بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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MONA MAGHRABY

Short Term Outcome of off Pump versus on Pump Coronary Artery Bypass Graft

Thesis

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By

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Amr Elsayed

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List of Abbreviations

Abb.	Full term
AF	*Atrial Fibrillation*
CABG	*Coronary Artery Bypass Grafting*
CBC	*Complete Blood Count*
CPB	*Cardiopulmonary Bypass*
CT	*Computerized Tomography*
DSWI	*Deep Sternal Wound Infection*
ECG	*Electrocardiogram*
EF	*Ejection Fraction*
IABP	*Intra Aortic Balloon Pump*
IMA	*Internal Mammary Artery*
ITA	*Internal Thoracic Artery*
LAD	*Left Anterior Descending*
LIMA	*Left Internal Mammary Artery*
MIDCAB	*Minimally Invasive Direct Coronary Artery Bypass*
MR	*Mitral Regurgitation*
MRI	*Magnetic Resonance Imaging*
OPCAB	*Off Pump CABG*
PVCS	*Premature Ventricular Contractions*
RIMA	*Right Internal Mammary Artery*
SPSS	*Statistical package for Social Science*
SSWI	*Superficial Sternal Wound Infection*
SWMA	*Segmental Wall Motion Abnormalities*

ABSTRACT

Background: Coronary-artery bypass grafting (CABG) has traditionally been performed with the use of cardiopulmonary bypass (on-pump CABG). CABG without cardiopulmonary bypass (off-pump CABG) might reduce the number of complications related to the heart–lung machine.

Aim of the Work: To compare the short term outcome of off pump versus on-pump coronary artery bypass graft concerning the efficiency and safety of both procedures.

Patients and Methods: This is prospective study including sixty patients diagnosed with chronic ischemic heart disease requiring coronary artery bypass grafting (CABG) operation, half of them were operated upon using CPB CABG and the other half were done off pump CABG (OPCAB) at Al-Maadi Armed Forces Medical Complex, Cairo, Egypt in the period between August 2017 and September 2018.

Results: There was no statistically significant difference between the two groups regarding preoperative data. Regarding intraoperative data, operation time and need for cardiac inotropes were significantly high in on-pump group (P-value 0.007, 0.000 respectively), regarding the myocardial revascularization in both groups, the total number of grafts were performed in on-pump group was 82 grafts, while in off-pump group it was 75 grafts with no significant difference. Regarding postoperative data, the postoperative elevation of troponin and CK-mb was significantly higher in on-pump group within 1st 6, 12 and 24 hours postoperatively with serially decrease after 12 and 24 hours, ventilation time and duration of ICU stay were significantly less in time in off-pump group (p-value 0.001 ,0.007 respectively). regarding the morality rate, in on-pump group there were 2 cases (6.7%), while in off-pump group there was only one case (3.3%) of mortality due to low cardiac output, there was no significant statistically difference between the two groups (P-value 0.554).

Conclusion: This study suggest that excellent results can be obtained with both techniques, In the OPCAB, there was a significant reduction operative time, ventilation time, ICU stay, cardiac enzymes postoperative. Thereby shortening the total hospital stay, because length of hospitalization is one of the major factors that affect overall cost. On the other hand, fewer grafts tend to be performed with OPCAB than with standard CABG.

INTRODUCTION

Surgery for human atherosclerotic coronary arterial disease began in 1935, when Beck attached a pedicled graft of pectoralis muscle to the heart in an attempt to provide a new blood supply ***(Whittaker and Abela, 2012)***. In 1941, Beck reported constricting the coronary sinus, mechanically abrading the pericardium and epicardium, instilling asbestos and trichloracidic acid into the pericardium, and placing mediastinal fat onto the epicardial surface. In 1951, Vineberg described the implantation of the internal thoracic artery directly into the myocardium ***(Cremer et al., 2017).***

Although long-term patency of the graft was demonstrated later, the amount of blood flow and region of distribution were insignificant with this approach. In the mid-1950s, Murray reported experimental studies of internal thoracic artery–coronary artery anastomoses ***(Head et al., 2013).*** In 1953, Gibbon successfully used cardiopulmonary bypass clinically for intracardiac surgery ***(Loubon et al., 2015).***

In the late 1950s, Bailey described direct coronary endarterectomies ***(Dimitrakakis et al., 2015).*** In 1961, Senning described a patch angioplasty of a stenotic coronary artery ***(Kuźma et al., 2016).*** In 1962, Sones and Shirey reported the development of coronary angiography, which would

subsequently permit guided interventions for distinct coronary stenoses ***(Nabel and Braunwald, 2012).***

Credit for performing the first coronary artery bypass procedure in humans is given to several different surgeons. In 1958, Longmire described a patient in which a coronary endarterectomy was attempted, but the coronary artery disintegrated. In a desperate attempt to reconstruct the coronary, the internal thoracic artery was harvested and anastomosed to the coronary artery ***(Nnaji, 2015).***

In 1962, Sabiston reported the first aortocoronary bypass, but this patient died in the early postoperative period of a cerebrovascular accident ***(D'amico, 2013).*** Garrett and DeBakey are credited by some with performing the first successful aortocoronary bypass in 1964, although this was not reported until 1973 ***(Lipcsey et al., 2014).*** In 1964, Kolesov in Leningrad performed the first planned anastomosis between the left internal thoracic artery and the left anterior descending artery ***(Khera and Panza, 2017).*** In 1968, Favaloro reported the first large series of coronary artery bypass graft patients ***(Mohr et al., 2013).***

From the late 1960s and early 1970s, aortocoronary venous bypass grafting, together with internal thoracic artery to coronary artery bypass grafting, grew rapidly in popularity to become one of the most commonly performed major operations today.