بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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Minimally Invasive Versus Right Thoracotomy for Mitral Valve Surgery

Essay

Submitted for the Partial Fulfillment of Master Degree in Cardiothoracic Surgery

By

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List of Abbreviations

Abb.	Full term
CPB	Cardiopulmonary bypass
EDV	End-diastolic volume
ESV	End-systolic volume
FSV	Forward stroke volume
ICU	Intensive care unit
LA	Left atrium
LAP	Left atrial pressure
MV	Mitral valve
RSV	Regurgitant stroke volume
TEE	Transesophageal echocardiography
TSV	Total stroke volume

INTRODUCTION & AIM OF WORK

Good exposure of the mitral valve is one of the most important factors for performing repair or replacement. Lillehei and colleagues were the first to employ cardiopulmonary bypass for repair of a mitral valve lesion. They approached the valve through a right thoracotomy and an incision in the left atrium posterior to the inter atrial groove ***(Lillehei et al., 1958)***.

Full median sternotomy has been well established as a standard approach for all types of open heart surgery for many years. Although well established, the full sternotomy incision has been frequently criticised for its length, post-operative pain and possible complications like wound infection and instability ***(Rajesh et al., 2011).***

Right anterolateral thoracotomy provides excellent exposure of the mitral valve, even with a small left atrium, and offers a better cosmetic lateral scar which is less prone to keloid formation ***(Kumar et al., 1993)***.

Because of the continuous trend towards less invasive procedures, cardiac operations have become increasingly more sophisticated and complex ***(Benetti et al., 1999; Mack, 2006; Kypson, 2007).***

Primary mitral valve surgery, if performed through a right anterolateral thoracotomy would not only be better accepted cosmetically by patients, but also make redo surgery

through a median sternotomy easy and trouble free from reentry bleeding. In addition it is as safe as median sternotomy for primary mitral valve surgery and should be used as an initial approach to mitral valve surgery, while median sternotomy be kept for repeat mitral valve or other open heart surgery required later in life ***(Srivastava et al., 1998)***.

Minimally invasive techniques in cardiac operations require higher surgical abilities to accomplish the same quality compared with the traditional procedures with cardiopulmonary bypass (CPB) or sternotomy ***(Andre et al., 2009).***

Minimally invasive mitral valve repair is safe, with low perioperative morbidity, and low rates of reoperation, Minimally invasive mitral valve surgery has been proven a feasible alternative to the conventional full sternotomy approach with low perioperative morbidity and short-term mortality.Efforts to minimize surgical trauma, hasten patient recovery, increase patient satisfaction, and reduce cost, without compromise to surgical repair or replacement techniques, continue to be the rationale for minimally invasive procedures ***(McClure et al., 2009).***

Aim of work:

To review the evolution and evaluate advantages and disadvantages of right anterolateral thoracotomy(classic right thoracotomy) as compared to most recent trends and techniques in the field of (minimal invasive) mitral valve procedures.

Chapter 1

ANATOMY OF THE CHEST WALL

The thoracic wall

The thoracic wall provides a good example of the correlation between structure and function in that the anatomical structures provide the mechanism for the functions of breathing, the protection of the underlying viscera, and the venous return from areas inferior to the thorax ***(Moore, 1985)***.

Bones of the thoracic wall

The thoracic cage or skeleton of the thorax is formed by: the 12 thoracic vertebrae and their intervertebral discs posteriorly; the 12 pairs of ribs and costal cartilages; and the sternum anteriorly.

The ribs

These elongated flat bones form the largest part of the thoracic cage. The sternum, the costal cartilages, and the vertebrae form the other part of the thoracic cage. The ribs are long, thin, curved, slightly twisted arches of bone. There are usually 12 pairs of ribs but the number maybe increased by the development of cervical ribs or lumbar ribs or it may be decreased by agenesis (failure of formation) of the 12^{th} rib.