Coronary artery bypass grafting in the octogenarian.
Is complete revascularization always necessary?

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Giovanni Concistrè*, Angelo Maria Dell'Aquila*, Alina Gallo, Stefano Pansini, Alessandro Piccardo, Filippo Rapetto, Giancarlo Passerone, Tommaso Regesta

Division of Cardiac Surgery, San Martino University Hospital, Genova, Italy

Coronary artery bypass grafting in the octogenarian. Is complete revascularization always necessary?

AIM: *The aim of this study was to investigate whether the completeness of revascularization affects the outcomes in the octogenarian.*
MATERIAL OF STUDY: *We retrospectively reviewed 130 consecutive octogenarians who underwent isolated coronary artery bypass grafting (CABG) between January 2003 and September 2010. According to operative technique, patients were categorized in Complete Revascularization (CRV) Group (96 patients) and in Incomplete Revascularization (IRV) Group (34 patients). Follow-up was 98% complete (mean: 30 ± 25 months).*
RESULTS: *The overall in-hospital mortality was 13% and was similar in both groups (p=0.0553). Multivariate regression analysis identified preoperative left ventricular ejection fraction ≤ 40% (p= 0.0060; OR= 0.19) and NHYA class > II (p= 0.0042; OR= 0.17) as risk factor for in-hospital death. Cox regression analysis not identified incomplete revascularization as risk factor for early or late death (p= 0.1381 and p= 0.8865). No differences in 5-year survival and freedom from major adverse cardiac and cerebrovascular events (MACCE) was found between two groups (p=0.8865 and p=0.6283).*
DISCUSSION: *CRV is important in young patients undergoing CABG, but this principle remains less absolute in elderly patients. In our study, the survival benefit of CRV was less in octogenarians. Probably, the major benefit of CRV was seen in patients less than 80 years of age. This makes sense because these patients have a longer expected survival, and there were more patients available to statistically confirm any difference in outcome.*
CONCLUSIONS: *In octogenarians undergoing CABG, IRV does not affect survival and freedom from MACCE. Patients' preoperative conditions are important in determining short and long term outcomes.*

KEY WORDS: CABG, Surgery, Incomplete revascularization, Elderly patients, Outcomes

Introduction

Coronary artery disease (CAD) is a leading cause of morbidity and mortality in the elderly. Almost 30% of octogenarians have symptomatic CAD, and these patients are increasingly referred for coronary artery bypass grafting (CABG)[1,2]. Some reports suggest that older patients with ischemic heart disease are best served by aggressive revascularization to relieve symptoms and improve quality of life[3,4]. Unfortunately, the majority of outcome studies on elderly patients undergoing CABG report more adverse outcomes and less successful revascularization compared with younger patients[5,6].
Complete revascularization is an important goal of CABG. The natural history of CAD suggests that once a stenosis exists, progression of the disease is likely. Importantly, complete revascularization has been shown to improve long-term survival and function after CABG in young patients[7-9]. However, the majority of studies

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Correspondence to: Giovanni Concistrè, MD, Via Diaz 54, 87011 Cassano Ionio (CS), Italy (e-mail: gioconci@libero.it)

excluded older patients because they are at higher risk during CABG and may be less likely to obtain this benefit owing to their advanced age. Thus, the principle of complete revascularization remains less absolute in elderly patients, specifically in octogenarians, in whom limited life expectancy may minimize the potential benefits of this well-accepted but more aggressive operative strategy.

The aim of this retrospective analysis was to evaluate the impact of complete versus incomplete revascularization on postoperative outcomes after CABG in octogenarians.

Material and Method

PATIENTS

A review of the Cardiac Surgery Database of San Martino University Hospital disclosed 2380 patients who underwent CABG at our Institution from January 2003 to September 2010.

All patients aged 80 years or more who underwent isolated no-redo CABG through a median sternotomy were considered for this analysis. Patients who underwent CABG as consequence of an iatrogenic trauma were excluded. Following these criteria, 130 patients (5.5%, 130/2380) were included in this study. Informed consent was obtained from each patient and the study protocol conforms to the ethical guidelines of the 1975 Declaration of Helsinki as reflected in a *priori* approval by the institution's human research committee.

The baseline clinical characteristics of the study patients are detailed in the Table I. Ninty-six (73.8%) patients received complete revascularization (CRV group), and 39 (26.2%) patients (IRV group) received incomplete revascularization.

The clinical characteristics were similar in both Groups.

COMPLETENESS OF REVASCULARIZATION

The definition of CRV is controversial. The traditional approach assumes one graft for every significantly obstructed coronary artery, whereas functional revascularization uses one graft for all diseased primary arterial territories. The left anterior descending artery (LAD), the circumflex artery (Cx), and the right coronary artery (RCA) define the coronary territories. Van der Salm and colleagues[10] compared these 2 definitions in the Bypass Angioplasty Revascularization Investigation (BARI) study and found no significant survival advantage for either compared with patients with IRV. Most surgical groups have adopted the functional definition in their studies[7,8,11,12]. We used both a traditional and functional definition and found 96 patients versus 34 patients, respectively, with CRV and IRV. The coronary vascular tree was divided into 3 separate territories: the LAD, the Cx, and the RCA. One-territory disease was classified as an isolated 50% or greater diameter narrowing in at least 1 blood vessel supplying a single vascular territory. Two-territory disease involved 50% or greater vessel narrowing to 2 separate territories or isolated left main (LM) narrowing of 50% or greater not involving the RCA territory. Three-territory disease included 50% or greater vessel narrowing to all 3 territories or isolated LM narrowing and RCA narrowing together. CRV was achieved when at least one bypass graft was placed distal to a 50% or greater narrowing in each diseased territory. LM territory disease would require bypass grafting to both

Table I - *Baseline clinical characteristics*

Variables	Overall n = 130	Complete n = 96	Incomplete n = 34	P *value*
Age, mean ± SD	82.1 ± 2.01	81.9 ± 0.20	82.6 ± 0.34	0.0988
Sex, female, n, (%)	55 (42)	36 (37)	19 (56)	0.0546
BSA, mean ± SD, (m^2)	1.11 ± 0.84	1.09 ± 0.08	1.18 ± 0.14	0.5954
Elective, n, (%)	98 (75)	69 (72)	29 (85)	0.0987
Urgent/emergent, n, (%)	33 (25)	28 (29)	5 (15)	0.5134
Hypertension, n, (%)	77 (59)	57 (59)	20 (59)	0.9900
Diabetes mellitus, n, (%)	25 (19)	17 (17)	8 (23.5)	0.3988
COPD, n, (%)	14 (10)	10 (9.5)	4 (12)	0.7074
Chronic renal failure, n, (%)	10 (7)	6 (5.5)	4 (12)	0.2243
Previous CVA/TIA, n, (%)	6 (4)	5 (4.5)	1 (3)	0.7350
Peripheral vascular disease, n, (%)	18 (14)	13 (13)	5 (18)	0.7613
Neoplasia, n, (%)	2 (1.5)	1 (1)	1 (3)	0.4729
Preoperative left ventricular ejection fraction, mean ± SD (%)	49.5 ± 11.7	49.5 ± 1.20	49.6 ± 2.01	0.9454
Unstable angina, n, (%)	42 (32)	30 (31)	12 (35)	0.6105

BSA, body surface area; COPD, chronic obstructive pulmonary disease; CVA, cerebro-vascular accident; TIA, transient ischaemic attack; SD, standard deviation.

Table II - *Individual patient-recorded reasons for incomplete revascularization*

Reasons	IRV		IRV On-pump		IRV OPCAB	
	Total	%	no.	%	no.	%
Small and/or severe disease	13	38.2	11	47.8	2	18.2
Nondominant	5	14.7	3	13.0	2	18.2
Infarcted tissue	4	11.8	3	13.0	1	9.1
High risk	4	11.8	1	4.4	3	27.2
Collaterals	3	8.8	2	8.7	1	9.1
No conduit available	3	8.8	1	4.4	2	18.2
No reason	2	5.9	2	8.7	0	0.0
Total	34	100	23	100	11	100

IRV, incomplete revascularization; OPCAB, off-pump coronary artery bypass.

the LAD and the circumflex territory to be considered complete. Nongrafting of any significantly narrowed vascular territory was considered IRV.

Reasons for Incomplete Revascularization

The most common reason recorded for IRV was that the arteries were too small, severely diseased, or both (Table II). Non-dominant RCA, the presence of prior infracted tissue and high risk were the next most frequently recorded reasons. Lack of a discernible reason was present only in 2 patients.

End Points

The endpoints of this study were postoperative complications and incidence of major adverse cardiac and cerebrovascular events (MACCE).
MACCE analyzed included cardiac death, postoperative myocardial injury or myocardial infarction, repeated coronary revascularization by percutaneous intervention or surgery, recurrent angina, and cerebrovascular events (stroke or transient ischaemic attack). Any death was considered cardiac unless proven otherwise. Postoperative myocardial injury was defined as the presence of ECG abnormalities associated to a high postoperative troponin level, postoperative inotropic support and new postoperative echocardiographic kinetic alteration.
ECG abnormalities were defined as new ST elevation or new left bundle branch block not documented to be resolved within 20 minutes or any new pathological Q-wave[13].

Follow-Up

The follow-up was obtained from direct telephone calls with the surviving patients or with families and referring physicians. Questions were addressed in regard to their actual functional status and incidence of MACCE. Follow-up was 98% complete (127 of 130 patients). Mean follow-up time of 30 ± 25 months, ranging from 3 months to 7.5 years.

OPERATIVE PROCEDURES
Operations were performed by a group of 4 senior surgeons with longstanding experience in both off-pump and on-pump CABG surgery. The decision to perform CABG with or without cardiopulmonary bypass was individually based on the preoperative assessment of the surgeon, including patients' preoperative hemodynamic, concomitant disease, and extent of acute coronary syndrome. Patients were premedicated with promethazin. All patients received a standardized totally intravenous anesthesia with propofol, and remifentanyl. Ventilation was performed with oxygen in air. Perioperative antibiotic prophylaxis was provided with 1 g of injection cefazolin administered intravenously.
In all patients, surgical access was performed via median sternotomy. Operative data and angiographic characteristics are reported in Tables III and IV.

Table III - *Operative data*

Variables	Overall n = 130	Complete n = 96	Incomplete n = 34	P *value*
CABG, on pump, n, (%)	106 (81.5)	83 (86)	23 (68)	0.0262
CABG, OPCAB, n, (%)	24 (18)	13 (13.5)	11 (32)	0.0276
Grafts, mean ± SD	2.76 ± 0.65	3.05 ± 0.06	1.97 ± 0.11	0.0001
LIMA use, n, (%)	113 (87)	86 (90.5)	27 (77)	0.0553
RA use, n, (%)	42 (33)	32 (34)	10 (28.5)	0.5777
SVG use, n, (%)	111 (85)	88 (93)	23 (66)	0.0003

CABG, coronary artery bypass grafting; OPCAB, off-pump coronary artery bypass; CPB, cardiopulmonary bypass; LIMA, left internal mammary artery; RA, radial artery; SVG, saphenous vein graft; SD, standard deviation.

TABLE IV - *Angiographic characteristics*

Variables	Overall n = 130	Complete n = 96	Incomplete n = 34	P *value*
Territories grafted				
LAD , n, (%)	130 (100)	96 (100)	34 (100)	0.000
Cx , n, (%)	106 (81.5)	86 (90.5)	20 (57)	0.0001
RCA, n, (%)	84 (65)	73 (77)	11 (31)	0.0001
Diseased territories				
LM , n, (%)	43 (33)	33 (35)	10 (28.5)	0.5040
LAD , n, (%)	130 (100)	96 (100)	34 (100)	0.000
Cx , n, (%)	118 (91)	86 (90.5)	32 (91)	0.8739
RCA , n, (%)	105 (81)	84 (87.5)	21 (62)	0.0001
No. of diseased territories				
One territory , n, (%)	3 (2)	3 (3)	0	0.1672
Two territory , n, (%)	28 (21.5)	22 (23)	6 (17)	0.4513
Three territories , n, (%)	99 (76)	70 (74)	29 (83)	0.2646
No. of territories diseased , n, (%)	2.73 ± 0.48	2.70 ± 0.05	2.82 ± 0.08	0.2053

LAD, left anterior descending; Cx, circumflex; RCA, right coronary artery; LM, left main; LAD, left anterior descending artery; Cx, circumflex artery; RCA, right coronary artery.

On-pump CABG. All patients in this group underwent revascularization during normothermic cardiopulmonary bypass (CPB) by using aortoatrial cannulation. Heparin was administered at a dose of 3 mg/kg to achieve a target activated clotting time (ACT) of 480 seconds or greater before commencement of CPB. Myocardial protection was achieved by means of anterograde intermittent administration of normothermic blood cardioplegia through the aortic root. Hematocrit was kept above 20% with packed red blood cells if necessary. Perfusion pressure during CPB was kept above 50 mmHg with norepinephrine if necessary. Mean arterial pressure after CPB was kept above 60 mmHg with volume and vasoactive drugs as appropriate. Intensive care unit (ICU) treatment was performed according to institutional standards.

Off-pump CABG. Heparin (1.5 mg/kg) was administered before the start of the first anastomosis or before the division of the left internal mammary artery. The target ACT was 250 to 300 seconds. Colloids were administered, and position changes and gravity support (Trendelenburg and right and left rotation) were used to stabilize patients' hemodynamics and to maintain a controlled systolic arterial pressure to optimize coronary perfusion. A myocardial coronary artery stabilizer system and intracoronary shunts were used in all cases. The distal anastomoses were performed first. The left anterior descending coronary artery (LAD) was revascularized first. Proximal anastomoses were performed on the partially clamped ascending aorta. ICU treatment was performed according to institutional standards.

Statistical Analysis

The design of the study was retrospective and analysis was performed with the JMP 7 statistical analysis software (SAS Institute, Cary, NC). Continuous variable are presented as mean ± standard deviation, and categorical variables are expressed as frequencies.
Comparison between variables was performed by means of the χ^2 test or Fisher exact test where appropriate. A search of risk factors for early and late death was performed. A univariate analysis was done first. The curves were stratified on the basis of binary variable and compared with the Log-Rank test. Variables with a $p < 0.2$ underwent multivariable model for Cox regression analysis to determine the independent predictors of late death. The variables employed in the analysis were diabetes mellitus, obesity, chronic obstructive pulmonary disease, unstable angina, left main disease, emergency surgery, on-pump CABG, preoperative left ventricular ejection fraction ≤ 40%, New York Heart Association (NYHA) functional class > II, incomplete revascularization. A p value less than 0.05 was considered to be statistically significant. Survival and event-free estimates were determined by the Kaplan-Meier method and are expressed as the proportion ± standard error.

Results

EARLY AND LATE MORTALITY
Overall in-hospital mortality was 13%, and it was 9.5% (9 patients) in CRV group and 23% (8 patients) in IRV group (p=0.0753). Three patients underwent to complete revascularization and 3 patients underwent to incomplete revascularization died as consequence of severe respiratory failure requiring prolonged postoperative intubation. Two patients of CRV group and 3 patients of IRV group had a postoperative course complicated by a multiorgan failure. One patient on each group died as consequence of postoperative stroke.

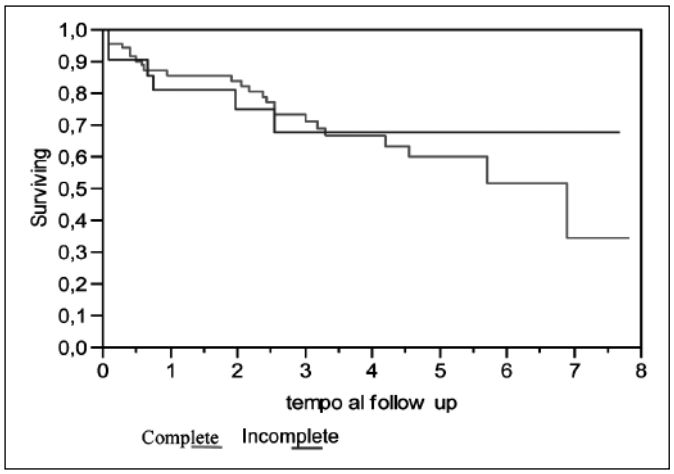

Fig. 1: Curve of survival in complete and incomplete revascularization.

Four patients (3 of CRV group and 1 of IRV group) had a severe persistent left ventricular failure treated with inotropic support associated in one patient with intraaortic balloon pump.

There were 30 late deaths. Neoplasia was present in 11 patients (5 pulmonary neoplasia, 5 prostatic neoplasia and 1 gastric neoplasia). Four patients died as consequence of stroke and 1 patient as consequence of respiratory failure. In 14 patients the cause of death was cardiac (10 of CRV group and 4 of IRV group, p=0.7074).

One- and 5-year survival was 86% and 60% in CRV group and 81% and 68% in IRV group (p=0.8865) (Fig. I).

Independent predictors of early and late death

Stepwise logistic regression identified preoperative left ventricular ejection fraction ≤ 40% (p=0.0060; OR=0.19) and NYHA class > II (p=0.0042; OR=0.17) as risk factor for in-hospital mortality. Cox regression analysis identified body mass index ≤ 30 as independent risk factor for late death (p=0.0001; RR=3.57).

Early and late clinical outcomes

Early and late clinical outcomes are reported in Table V. There are not significant statistically differences in term of early and late complications in both groups.

Freedom from MACCE was similar in both groups (p=0.6283).

Two patients of CRV group and 1 patient of IRV group had a transient ischaemic attack. One patient of CRV group had myocardial injury for stenosis of left internal mammary artery at anastomosis site with left anterior descending. This patient was treated with percutaneous transluminal coronary angioplasty with bare-metal stent implantation, at 2 postoperative day. Three patients of CRV group and 1 patient of IRV group had recurrent angina with ECG abnormalities, treated with nitrates administration, and resolved within 20 minutes without pathological Q-wave.

ECG abnormalities occurred in a total of 30 patients (23%) (25 patients in the CRV group and 5 in the IRV group; p=0.7817) and was successfully treated with nitrates administration until electrocardiography normalization.

Table V - *Early and late clinical outcomes*

Variables	Overall n = 130	Complete n = 96	Incomplete n = 34	P *value*
Early clinical outcomes				
New postoperative atrial fibrillation, n (%)	34 (31)	27 (34)	7 (22.5)	0.2433
Transfused patients, n (%)	66 (51)	49 (51.5)	17 (48.5)	0.7610
ICU stay, mean ± SD, (days)	12.11 ± 20.6	13.32 ± 2.11	8.82 ± 3.48	0.2717
ECG abnormalities, n (%)	30 (23)	25 (26)	5 (15)	0.7817
Myocardial injury, n (%)	1 (0.7)	1 (1)	0	0.4309
IABP, n (%)	1 (0.7)	1 (1)	0	0.4309
Severe persistent LV failure, n (%)	4 (3)	3 (3)	1 (3)	0.7287
Recurrent angina, n (%)	4 (3)	3 (3)	1 (3)	0.7287
TIA, n (%)	3 (2)	2 (2)	1 (3)	0.5204
Stroke, n (%)	2 (1.5)	1 (1)	1 (3)	0.4729
Severe respiratory failure, n (%)	6 (5)	3 (3)	3 (9)	0.6765
MOF, n (%)	5 (4)	2 (2)	3 (9)	0.6435
Late clinical outcomes				
Stroke, n (%)	4 (3)	3 (3)	1 (3)	0.7287
Severe respiratory failure, n (%)	1 (0.7)	1 (1)	0	0.4309
Recurrent angina, n (%)	2 (1.5)	1 (1)	1 (3)	0.4729

ICU, intensive care unit; ECG; electrocardiography; IABP, intra-aortic balloon pump; LV, left ventricle; TIA, transient ischemic attack; MOF, multiorgan failure; SD, standard deviation.

No patient presented postoperative acute renal failure.
Despite only one patient presented preoperative persistent atrial fibrillation, postoperative atrial fibrillation was common (30.6%; 34 of 130 patients) and was similar in the groups (p=0.2433). Postoperative atrial fibrillation was successfull treated with Amiodarone or, in those with hemodynamic instability, with synchronized electrical cardioversion so that at discharge, there were 128 in sinus rhythm.
The patients required less blood transfusion were similar in the groups (p=0.7610).
At follow up, 2 patients presented recurrent angina, one of the CRV group and one of the IRV group (p=0.4729), with complete regression of the syntomatology after oral nitrates administration. Both patients had a preoperative moderate left ventricular dysfunction (LVEF=40%). No patient required hospitalization for percutaneous transluminal angioplasty or reoperation for CABG.
Four patients had ischaemic stroke (p=0.7287). These patients had atherosclerotic peripheral vascular disease. One patient had stroke 2 years and three patients 3 years after operation. One patient in CRV group had severe respiratory failure.

Discussion and Comments

This study shows surgical and clinical results of 130 octogenarian patients who underwent CABG for CAD. We demonstrated that incomplete revascularization does not affect short and long-term survival and freedom from MACCE.
Complete myocardial revascularization is a long-held tenet of surgical coronary artery revascularization. Both a report from the Coronary Artery Surgery Registry in 1992 and from Emory University in 1996 established the long-term survival benefit of CRV in cardiac surgical patients[13]. The Coronary Artery Surgery study followed 3372 patients undergoing isolated CABG between July 1974 and June 1979, among whom the mean age of patients was 56 years and in whom the saphenous vein was generally used, with 16% of patients receiving an left internal mammary artery (LIMA) graft alone or in combination with saphenous veins. The 2860 Emory group patients enrolled between January 1978 and December 1981 were similar, with a mean age of 57 years and infrequent reported use of LIMA grafting. These benchmark studies' major shortcoming is the infrequent use of arterial grafting in this earlier generation of younger patients. More current studies, which use a greater percentage of arterial grafting, have called into question the benefit of CRV. Moon and associates[11] reported that in octogenarian patients with increased LIMA use (65%), CRV did not improve survival. In the BARI study from August 1988 through August 1991, 1526 patients underwent CABG. The average age was 62 years, with more than 80% of the patients receiving LIMA grafting. The BARI investigators were unable to demonstrate a survival advantage compared with IRV to 7 years of follow-up[10]. Improvements in myocardial protection and more frequent LIMA grafting might have decreased the survival benefit of CRV seen in an earlier era of primarily saphenous vein grafting. In addition, older patients might not live long enough to realize the benefits of CRV.
We observed 130 octogenarian patients undergoing isolated non-redo CABG at a single institution from January 2003 through September 2010. We found that there are not significant differences in order to in-hospital mortality, one and 5-years survival between the octogenarians received complete and incomplete myocardial revascularization. The survival benefit of CRV was less in octogenarians. Probably, the major benefit of CRV was seen in patients less than 80 years of age. This makes sense because these patients have a longer expected survival, and there were more patients available to statistically confirm any difference in outcome. Perhaps our study shows that, even more than in the young, in elderly patients the most important element of surgical myocardial revascularization is the mammary on the left anterior descending. This is probably the secret of the lack of difference between the two groups. One of the most striking features in the follow-up is the magnitude of the survival difference between patients with CRV and patients with IRV out to 5 years. The overall in-hospital mortality was 13% and was similar in both groups (p=0.0753). Multivariate regression analysis identified preoperative left ventricular ejection fraction ≤ 40% (p= 0.0060; OR= 0.19) and NHYA class > II (p= 0.0042; OR= 0.17) as risk factor for in-hospital death. No differences in 5-year survival and freedom from major adverse cardiac and cerebrovascular events (MACCE) was found between two groups (p=0.8865 and p=0.6283). Cox regression analysis not identified incomplete revascularization as risk factor for early or late death (p= 0.1381 and p= 0.8865). In our study, the most common reason recorded for IRV was that the arteries were too small, severely diseased, or both (Table II). Nondominant RCA, the presence of prior infracted tissue and high risk were the next most frequently recorded reasons. Lack of a discernible reason was present only in 2 patients. There are not significant statistically differences in term of early and late complications in both groups. Freedom from MACCE was similar in both groups (p=0.6283). One patient of CRV group had early myocardial injury for stenosis of left internal mammary artery at anastomosis site with left anterior descending. Early ECG abnormalities occurred in 25 patients in the CRV group and 5 in the IRV group (p=0.7817) and was successfully treated with nitrates administration until electrocardiography normalization. At follow up, 2 patients presented recurrent angina, one of the CRV group and one of the IRV group (p=0.4729), with complete regression of the syntomatology after oral nitrates administration. No patient required hospitalization for

percutaneous transluminal angioplasty or reoperation for CABG.

The potential advantage of shorter aortic cross-clamping time, especially in the older patient group, could not be confirmed by our analysis. However, the intention to treat includes a careful consideration of the surgeon according to each individual coronary status, so that a primary incomplete approach might have been accompanied by shorter aortic cross-clamping and operation time. However, it remains questionable, whether even a more prolonged extracorporeal circulation for plus/minus one or two distal anastomoses in the range of 10±30 min would have substantial effect on early mortality.

Study Limitations

Our study is subject to all the limitations inherent in a retrospective, nonrandomized, nonblinded review. There was significant selection bias in choosing which patients received CRV and IRV. To minimize these biases, we chose to analyze both all-cause death and cardiac death. Multivariable logistic and Cox regression analyses were then used to adjust for confounding risk factors. However, these methods cannot entirely eliminate biases in an observational study. Other potential limitations include the relatively small numbers of patients with CRV and IRV. Preoperative coronary angiogram reports might not be as accurate as systematic interpretation by a single group of experienced readers.

Conclusion

In our study, complete revascularization in octogenarian patients undergoing CABG not improve 5-years survival and freedom from major adverse cardiac and cerebrovascular events compared with incomplete revascularization. Patients' preoperative conditions are important in determining short and long term outcomes.

Riassunto

La rivascolarizzazione miocardica completa è importante nei pazienti giovani sottoposti ad intervento di bypass aortocoronarico (CABG), ma questo principio resta poco chiaro nei pazienti anziani. Lo scopo del nostro studio è valutare se la completezza della rivascolarizzazione influenzi gli outcomes negli ultraottantenni. Abbiamo analizzato retrospettivamente 130 pazienti ultraottantenni (età media: 82 ± 10 anni; range: 80-90 anni) sottoposti presso il nostro Istituto a CABG tra Gennaio 2003 e Settembre 2010. In accordo con la strategia operatoria utilizzata, i pazienti sono stati suddivisi in 2 gruppi: pazienti sottoposti a rivascolarizzazione completa (Gruppo RC) (96 pazienti) e pazienti sottoposti a rivascolarizzazione incompleta (Gruppo RI) (34 pazienti). Per rivascolarizzazione incompleta si è inteso l'assenza di bypass su un territorio miocardico vascolarizzato da una coronaria con una stenosi ≥ 50%. Il follow-up è stato completato al 98% (medio: 30 ± 25 mesi; range: 3 mesi – 7.5 anni). La mortalità intraospedaliera complessiva è stata del 13% ed è stata simile nei 2 gruppi (p=0.0553). L'analisi multivariata ha identificato la frazione di eiezione preoperatoria ≤ 40% (p=0.0060; OR=0.19) e la classe NYHA > II (p=0.0042; OR=0.17) fattori di rischio di mortalità intraospedaliera. L'analisi di Cox non ha identificato la rivascolarizzazione incompleta come fattore di rischio di mortalità precoce e tardiva (p=0.1381 e p=0.8865). Non sono state riscontrate differenze tra i 2 gruppi in termini di sopravvivenza a 5 anni e libertà da eventi cardiaci e cerebrovascolari maggiori (MACCE) (p=0.8865 e p=0.6283). Probabilmente i maggiori benefici di una rivascolarizzazione completa si hanno nei pazienti più giovani, che hanno un'aspettativa di vita maggiore. In conclusione il nostro studio mostra che, seppur con una limitata coorte di pazienti, negli ultraottantenni sottoposti a CABG la rivascolarizzazione incompleta non influenza la sopravvivenza e la libertà da MACCE. Le condizioni preoperatorie del paziente determinano sicuramente gli outcomes precoci e tardivi.

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