

**EARLY OUTCOMES OF MINIMALLY INVASIVE DIRECT  
CORONARY ARTERY BYPASS (MIDCAB) VERSUS OFF-PUMP  
CORONARY ARTERY BYPASS (OPCAB) THROUGH  
STERNOTOMY FOR SINGLE VESSEL DISEASE**

Thesis

**Submitted for Partial Fulfillment of  
Master's Degree in Cardiothoracic Surgery**

By

**KERELLOS GHATTAS TAWFIK MAX  
M.B.B.Ch Faculty of medicine Fayoum University**

**Cardiothoracic Surgery Department**

**Faculty of medicine – Cairo University**

**Faculty of medicine – Cairo University**

**2018**

**EARLY OUTCOMES OF MINIMALLY INVASIVE DIRECT  
CORONARY ARTERY BYPASS (MIDCAB) VERSUS OFF-PUMP  
CORONARY ARTERY BYPASS (OPCAB) THROUGH  
STERNOTOMY FOR SINGLE VESSEL DISEASE**

Thesis

**Submitted for Partial Fulfillment of  
Master's Degree in Cardiothoracic Surgery**

By

**KERELLOS GHATTAS TAWFIK MAX  
M.B.B.Ch Faculty of medicine Fayoum University**

Supervised by

**PROF. DR. TAREK HUSSEIN EL-TAWIL  
Professor of Cardiothoracic Surgery  
Faculty of medicine – Cairo University**

**PROF. DR. AHMED NABIL KHALLAF  
Assistant Professor of Cardiothoracic Surgery  
Faculty of medicine – Fayoum University**

**DR. OMAR ABD EL-AZIZ DAWOUD  
Lecturer of Cardiothoracic Surgery  
Faculty of medicine – Cairo University**

**Faculty of medicine – Cairo University**

**2018**

## **ABSTRACT**

Coronary artery bypass grafting (CABG) is among the most important surgical procedures in the history of medicine. Arguably, no other operation has prolonged more lives, provided more symptom relief, and been more thoroughly studied. It has been the most common procedure of adult cardiac surgery. CABG is evolving and remains the most durable means of revascularization for patients with coronary artery disease (CAD).

Off-pump coronary artery bypass is considered an important method in the field of coronary surgery as with advancements of studies on the cardiopulmonary bypass machine, it's proved that there are many drawbacks to CPB e.g.: incidence of strokes, renal impairment, post-operative coagulopathy and bleeding especially with prolonged bypass times. And with the continuous improvements in both scientific and technical axes; we realized that doing these operations off-pump could be beneficial in reducing some of these drawbacks.

With the development of off-pump techniques, we could perform these operations minimally invasive with thoracotomy incision adding the benefit of avoiding median sternotomy to the proposed benefits of off-pump.

***Keywords:*** coronary artery disease, coronary surgery, off-pump coronary artery bypass, minimally invasive coronary surgery, hybrid surgery