ORIGINAL ARTICLE

Implication of Left Main Coronary Artery Disease on Coronary Artery Bypass Graft Surgery Results

Implicancia de la enfermedad del tronco de coronaria izquierda en los resultados de la cirugía de revascularización miocárdica

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ABSTRACT

Background: Coronary artery bypass graft surgery (CABG) has been the indicated approach for the treatment of left main coronary artery (LMCA), disease with percutaneous coronary intervention (PCI) as an alternative treatment in a highly selected group of patients. However, the non-inferiority criteria of PCI outcomes in terms of mortality and acute myocardial infarction (AMI) in the mid-term follow-up are currently subject of debate.
Objective: The aim of this study was to evaluate the clinical, functional and angiographic characteristics of patients undergoing CABG with and without LMCA disease, and the implications of morbidity and mortality encountered.
Methods: A total of 458 consecutive patients underwent CABG; 187 (40.82%) presented LMCA disease. This group had a higher risk profile compared with the group without LMCA disease: ArgenSCORE: 2.78 (1.55-5.9) vs. 2.78 (1.95-7); p=0.03, STS score: 0.85 (0.55-1.8) vs. 0.77 (0.5-1.17); p=0.01 and EuroSCORE II: 2.2 (1.35-3.97) vs. 1.75 (1.08-2.9); p=0.04.
Results: Despite the higher expected risk, there were no statistically significant differences in mortality (3.2% vs. 1.1%), AMI (2.6% vs. 1.1%) and stroke (1% vs. 0.3%) in the two groups. In the multivariate analysis, LMCA disease was not a predictor of morbidity and mortality (HR=2.1; 95% CI 0.70-6.23; p=0.18) and positively identified the preoperative ejection fraction (HR=0.96; 95% CI 0.93-0.99; p=0.040) and non-programmed surgery (HR=3.44; 95% CI 1.60-7.41; p=0.002).
Conclusions: In our experience, LMCA disease in patients undergoing CABG is not a predictor of death, AMI and/or stroke.

Key words: Coronary Artery Bypass - Cardiac Surgical Procedures - Cause of Death - Heart Bypass, Left

RESUMEN

Introducción: La cirugía de revascularización miocárdica (CABG) ha sido el abordaje indicado para el tratamiento de la lesión del tronco de la coronaria izquierda (TCI), siendo la angioplastia coronaria (ATC) un tratamiento alternativo en un grupo muy seleccionado de pacientes. Sin embargo, los criterios de no inferioridad de los resultados de la ATC en términos de mortalidad e infarto de miocardio (IAM) en el seguimiento a mediano plazo es tema de discusión actual.
Objetivo: Evaluar las características clínicas, funcionales y angiográficas de los pacientes sometidos a CABG con y sin TCI, y las implicancias de morbimortalidad halladas.
Material y métodos: Se sometió a 458 pacientes consecutivos a CRM 187 (40.82%) presentaban TCI. El grupo con TCI tenía un perfil de riesgo mayor: ArgenSCORE: 2.78 (1.55-5.9) vs 2.78 (1.95-7) p=0.03, STS score: 0.85 (0.55-1.8) vs 0.77 (0.5-1.17) p=0.01 y EuroSCORE II: 2.2 (1.35-3.97) vs 1.75 (1.08-2.9) p=0.04 respecto al grupo sin TCI.
Resultados: A pesar del mayor riesgo esperado no hubo diferencias estadísticamente significativas en mortalidad 3.2% vs 1.1%, IAM 2.6% vs 1.1% y ACV 1% vs 0.3% en los dos grupos. En el análisis multivariado el TCI no fue predictor de morbi-mortalidad (HR = 2.1; IC 95% 0.70-6.23; p = 0.18) e identificó positivamente a la fracción de eyección preoperatoria (HR = 0.96; IC 95%: 0.93-0.99; p = 0.040) y la cirugía no programada (HR = 3.44; IC 95%: 1.60-7.41; p = 0.002).
Conclusiones: en nuestra experiencia los pacientes intervenidos con CRM el TCI no es predictor de muerte, IAM y/o ACV.

Palabras clave: Puente de Arteria Coronaria - Procedimientos Quirúrgicos Cardíacos - Causas de Muerte – Puente Cardíaco Izquierdo

INTRODUCTION

Patients with unprotected left main coronary artery (LMCA) disease have an increased risk of mortality due to the large amount of myocardium at risk and because it supplies more than 80% of the blood flow to the left ventricle. In this context, 3-year mortality was close to 50% when patients were medically treated with nitrites and beta-blockers, prior to the systematic use

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of statins and aspirin. (1-3) Percutaneous coronary intervention (PCI) has been positioned as an alternative treatment to CABG in a selected group of patients with favorable anatomy who have been included in several studies with the aim of evaluating hard points such as mortality, stroke, acute myocardial infarction (AMI) and need for new revascularization. (4-8) Nevertheless, non-inferiority criteria of PCI outcomes in terms of mortality and AMI during follow-up are currently topics of debate. In this sense, the clinical characteristics and many of the pretreatment risk variables (PCI vs. CABG) in randomized studies are far from the current reality of patients undergoing revascularization.

The aim of this study was to evaluate the clinical, functional and angiographic characteristics of patients undergoing CABG with LMCA disease and the morbidity and mortality implications found compared with the rest of the population of patients with CABG without LMCA disease.

Inclusion criteria

All patients over 18 years of age, with preoperative LMCA disease presenting >50% obstruction and/or ≥70% obstructive coronary lesion in the rest of the coronary arteries, who consecutively underwent isolated CABG (single procedure) at Hospital Universitario Austral (HUA) from January 1, 2011 to March 31, 2020 were included in the study. Patients who received an additional procedure to CABG were excluded from the analysis.

METHODS

This was a retrospective cohort study of patients undergoing isolated CABG, with data collected from the electronic medical records of HUA and a database specially designed for this study (all variables studied are incorporated).

The endpoint of major adverse cardiovascular events (MACE) is defined as the composite of death, stroke and/or AMI within 30 days after CABG.

The following variable definitions were used:

AMI: Development of new persistent Q waves detected by ECG of at least 0.04 msec in two or more consecutive leads and/or decrease in the R wave amplitude in precordial leads >25%, increased troponin levels >10 times its normal values and/or wall motion abnormalities in the echocardiogram consistent with the electrocardiogram.

Stroke: Focal and/or diffuse brain lesion confirmed by clinical findings and computed tomography with sequelae at patient discharge.

Renal failure: More than 50% increase in creatinine levels with respect to baseline.

Mediastinitis: Clinical signs with positive cultures confirmed in the surgical mediastinal toilet.

Low cardiac output syndrome: Systolic blood pressure <90 mmHg, pale and cold skin, poor capillary filling, confusion and oliguria, cardiac index <2.2 L/min/m2, pulmonary capillary pressure>18 mm Hg, requiring more than one inotropic drug, intra-aortic balloon pump, or ventricular assist device.

Prolonged mechanical ventilation: Need of postoperative mechanical ventilation for a term equal to or greater than 24 hours.

Preoperative surgical condition was divided into elective, urgency and emergency. Elective surgery can be conducted when the clinical condition of stability allows the procedure to be performed on a scheduled basis from the office. Urgent surgery corresponds to an unstable clinical condition and surgery is performed 24 hours after its indication and emergency surgery is performed within 24 hours of its indication due to the severity and/or rescue of the hemodynamic cardiovascular condition.

Coronary beds: Assessment of coronary beds was performed in all preoperative coronary angiography studies and was divided into three groups (9) defined as: "Good" when the obstruction is equal to or greater than 70% located in the proximal portion without distal obstruction and with a diameter ≥2 millimeters, "fair" when it presents the same characteristics as the previous group, but with a diameter between 1.5 to 2 millimeters, and “poor” when the coronary vessel presents significant proximal and distal lesions with a diameter <1.5 millimeters.

The following scores were used to validate the risk of preoperative morbidity and mortality: ArgenSCORE (10), STS score (11) and EuroSCORE II (12).

Ethical considerations

The registry was approved by the independent institutional Review and Ethical Board, waiving the request for informed consent as no sensitive data or clinical follow-up was required (according to Personal Data Protection Law 25,326).

Statistical analysis

Qualitative variables were described as percentages. Quantitative variables were expressed as mean and standard deviation or median and interquartile range, according to their normal or non-normal distribution. Student’s t test, the chi square test, or the Wilcoxon or Mann Whitney tests were used as hypothesis tests. Multivariate analyses were performed with linear regression or logistic regression according to the characteristic of the dependent variable (quantitative or qualitative) and fulfilling tests’ assumptions. The selection of variables for the univariate analysis was based on a p value.

RESULTS

Among a total of 458 consecutive patients who underwent isolated CABG between January 2011 and March 2020, 187 patients (40.82%) had LMCA disease (Group 1) and 271 patients (59.18%) did not present with the disease (Group 2). Baseline preoperative characteristics (Table 1) showed that group 1 presented with higher chronic obstructive pulmonary disease (10.1% vs. 5.1%; p=0.04), emergency surgery (13.5% vs. 3.7%; p=0.001) and use of preoperative intra-aortic balloon pump. (6.4% vs. 0.3%; p=0.001), while group 2 presented a greater tendency to suffer hypertension (HTN) (91% vs. 85%; p=0.02).

Preoperative coronary angiography data revealed that all (100%) group 1 patients had LMCA lesion and none in group 2. Regarding the rest of the coronary lesions, group 2 had a higher incidence of severe obstruction in the anterior descending artery (97% vs. 94%; p=0.041) as well as in the right coronary artery (78% vs. 63%; p=0.01) compared with group 1. No differences were observed in the characteristics of the

Table 1. Preoperative variables and characteristics of operative risk according to ArgenSCORE, STS score and EuroSCORE II

Variable	Global (n:458)	Group I (n:187)	Group II (n:271)	*p* value
Age, years	64 ± 9	64 ± 10	63 ± 8	ns
Male gender, n (%)	404 (88.2)	171 (91)	233 (88)	ns
HTN, n (%)	410 (89.51)	160 (85)	250 (91)	0.02
Family history, n (%)	63 (13.75)	28 (15)	35 (12)	ns
Current smoker, n (%)	111 (24.23)	53 (28)	58 (21)	ns
Ex-smoker, n (%)	182 (39.73)	70 (37)	112 (41)	ns
Diabetes, n (%)	197 (43.01)	70 (37.43)	127 (46.86)	ns
Type I	83 (18.12)	30 (16)	53 (20)	ns
Type II	114 (24.89)	40 (21)	74 (27)	ns
DLP, n (%)	400 (87.33)	161 (80)	239 (88)	ns
PVD, n (%)	59 (12.88)	31 (26)	28 (10)	ns
BMI, SD	28.83 ± 4.31	28 ± 3.9	28.7 ± 4	ns
COPD III-IV, n (%)	33 (7.20)	19 (10.1)	14 (5.1)	0.04
Creatinine (mg/dl)	0.98 [0.8-1.1]	0.98 [0.8-1.1]	1 [0.8-1.1]	ns
Creatinine Clearence ml/min	86.2 [62-106]	82.2 [45-110]	88.9 [69-104]	ns
Hematocrit %	41 [38-44]	41 [38-45]	41 [37-44]	ns
Platelets ×103/mcL	209 [173-248]	203 [170-238]	214 [175-270]	ns
Previous PCI, n (%)	122 (26.63)	47 (25.13)	75 (27.67)	ns
<1 month	51 (11.13)	15 (8)	36 (13)	ns
1 month – 1 year	56 (12.22)	24 (13)	32 (12)	ns
>1 year	84 (18.34)	38 (20)	46 (17)	ns
Previous CABG, n (%)	5 (1.09)	3 (1.6)	2 (0.7)	ns
Previous AMI, n (%)	177 (38.64)	63 (34)	114 (42)	ns
Mean LVEF %	56 [42-60]	58 [43-62]	55 [42-60]	ns
> 50, n (%)	275 (60.04)	117 (62.5)	158 (58.3)	ns
30 – 50, n (%)	126 (27.51)	42 (22.4)	84 (30.9)	ns
20 – 30, n (%)	48 (10.48)	23 (12.3)	25 (9.2)	0.04
<20, n (%)	9 (1.96)	5 (2.7)	4 (1.5)	ns
Affected coronary artery				
LMCA, n (%)	187 (40.82)	187 (100)	0	
LAD, n (%)	432 (94.32)	176 (94)	265 (97)	0.041
CX, n (%)	383 (83.62)	161 (86)	222 (82)	ns
RCA, n (%)	331 (72.27)	119 (63)	212 (78)	0.01
Coronary beds				
Good, n (%)	336 (73.36)	145 (77.5)	191 (70.5)	ns
Fair, n (%)	82 (17.90)	28 (15)	54 (19.9)	ns
Poor, n (%)	40 (8.73)	14 (7.5)	26 (9.6)	ns
Priority				
Elective, n (%)	233 (50.87)	80 (42.7)	153 (56)	ns
Urgency, n (%)	190 (41.48)	82 (43.8)	108 (40)	ns
Emergency, n (%)	35 (7.64)	25 (13.5)	10 (3.7)	0.001
PIABP, n (%)	13 (2.83)	12 (6.4)	1 (0.3)	0.001
Shock, n (%)	18 (3.93)	10 (5.3)	6 (2.2)	0.07
Risk scores				
ArgenSCORE *	2.79 [1.86-5.9]	2.79 [1.55-5.9]	2.79 [1.9-5.7]	0.03
STS score *	0.8 [0.51-1.37]	0.85 [0.55-1.8]	0.77 [0.5-1.17]	0.01
EuroSCORE II*	1.93 [1.17-3.37]	2.2 [1.35-3.97]	1.75 [1.08-2.9]	0.04

* Expressed as median and interquartile range.
HTN: Hypertension, DLP: Dyslipidemia, PVD: Peripheral vascular disease, COPD: Chronic obstructive pulmonary disease, BMI: Body mass index, PCI: Percutaneous coronary intervention, CABG: Coronary artery bypass graft surgery, AMI: Acute myocardial infarction, LVEF: Left ventricular ejection fraction, PIABP: Preoperative intra-aortic balloon pump.

coronary beds.

Group 1 patients had higher risk of surgical morbidity and mortality than group 2, as analyzed by validated risk scores (expressed as median and interquartile range), such as the ArgenSCORE: 2.79 (1.55-5.9) vs. 2.79 (1.95-7); p=0.03, the STS score: 0.85 (0.55-1.8) vs. 0.77 (0.5-1.17); p=0.01 and the EuroSCORE II: 2.2 (1.35-3.97) vs. 1.75 (1.08-2.9); p=0.04 (Table 1).

In the global population, most patients underwent off-pump CABG (87.99%) and exclusively with multiple arterial grafts in 82.53% of patients, using the left mammary artery in 98.25%, the right mammary artery in 52.83%, and the radial artery in 31.22 % of cases, representing a median of 3 coronary bypasses per patient. In patients who required cardiopulmonary bypass, median time was 75 minutes and median aortic cross-clamp time was 75 minutes. These characteristics of the surgical procedure are detailed in Table 2 without differences in the two groups analyzed.

There were no statistically significant differences between the two groups when analyzing mortality (3.2% vs. 1.1%), AMI (2.6% vs. 1.1%) and stroke (1% vs. 0.3%) (p=ns); however, in the univariate analysis, group 1 patients had a higher incidence of MACE (3.93% vs. 2.2%, p=0.022). There were no differences in the rest of the morbidity variables studied (Table 3) with a longer hospital stay, expressed as median with its corresponding interquartile range, for patients in group 1 of 6 days (5-8) vs. 6 days (5-7) in group 2 (p=0.004).

A univariate and multivariate regression model was carried out in order to evaluate the effect of LMCA disease in the occurrence of MACE. Given the limited number of events, variables of biological implication were incorporated into the model as shown in Table 4. Although, in the univariate analysis the relationship between the presence of LMCA disease with the occurrence of the composite events became statistically significant, the significance was lost after adjustment with acceptable calibration (Hosmer-Lemechow goodness of fit test 0.34).

Comparison of CABG results requires a complete risk assessment of the treated population. In this sense, the predictive value of two international scores (STS score and EuroSCORE II) and one developed in Argentina (ArgenSCORE) were compared using the ROC curve. No significant differences in the predictive capacity of composite events were found with an area under the curve and 95 % CI of 0.71 [0.59-0.83], 0.77 [0.67-0.88] and 0.74 [0.60-0.89], respectively (Table 5).

DISCUSSION

Morbidity and mortality rates are frequently used as quality markers of hospital care; however, they are an isolated data if the risk profile of patients is not considered. Currently, patients present with an increasingly important and advanced associated comorbidity, and even so, perioperative mortality rates in our institution remain <2% globally, a figure comparable to international reference surgical centers such as the database of the STS (13). In the ESMUCICA study, the prevalence of 3-vessel disease was 50.8% and that of LMCA lesion 19%, lower than in our population (65.28% and 40.8%, respectively). In our study, risk factors showed a higher incidence of HTN (89.51% vs. 57.3%), diabetes (43.01% vs. 21.8%), dyslipidemia (87.33% vs. 64%), previous PCI (26.6% vs. 9.3%) and peripheral vascular disease (PVD) (12.88% vs. 4.3%) with respect to the ESMUCICA population of the 90s (14). These data reveal the change in preoperative characteristics which have a direct proportional impact in morbidity and mortality. The mortality registered in ESMUCICA was 5.1%. Subsequently, CONAREC XVI, the last national registry to date on CABG mortality, which included 49 centers in Argentina with residency or fellowship in cardiology evaluating 1,465 consecutive patients with CABG, was published (15). The reported mortality was 4.36% (EuroSCORE II 2.62–3.51%) and on-pump CABG was a predictor of mortality (OR: 1.58, 95% CI 1.19-2.1, p=0.053).

Our population underwent off-pump surgery in 87.99% of patients. This was the preferred modality, as well as the use of multiple arterial conduits. Possibly off-pump CABG could protect from early mortality

Table 2. Intraoperative findings and variables

	Global (n:458)	Group I (n:187)	Group II (n:271)	*p* value
Venous graft / patient	0.26	0.26	0.26	ns
Arterial graft / patient	2.78	2.81	2.76	ns
Total grafts / patient	3.04	3.07	3.01	ns
Pure arterial CABG, n (%)	378 (82.53)	153 (81.8)	225 (83.0)	ns
Left mammary artery, n (%)	450 (98.25)	183 (97.86)	267 (98.52)	ns
Right mammary artery, n (%)	242 (52.83)	108 (57.75)	134 (49.44)	ns
Radial artery, n (%)	143 (31.22)	59 (31.55)	86 (31.73)	ns
CPB minutes, median*	75 [60-90]	80 [70-100]	70 [58-90]	ns
ACC minutes, median*	60 [49-70]	59 (49-70]	60 [50-70]	ns
Off-pump, n (%)	403 (87.99)	164 (87.7)]	239 (88.1)	ns

* Expressed as median and interquartile range.
CPB: Cardiopulmonary bypass, ACC: Aortic cross-clamp.

Table 3. Analysis of postoperative variables and morbidity and mortality

EVENTS	Global (n:458)	Group I (n:187)	Group II (n:271)	*p* value GI vs. GII
AMI, n (%)	8 (1.74)	5 (2.6)	3 (1.1)	ns
Stroke, n (%)	3 (0.65)	2 (1)	1 (0.3)	ns
Death, n (%)	9 (1.96)	6 (3.2)	3 (1.1)	ns
MACE, n (%)	18 (3.93)	12 (6.4)	6 (2.2)	0.022
MV, n (%)	13 (2.83)	7 (3.74)	6 (2.21)	ns
Atrial fibrillation, n (%)	70 (15.28)	27 (14.4)	43 (15.8)	ns
Surgical bleeding, n (%)	5 (1.09)	3 (1.6)	2 (0.7)	ns
Mediastinitis, n (%)	11 (2.4)	3 (1.6)	8 (2.9)	ns
Kidney failure, n (%)	32 (6.98)	14 (7.48)	18 (6.64)	ns
Dialysis, n (%)	6 (1.31)	2 (1.06)	4 (1.47)	ns
Low cardiac output, n (%)	34 (7.42)	15 (8.02)	19 (7.01)	ns
Median stay, days (IQR)	6 (5.1-6.8)	6 (5-8)	6 (5-7)	0.004

AMI: Acute myocardial infarction, MACE: Major adverse cardiovascular events: composite of AMI, stroke and death, MV: mechanical ventilation.

Table 4. Univariate and multivariate analysis of preoperative risk variables

	Univariate analysis			Multivariate analysis		
Variable	OR	IC 95%	*p*	OR	IC 95%	*p*
Age	1.01	0.96-1.07	0.54	1.00	0.95 – 1.06	0.37
Gender	0.54	0.15-1.96	0.35	0.47	0.11 – 1.93	0.28
Positive LMCA	2.76	1.01-7.6	0.049	2.10	0.70 – 6.23	0.18
Preop. LVEF.	0.95	0.92-0.98	0.006	0.96	0.93 – 0.99	0.04
Priority						
Elective	Reference					
Urgency	2.9	0.7- 11.4	0.123	2.68	0.68-10.6	0.15
Emergency	19.1	4.6-78.3	<0.001	11.2	2.55-49-7	0.001

LMCA: Left main coronary artery, Preop. LVEF: Preoperative left ventricular ejection fraction.

Table 5. Risk assessment according to ArgenSCORE, STS score and EuroSCORE II.

	Area under the ROC curve	SD	95% CI
EuroSCORE II	0.7732	0.0519	0.67-0.87
ArgenSCORE	0.7428	0.0732	0.59-0.88
STS score	0.7112	0.0609	0.59-0.83

in our results; however, international publications are not conclusive in this regard, depending on many preoperative variables and the experience of each group. The conclusions of the meta-analysis carried out by Giovani et al. (16) in rigorously adjusted observational studies (with more than 1,100,000 patients) and combined analysis indicated that off-pump CABG offers lower short-term mortality, but poorer long-term survival. These results suggest that, in real-world applicability, there is greater operational safety with off-pump CABG; and this initial benefit would be lost over the years with respect to on-pump CABG (17-18).

An important point to highlight is that our CABG technique includes the preferential use of arterial conduits over venous grafts. Lytle et al. demonstrated in 1999 greater survival when using two mammary arteries over one in patients undergoing CABG (19). In our population, 2.78 arterial bypass grafts were performed per patient and only 0.26 venous grafts per patient, totaling 3.04 grafts per patient. Gaudino et al. carried out a meta-analysis including a total of 10,287 matched and unmatched patients according to the use of 1, 2 or 3 arterial grafts for CABG (20). The authors concluded that the implementation of more arterial conduits does not increase the perioperative risk and, furthermore, the use of three arterial conduits is statistically associated with lower long-term mortality (HR 0.8; 95% CI 0.75–0.87; p <0.001). A similar finding was reported for the non-matched population (HR 0.57; 95% CI 0.33–0.98; p=0.04).

The results of current randomized studies evaluating morbidity and mortality between CABG and PCI have several limitations. For example, in the Syntax study (21) 4,337 patients were enrolled and only 1,800 patients were randomized (41.5%); therefore, the conclusions of the study are limited to that selection of patients with their preoperative characteristics, leaving aside the majority of the real-world patients we deal with every day. In addition, there is an intention-to-treat bias given that the definition and decision-making is very broad depending on the resources and experience of each center. Moreover, treatment selection is not free from certain conditions inherent to the

time of diagnosis: professionals (heart team) who analyze the coronary angiography and the patient's clinical risk characteristics, and their abilities to solve the patient's problems with the safety standards of excellence of each institution. (22-24) There has been a fast growth of studies comparing PCI and CABG in LMCA disease over the past decade, following the favorable results of randomized trials (25-28) and observational registry studies (29-33). Current guidelines recommend PCI in patients with LMCA and/or other coronary vessel disease in the absence of complex or diffuse coronary lesions (34). The guidelines are mainly based on the pre-specified and potentiated subgroup of 705 patients with LMCA disease of the SYNTAX study (35), the studies of LE MANS with 100 patients (36), PRECOMBAT with 600 patients (37), NOBLE with 1,201 patients (38) and that of Boudriot et al. with 201 patients (27), to name the main references. In randomized trials, the non-inferiority margin was wide, due to the relatively small sample size, and therefore trials were not conducted to definitively determine the best treatment for LMCA disease. Also, the criteria for defining infarction during follow-up and mid-term evolution of mortality are two other critical aspects that require further investigation to equate the results of PCI with those already known from an expert surgical team.

The current socioeconomic reality and the availability of resources in developing countries also provide another overlooked challenge in decision-making that has a great impact on the implementation of health policies. In an era of exponentially growing health care costs, with a need to reduce expenditures, the cost effectiveness of PCI and CABG should also be evaluated (39). In addition to mortality, other outcomes that affect morbidity and quality of life, such as AMI, stroke and new revascularization, are important for the patient and must be considered by the professionals who decide (Heart Team) when choosing the best revascularization option for each case. (40)

The statistical analysis of preoperative variables allowed us to show that in our population the clinical determinants related to the presence of MACE are the preoperative ventricular function and general clinical condition of the cardiovascular disorder defined by the PRIORITY variable, emergency being the most significant condition for the defined endpoint. Given the discrepancy between observed events and those estimated by risk scores, a predictive model was performed for each score, evaluating its capacity to predict results in our sample. All showed good estimation and adequacy with no statistically significant differences.

As a limitation of the study, it could be said that the inclusion and exclusion criteria selection left many patients out of the analysis because it was thought that CABG or PCI was the preferred revascularization strategy based on age, risk profile given pretreatment baseline characteristics and individual coronary complexity.

CONCLUSIONS

There is a high incidence of LMCA disease in patients undergoing CABG in our population, with preoperative characteristics of greater surgical risk than in the studies published to date. Despite the prediction of cardiovascular events according to the scores used, morbidity and mortality was significantly lower in our population.

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Conflicts of interest

None declared.

(See authors' conflicts of interest forms on the website/ Supplementary material)

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