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Early Outcomes of On-Pump versus Off-Pump CABG

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Abstract

Post-surgical complications after on-pump and off-pump Coronary Artery Bypass Grafting (CABG) is a controversial issue among different cardiac surgeons to re-vascularize ischemic myocardia. The aim of this study is comparing early outcome after on-pump and off-pump CABG. This is a randomized clinical trial in ischemic heart disease patients who divided into 2 groups according to surgical method. Early outcomes for 30 days are evaluated in 104 patient undergone on-pump and off-pump CABG. SPSS analysis is used to compare incidence of stroke, infection, exploration surgery, myocardial infarction, renal failure, rate of survival and so on between two groups. In this clinical registry, early outcome for 30 days after on-pump and off-pump CABG showed no significant differences within complications after surgery between on-pump and off-pump groups.

Keywords: on-pump and off-pump Coronary Artery Bypass Grafting

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The traditional treatment for patients with multivessel coronary artery disease (CAD) is CABG with cardiopulmonary bypass (on-pump) along cardioplegic arrest which can increase the survival rate of patient via improvement of reperfusion into ischemic area. Though, this procedure along with aortic manipulation lead to some complications including stroke, elevated systemic inflammatory response that made interests to CABG on the beating heart (Off-pump CABG). It is thought that this procedure can overcome some post-surgical complications of on-pump CABG like cerebral dysfunction, myocardial depression, hemodynamic instability and inflammatory responses. However, Main concerns about Off-pump CABG technique are quality of coronary

anastomosis and integrity of revascularization. There are some data over lower graft potency for off-pump technique during long-term outcome. In spite of different studies over short and long outcomes of these two procedures, debate continues for superiority of on-pump or off-pump procedure. This dichotomy is observed via discrepancy in the rate of off and on pump, about 20% of CABG in United Kingdom are performed off pump while this is about 95% in India. Here, we evaluated short term outcome for 30 days in patients who undergone CABG on-pump and off-pump.

A prospective randomized clinical trial done for patients who undergone CABG under on-pump or off-pump. Out of 104 patients, 36 patients were treated with on-pump CABG and 68 patients with off-pump. Emergency surgery for ongoing myocardial ischemia or significant valvular disease considered as exclusion criteria. Post-surgical complications monitored during 30 days follow up. Base line characteristic of patients.

All surgeries have been performed by one surgeon which is experienced enough for on-pump and off-pump procedures.

Outcomes for 30-days death and 30-days complications evaluated. The most important complications included coma, stroke, prolonged ventilation, renal failure (new requirement for dialysis or more than 50% increase in creatinine over base line), mediastinitis (deep sternal infection), and reoperation for bleeding.

All statistical analyses were performed using SPSS version 26. The results of this study were analyzed using descriptive statistic and inferential statistic. Continues variables compared by T test and non-normally distributed continues data compared with Mann-Whitney test.