A HUGE IMPELLA-RELATED AORTIC THROMBUS IN A D-LVAD PATIENT SUCCESSFULLY TREATED WITH THE INARI FLOWTRIEVER SYSTEM

A. Loforte[1], A. Spitaleri[1], G. Monteleone[1], P. Abbà[1], G. A. Galanti[1], V. Aloi[1], A. Sandoval[2], G. Gallone[3], A. Di Scalzi[4], A. C. Trompeo[5], M. Boffini[1], M. Rinaldi[1]
[1]Università di Torino, Dipartimento di Scienze Chirurgiche, ASOU Città della Salute e della Scienza di Torino, SDCU di Cardiochirurgia Torino, [2]Cirugía cardiovascular y torácica, Fundación Favaloro, Buenos Aires, Argentina Buenos Aires, [3]Università di Torino, Dipartimento di Scienze Mediche, ASOU Città della Salute e della Scienza di Torino, SC di Cardiologia Torino, [4]Università di Torino, Dipartimento di Scienze Chirurgiche, ASOU Città della Salute e della Scienza di Torino, Unità di Radiologia Interventistica Torino, [5]Università di Torino, Dipartimento di anestesia e rianimazione, ASOU Città della Salute e della Scienza di Torino, U Cardiorianimazione Torino

Micro-axial flow pumps (mAFPs), eventually associated with ECLS, have emerged as a valid option to treat cardiogenic shock as a bridge to durable LVAD (d-LVAD) therapy.

We describe the case of a 55-year-old man with acute myocardial infarction-related cardiogenic shock (AMI-CS) who was bridged from ECMELLA to d-LVAD. He subsequently developed early right heart failure and required a temporary right ventricular assist device (t-RVAD). Four days later the RV function recovered, and TEE showed an incidental huge floating thrombus in the descending aorta. Despite anticoagulation, the thrombus remained stable. However, fibrinolysis wasn't a suitable option due to high bleeding risk of pre-existing cerebral lesions thus, after a multidisciplinary team discussion (cardiac surgeons, anesthesiologists, interventional radiologists), we decided for mechanical thrombectomy using the FlowTriever System (Inari Medical, Irvine, CA).

LESS INVASIVE IMPLANTATION OF THIRD GENERATION LEFT VENTRICULAR ASSIST DEVICES: PRELIMINARY ANALYSIS

A. Loforte[1], A. Spitaleri[2], G. Monteleone[1], P. Abbà[1], M. Marro[1], E. Simonato[1], A. Sandoval[3], G. Gallone[4], S. Frea[4], A. C. Trompeo[5], M. Boffini[1], M. Rinaldi[1]
[1]Università di Torino, Dipartimento di Scienze Chirurgiche, ASOU Città della Salute e della Scienza di Torino, SDCU di Cardiochirurgia Torino, [2]SCDU Cardiochirurgia, ospedale Molinette, Città della Salute e della Scienza di Torino Torino, [3]Cirugía cardiovascular y torácica, Fundación Favaloro, Buenos Aires, Argentina Buenos Aires, [4]Università di Torino, Dipartimento di Scienze Mediche, ASOU Città della Salute e della Scienza di Torino, SC di Cardiologia Torino, [5]Università di Torino, Dipartimento di anestesia e rianimazione, ASOU Città della Salute e della Scienza di Torino, U Cardiorianimazione Torino

Background and Aim: This study evaluates the short-term benefits of a less invasive surgical approach (LIS) compared to traditional full sternotomy (FS) for implanting third-generation left ventricular assist devices (LVADs).

Methods: Out of 165 LVAD implantations at our institution, a retrospective analysis was performed on 115 centrifugal pumps recipients (HeartWare HVAD and HeartMate 3) between 2010 and 2023.

Results: Of the 115 LVAD implants analyzed, 79% (n=91) were performed using FS, while 21% (n=24) used LIS. The LIS cohort was younger (median age 57 vs. 61 years, p=0.05) and more frequently received the HVAD device (83% vs. 17%, p=0.001). They presented with worse hemodynamic parameters and a higher frequency of moderate to severe tricuspid regurgitation (83.3% vs. 45.6%, p=0.001). Perioperatively, the LIS group had a lower use and shorter time of extracorporeal circulation (62% vs. 100%, p=0.001; median time 60 vs. 92.5 minutes, p=0.007), lower incidence of right heart failure (21.7% vs. 30.03%, p=0.044), and faster respiratory weaning (extubation at 48 hours, 70.8% vs. 52.7%, p=0.029). Additionally, no revision for bleeding was required (0% vs. 15.5%, p=0.014), and in-hospital mortality was lower (4.2% vs. 12.4%, p=0.003). At six months, the LIS group experienced fewer driveline infections (10.8% vs. 18.2%, p=0.05), cerebral events (4.6% vs. 6.9%, p=0.044), and pump thrombosis (0% vs. 1.4%, p=0.039).

Conclusions: The less invasive surgical approach for LVAD implantation is a feasible and safe alternative to full sternotomy in selected patients.