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Revascularization Alone for Functional Mitral Regurgitation: A Propensity Case-Match Analysis of the Off Pump Coronary Artery Bypass Approach

Paul C. Saunders, Eugene A. Grossi, Charles F. Schwartz, Robert M. Applebaum, Greg H. Ribakove, Alfred T. Culliford, Aubrey C. Galloway, Stephen B. Colvin, New York University Medical Center, New York, NY

Objective: Patients with mild or moderate functional mitral regurgitation (MR) are at increased risk for poor outcomes after coronary revascularization. When these patients receive coronary revascularization alone, it is unclear if an off-pump approach (OPCAB) affects outcomes.

Methods: 1078 patients with functional mitral regurgitation underwent CABG alone between 1996 and 2002; 222 performed off-pump and 856 using cardiopulmonary bypass (CPB-CABG). Using intraoperative transesophageal echocardiography (TEE), MR was classified as mild (n=848), moderate (n=223), and severe (n=7). Propensity analysis was used to construct matched cohorts of patients with mild and moderate MR undergoing OPCAB(n=127) and CPB-CABG(n=127). Matching variables included age, sex, degree of MR, ejection fraction, number of grafts performed, urgency of operation, previous cardiac surgery, and co-morbidities such as renal disease, diabetes, atherosclerotic aortic disease, peripheral vascular disease, COPD, history of stroke and previous MI.

Results: Hospital mortality (6.3% vs. 5.5%, p=0.79) and mid-term(3yr.) survival (90.0% vs. 94.9%, p=0.33) were similar between the CPB-CABG and OPCAB groups, respectively. By multivariable analysis, factors associated with increased hospital mortality were renal disease (Odds Ratio(OR)=8.4, p=0.001), reoperation (OR=5.6, p=0.08), and worse degree of MR (OR=5.2, p=0.01). Mid-term survival was adversely affected by renal disease (OR=4.0, p=0.008), worse degree of MR (OR=2.5, p=0.07, and history of stroke or cerebrovascular disease (OR=2.6, p=0.07).

Conclusions: Worsening insufficiency was associated with poorer outcomes in patients with functional MR undergoing coronary revascularization alone, suggesting that they might benefit from mitral valve intervention. Choice of technique (OPCAB vs. CPB-CABG) was not a significant factor in hospital or mid-term mortality.

1079-101

Therapeutic Strategies and Outcomes in Patients With Previous Coronary Artery Bypass Graft Following a New Acute Coronary Syndrome: Insights From the GRACE Experience

Viviana Brito, Ricardo Perez de la Hoz, Edgardo Sampó, Ernesto Duronto, Omar H. Dabbous, Neelam Gowda, Enrique P. Gurfinkel, The GRACE Investigators, Hospital San Martin, Buenos Aires, Argentina, ICYCC Fundación Favaloro, Buenos Aires, Argentina

Background Prior antecedents of coronary artery bypass graft (CABG) surgery are a clinical feature of risk in patients with an acute coronary event.

Aim To compare outcomes in acute coronary syndrome (ACS) patients with a history of CABG who were treated conservatively or invasively.

Methods and Results From a total of 30,588 patients included in this prospective analysis of GRACE patients, 3794 had a history of CABG. In-hospital and 6-month follow-up data were available from 3006 and 1638 patients, respectively. During the first 48 h, 405 patients underwent invasive treatment and 2601 conservative treatment. Antiplatelets, antithrombins and glycoprotein (GP) IIb/IIIa inhibitors were more frequently used in the invasive than the conservative group (aspirin 95 vs 89%; thienopyridine 88 vs 23%, LMWH 36 vs 46%, GPIIb/IIIa 70 vs 9%; all P<0.001). Multivariate analysis was performed to adjust for differences in baseline characteristics and potential confounders. Major bleeding and stroke were more frequent in the invasive group. No difference in cardiovascular death was observed between groups at 6-month follow-up. Using the GRACE risk model, an initial conservative approach in patients with prior CABG was not related to a higher risk of in-hospital death/major bleeding.

Table 1: Crude odds ratios using the GRACE risk model (in-hospital events and 6-month follow-up)

Variables (invasive treatment)	Odds ratio	95% CI	P value
Crude			
Major bleeding	1.689	1.009-2.829	0.046
In-hospital death	1.036	0.614-1.748	0.895
Ischemic event	0.993	0.787-1.253	0.951
Six-month follow-up	0.865	0.646-1.159	0.332
Adjusted			
Ischemic symptoms	1.026	0.801-1.312	0.841
In-hospital death	1.166	0.609-2.231	0.643
Combined endpoints	1.057	0.835-1.339	0.644
Major bleeding	1.499	0.828-2.714	0.181
Six-month follow-up	1.002	0.732-1.371	0.992

Conclusion In spite of the imbalance in characteristics, we found no clear beneficial trend in favor of an invasive approach and an increase in the risk of major bleeding or stroke with this approach.

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Correlation Between Norepinephrine and Epinephrine Myocardial Spillover and Tumor Necrosis Factor-Alpha in Conventional Versus Off-Pump Coronary Artery Bypass Surgery

Francesco Donatelli, Michele Triggiani, Giovanni Marchetto, Andrea Moneta, Marco Pocar, Davide Passolunghi, Gianni Bolla, Alessio Assaghi, Barbara Sala, Orietta Borghi, Pino Fundarò, Pier Luigi Meroni, Luisa Gregorini, University of Milano, Milano, Italy

Background: Complete revascularization obtained by coronary artery bypass surgery does not prevent long term left ventricular remodeling and heart failure development. Periprocedural events linked to different surgical techniques, such as cardiopulmonary bypass with cardioplegic arrest (CABG) versus off-pump procedures may trigger an irreversible microvascular dysfunction or myocytes necrosis and apoptosis.

Methods: To test this hypothesis we measured norepinephrine and epinephrine coronary sinus and aortic spillover before and after surgery, simultaneously with Tumor Necrosis Factor-alpha (TNF-alpha) measurements in 30 patients randomized to CABG (n=15), or off-pump (n=15) coronary surgery. Plasma catecholamines were assessed by high performance liquid chromatography and TNF-alpha by ELISA.

Results: Norepinephrine and epinephrine spillover was similar in the two groups before surgery, being 1.38±0.62 and 1.08±0.45, respectively. After surgery norepinephrine spillover was 1.43±0.56, 0.72±0.49 in CABG and off-pump, respectively (P<0.05 CABG versus off-pump, means ±SD). Epinephrine spillover was 1.27±0.16 and 0.65±0.15 respectively (P<0.05, CABG versus off-pump). TNF-alpha significantly increased only in CABG patients being 22.17±6.79 and 35.4±5.98, pg/mL, before and after surgery (P<0.05), respectively. After surgery norepinephrine spillover correlated with TNF-alpha levels (P=0.01, R=0.553).

Conclusions: Patients undergoing off-pump interventions showed significantly lower catecholamines spillover as compared to CABG, suggesting that the off-pump technique may result less invasive, not only for a lower local and whole body inflammatory response but also for a lower sympathetic drive. For the first time in humans we have detected an increase in epinephrine-spillover after cardiac surgery. Further studies are necessary to evaluate if the short-term advantages observed after off-pump coronary surgery translate into a long-term attenuation of left ventricular remodeling and in the prevention of heart failure progression.

ORAL CONTRIBUTIONS

815FO

Featured Oral Session...Unstable Ischemic Syndromes: Intermediate- and Long-Term Outcomes

Monday, March 08, 2004, 2:00 p.m.-3:30 p.m.
Morial Convention Center, Hall A

2:15 p.m.

815-2

Long-Term Outcome of Patients With Cardiogenic Shock Complicating Acute Myocardial Infarction

David R. Holmes, Jr., David Hasdai, Jennifer White, Peter B. Berger, Mayo Clinic, Rochester, MN

INTRODUCTION: Although the early outcome of cardiogenic shock (CS) complicating acute myocardial infarction (MI) has been well documented, the longer term outcome is less well understood.

METHODS: The GUSTO I study enrolled patients with AMI from 1989 to 1993 and included 1891 United States patients with CS. Vital status 9 years after study entry is available in 1797 of whom 859 (47%) survived the first 30 days. These 859 patients form the basis of this report.

RESULTS: Nine years after study entry, 53% of patients remained alive. Table 1 compares the baseline characteristics of 30-day survivors who did and did not survive 9 years.

N	Alive 457	Dead 402	P
Male	66.5%	65.7%	.793
Age (yrs)	60.6 +/- 10.56	66.5 +/- 11.02	<.001
Diabetes	9.9%	20.6%	<.001
Prior MI	10.8%	26.8%	<.001
Anterior MI	37.7%	50.3%	<.001
Inferior MI	60.1%	47.8%	<.001
Revasc within 30 days	42.7%	28.9%	<.001
PTCA	21.9%	21.1%	.763
CABG	58.3%	46.3%	<.001
PTCA or CABG			

Using Cox regression methods for multivariable analysis, the following factors were significantly associated with long-term mortality, age > 55, prior MI, diabetes, current smoker, index revascularization all p <.001.

CONCLUSIONS: Although early mortality from cardiogenic shock remains high, those