Minimally Invasive versus Conventional Mitral Valve Surgery

Comparison of Early Outcomes

Thesis

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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

MR : Mitral regurgitation

MRSA : Methicillin-resistant S. *aureus*

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 *enterococcus*

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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 devided 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-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