



Minimally Invasive versus Conventional Mitral Valve Surgery Comparison of Early Outcomes

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم الحكيم

صدق الله العظيم

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List of Abbreviations

ABG	: Arterial blood gas
ACT	: Activated clotting time
AF	: Atrial fibrillation
CAD	: Coronary artery disease
CPB	: Cardiopulmonary bypass
CT	: Computed axial tomography
DSWI	: Deep sternal wound infection
ECG	: Electrocardiogram
FS	: Full sternotomy
ICU	: Intensive care unit
IE	: Infective endocarditis
LA	: Left atrial
LAD	: Left anterior descending artery
LV	: Left ventricular
LVEF	: Left Ventricular Ejection Fraction
MICS	: Minimally invasive cardiac surgery
MIDCAB	: Minimally invasive direct coronary bypass operation
MIMVS	: Minimally invasive mitral valve surgery

List of Abbreviations

MR	: Mitral regurgitation
MRSA	: Methicillin-resistant <i>S. aureus</i>
MS	: Mitral stenosis
MVA	: Mitral valve area
PASP	: Pulmonary artery systolic pressure
STS	: Society of Thoracic Surgeons
TE	: Thromboembolic
TEE	: Transesophageal echocardiography
TR	: Tricuspid regurgitation
VATS	: Video-assisted thoracic surgery
VRE	: Vancomycin-resistant <i>enterococcus</i>

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ABSTRACT

Background: Although the first mitral valve replacement method through right thoracotomy incision under cardiopulmonary bypass was described by Lillehei and colleagues in 1957, median sternotomy approach is still considered the standard approach for mitral valve surgery. In the late 1990s, a novel technique named “minimally invasive mitral valve surgery” was proposed. In 1996, Carpentier and colleagues accomplished the first video assisted mitral valve repair through a right thoracotomy. We hypothesized that mitral valve surgery, if performed through a right anterolateral minithoracotomy, would not only be better accepted cosmetically by patients, but also make redo surgery through a median sternotomy easy and trouble free from re-entry bleeding and less postoperative ICU, hospital stay and complication with better pulmonary function.

Objectives: To compare between the early outcomes for patients undergoing mitral valve surgery through right anterolateral minithoracotomy technique and those undergoing mitral valve surgery through conventional full sternotomy technique

Methodology: Our study was conducted in Cardiovascular Hospital – Cardiac Surgery Department- Ain Shams University during (2016-2018) It was a prospective non-randomized comparative study of sixty patients with mitral valve disease were divided into two equal groups; Group “I” 30 patients underwent mitral valve surgery through a minimally invasive right anterolateral minithoracotomy and Group “II” 30 patients underwent mitral valve surgery through standard full median sternotomy. The ethical committee approved the study.

Results: There was no statistical difference between the two groups preoperatively regarding their age, sex, NYHA class, EF%, LA dimension,. There was no operative mortality in both groups but fewer postoperative complications such as wound infection; post-operative arrhythmias occurred in both groups. Postoperative bleeding, inotropic requirement, ventilatory support and blood transfusion were less in group “I” with highly significant statistical difference($P\text{-value} < 0.01$), with better cosmetic appearance.

Conclusion: Right anterolateral minithoracotomy minimally invasive technique provides convenient exposure of the mitral valve, a better cosmetic lateral scar. In addition, minimally invasive right anterolateral minithoracotomy for mitral valve surgery was

comparable to median sternotomy technique regarding safety, with fewer complications and postoperative pain, faster postoperative return to work with no movement restriction after surgery. It should be used as an alternative approach for mitral valve surgery.

Keywords:

- Minimally invasive right anterolateral minithoracotomy
- Mitral valve surgery.
- Median sternotomy