Does previous Percutaneous Coronary Stenting Compromise Results of Subsequent Surgical CABG?

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Abstract

Background: During the last decade, **Percutaneous Coronary Intervention (PCI)** or **Percutaneous Transluminal Coronary Angioplasty (PTCA)** has undergone enormous advancements in techniques used to achieve coronary revascularization. However, PTCA is not a unified approach that suits all patient types, and hence personalization of the indications and steps is mandatory. Herewith, we assessed the impact of patient and procedural characteristics on patients in whom PTCA results failed & was followed by surgical CABG versus those who underwent CABG from the start in order to understand the causal relationship between these patient subsets over early and 2-years mid-term follow-up.

Patients and Methods: This prospective comparative analytic study was conducted between 2004 & 2011 in the Departments of Cardiothoracic Surgery and Cardiology of Faculty of Medicine Cairo University as well as El Moaasat Hospital (KSA) after obtaining the approval of the local ethical committees. Hundred patients who presented with critical coronary ischemia for which they were admitted for surgical CABG with or without previous PTCA were enrolled. Patients were allocated in 2 groups of equal number and matching preoperative risk factors. Group A contained 50 patients in whom only Surgical CABG was performed after only diagnostic angiocatheterization. Group B contained 50 patients in whom Surgical CABG was done following previous attempts for coronary revascularization by PCI (PTCA). Time lapse before urgent surgery (hrs) in group B patients ranged between 2.5 and 5 hours with mean of 3 ± 0.3 hours. Successful preoperative follow-up over the first 2 years by regular clinical examination and recommended investigations.

Results: In group B, the total operative time, CPB time, and aortic cross clamp time were markedly prolonged compared to group B with high statistical significance. Intraoperative weaning off-CPB was more smooth using less support by catecholamine inotropics and IABCP in group A patients. In group A, there was a single mortality (2%) due to CHF in an uncontrolled DM 69-years old lady; versus 5 patients (10 %) in group B which occurred due to AMI with low CO ending by CHF on IABCP in 3 patients (6%); and permanent neurological deficit leading to coma then death in 2 patients (4%), who sustained cardiac arrest during PTCA and were resuscitated before urgent surgical revascularization. Morbidity complications occurred in 9 (18 %) of group B patients; versus only 2 (8 %) in group A (p < 0.01). A favorable postoperative functional outcome occurred in both groups being more profound in group A patients as regards the clinical improvement (mean NYHA clinical Class & mean LVEF%). Patients of group A returned earlier to productive work within mean time of 28 ± 2.2 days; versus 50 ± 1.6 days for group B (p < 0.001). New ischemic pain requiring intensifying the medical therapy was detected in a single patient (2%) in group A; versus 6 patients (12%) in group B (p < 0.001). Mean postoperative LVEF (%) was 66 ± 5 in group A patients; versus 52 ± 0.2 in group B (p < 0.03). Mean postoperative NYHA class was 1 ± 0.2 for group A; versus 2 ± 0.7 in group B (p < 0.05). Multivariate analysis revealed that the independent predictors of risk for surgical CABG during in-hospital stay and 2 years postoperative follow-up were: age > 65 years, female gender, body surface area ≤ 1.5, uncontrolled DM, Cleveland score >5, stent implantation, Preoperative delay, preoperative hemodynamic compromise (LVEF% < 40 %), prolonged aortic occlusion (ischemic) time; and use of arterial conduits. Predictors of the highest risk with the highest statistical impact were: previous to stent implantation, preoperative delay of surgery, Cleveland score > 5, and preoperative hemodynamic compromise

Conclusion: In view of our study results we concluded that the recent trend of insistence on performing initial PTCA stenting for all CAD patients as a fixed treatment step is ill-founded and is associated with higher mid-term mortality and morbidity. However, the question of whether a causal relationship can explain worse surgical outcomes after stenting still needs to be addressed by more greater-number comparative prospective analytic studies of multicenter distribution.

Key words & abbreviations: CABG: Coronary Artery Bypass Grafting PTCA: Percutaneous Transluminal Coronary Angioplasty IABCP: Intraaortic Balloon Counter pulsation PCI: Percutaneous Coronary Intervention PO: Postoperative MI: Myocardial Infarction LVEF%: Left ventricular ejection fraction % Statistical Significance was detected if P < 0.05