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Review Article

Evaluation of Major Adverse Cardiac Events After Cardiac Surgery in Gaza

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Abstract

The present study assessed the major adverse cardiac events (MACE) (hospital mortality rate, major stroke and reintervention) after cardiac surgery du to coronary artery bypass grafting or valve surgery or both in the Ministry of health hospitals (MOH) in Gaza Strip at 2022 by either Local or Expert cardiac surgery team.

Keywords:

Introduction

Cardiovascular disease (CVD) is the leading cause of death in the world, accounting for approximately 17.5 million deaths worldwide every year, of which 80% occur in low- and middle-income countries. Coronary artery bypass grafting (CABG) has remained the most commonly performed cardiac surgery procedure for coronary artery disease over the past decades [1]. The main goal of the surgery is to improve survival and health related quality of life (QoL) [2]. Despite the fact that the profile of patients undergoing isolated CABG surgery has changed towards higher age with increased frequency of preoperative comorbidities [3,4]. mortality rate and morbidity after CABG have even decreased over past decades in the world [5].

The purpose of the present study was to compare hospital mortality rates of patients seen in the MOH health system who underwent coronary bypass surgery or valve surgery for the first time in publicly hospitals by local or foreign cardiac surgeon at MOH hospitals during 2022.

Methods

Retrospective cohort study including all patients who underwent cardiac surgery by local or expert cardiac surgery team with cardiopulmonary bypass and /or valve surgery in the MOH hospitals at Gaza Strip during 2022.

Data Collection

From 1th January 2022 to 31th December 2022, data were prospectively collected for all patients covered by the public healthcare system in whom a coronary artery bypass graft (CABG) and/or cardiac valve surgery was indicated as first surgery. This was done at two publicly managed hospitals (Alshifa and European Gaza Hospital)

Type of Surgery

First time coronary artery bypass graft (CABG) and/or cardiac valve surgery

End Points (MACE)

Hospital mortality: was defined as death due to any cause during or after the procedure and up to hospital discharge, or within 30 days following the procedure.

Reintervention: The event was defined as the first reintervention for acute coronary syndrome after cardiac surgery. This reintervention could be a cardiological intervention such as a PCI or similar procedure on a cardiosurgical intervention such as isolated or combined CABG, mitral valve repair or replacement for ischemic valve disease within 90 days

Major stroke: patients with permanent Disability and NIHSS (National Institute of Health Stroke Scale) NIHSS more than 15 and Modified Rankin Scale mRS >2 within 30 days

Expert cardiac surgeon: working total operation at least > 1000 cases and empierce > 10 years after graduated, we have 3 expert cardiac surgeon 2 from USA and one from Germany who make operation as short period in MOH in Gaza.

Statistical analysis

Baseline variables Continuous data are reported as means ± SD. Categorical data are presented as absolute values and percentages. Using the x2 test for calculation of MACE (mortality rate, major stroke and reintervention) between patients underwent cardiac surgery local and expert cardiac surgeon. Significance level was set at P value < 0.05. Statistical analysis was performed with SPSS Statistics, Version 23.0.

Results

Among the 98 patients (27 female and 72 male) with mean age 56±12 years scheduled for surgery during the study period, 38 patients was operated by local team, and 60 patients was operated by expert cardiac surgeon during 2022 in Gaza MOH hospitals. (table 1) Total Patients

	98
Mean age	56+12 years
Male	72 (73.5%)
Risk factors:	
Hypertension	62 (63%)
Diabetes mellitus	43 (43.9%)
Type of Surgery:	
CABG	74 (74%)
Valve surgery	22 (22%)
Combination (CABG + valve)	2 (2%)
End Points:	
Death	6 (6%)
Reintervention	5 (5%)
Major stroke	2 (2%)

Table 1: characterizes of patients

The comparison of end points (mortality, major stroke and reintervention) between local and expert cardiac surgeons, was significantly low in patients operated by expert surgeon (table2)

	Local (38)	expert (60)	p value
End points	9	4	0;015
Mortality	3	3	
Major stroke	1	1	
Re-intervention	5	0	

Table 2: The comparison of MACE

The major causes or reintervention (incomplete revascularization in three patients , severe stenosis at anastomosis area in one patient, wrong anastomosis in one patient)

Discussion

The Gaza strip need 350-400 case for coronary artery bypass grafting and 200-250 for cardiac valve surgery yearly[6].

Because the restricted siege of Gaza from 2006 until now. Cardiac surgery was started in Gaza at 2010 by visitor cardiac surgeon from USA and Germany for making and educated local team, but the 30 days mortality in patients who operated by local cardiac surgeon still high 8% (three patients from 38 patients) and reintervention within 3 months is high 13% because of incomplete revascularization ang graft failure. Despite local team only operated selected low risk cardiac patients with elective ischemic coronary artery disease another cardiac surgery such as (valve surgery, aortic aneurysm, cardiac tumor, Redo CABG, Congenital heart disease surgery and CABG with acute coronary syndrome) still transfer to cardiac surgery hospitals in west bank.

In Canada, there is a trend to decreasing mortality in the AVR + CABG cohort to less than 3.0%, with isolated CABG and isolated AVR mortality relatively constant at 1.3% each. [7].

In Gaza only two cardiac surgeons are available for 2.5 million people. A total of 12,180 adult cardiac surgeons were listed in the CTSNet registry, which translates to 1 adult cardiac surgeon per 0.61 million people globally, or, conversely, 1.64 adult cardiac surgeons per million people. Regional distribution ranged from 11.12 adult cardiac surgeons per million population (32.82% of total) in North America to 0.12 adult cardiac surgeons per million (1.05% of total) in sub-Saharan Africa. [8].

Conclusion

Only two adult cardiac surgeon in Gaza is available, with limited surgery for coronary artery bypass grafting in patients with low risk and high mortality and reintervention rate after surgery. Gaza need additionally at least 2 to3 expert adult cardiac surgeon to make large number of different cardiac surgery and to reduce post cardiac surgery complications.

The combination end points included Hospital mortality, major stroke and reintervention rate was higher in patients operated by local cardiac surgery team.

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