### Value Of Transesophageal Echocardiography In Estimating Left Atrial Pressure In Cardiac Surgery Intensive Care Unite

#### **Thesis**

Submitted for partial fulfillment of The MD In Critical Care Medicine
By

Nashaat Abdel Halim Mahmoud M.B., B.Ch., M.S.

ts ti

Supervised by

Prof. Dr. M. Sherif Mokhtar, M.D.

Prof. of Cardiology & Critical Care Medicine Faculty of Medicine - Cairo University

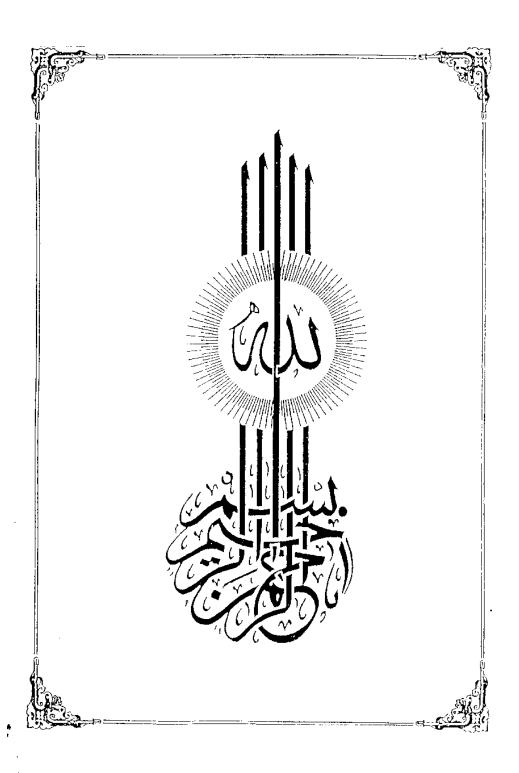
Prof. Dr. Ismael Awad Allah Sallam, M.D.

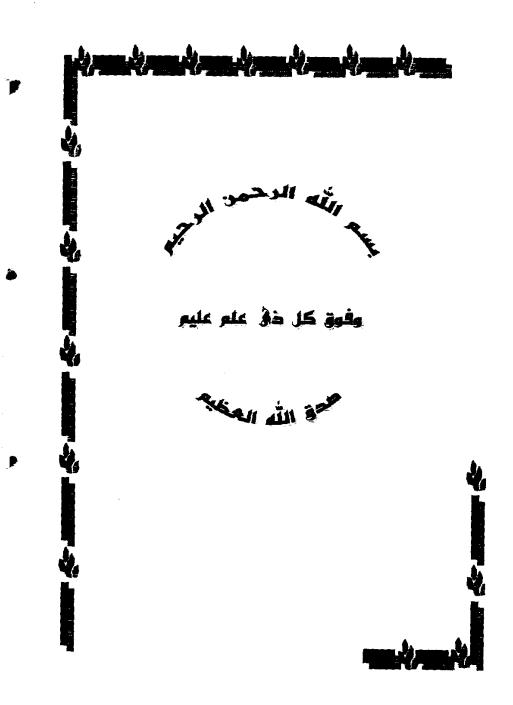
Prof. of Cardiosurgery
Faculty of Medicine - Ain-Shams university

Dr. Hassan Khaled Nagi, M.D.

Assis. Prof. of Critical care Medicine Faculty of Medicine - Cairo University

Faculty of Medicine - Cairo University (1997)





بحضير

أجتماع لجنة العكم على الرسسالة الدفدسة سسست الطبيب / مستشكر مست عبد الحليم مجهول توطئة للعصول على درجسة التابستيو / الدكتسبواة في مسلم المراكب العرب العرب

Value of trans on phageaf eshore may his Illis it is
Unlue of trans one phage of echocaring the this will in cardiac Surge
intensive care unit
- Allis Hans: Ital The state of
Erest With beir was budy lett
- Letter ( 10 ) of Jell 2 ( 10 )
بنا على موافقة الجامعة بتاريخ / / ١١ تم تشكيل لجنة القحصوالمناقشة للرسيالة الذكوة أعسلاه على النحسو التالي :
ا) سيار من الشرفين الشرفين
١) مرا المرا
۲) کال کی ستن خارجی
بعد فحص الرسالة بواسطة كل عنومنفردا وكتابة تفاريومنفردة لكل منهم انعقدت اللجنة مجتمعة فيسمى
يم التكاراء باين ١١٩ / ١٧٨ بنم سيدي
بكلية الطب _ جامعة الفاهرة وذلك لمناتشة الطالب في جلسة علنية في موضوع الرسالة والنتائج التي توسسل
إليها وكذلك الأسس العلمية التي قام عليها البحث ه
المارية والمناز في المارية المناز المارية المناز المارية المناز المارية المناز المارية المارية المارية المارية
فواد اللجندة: <u>شَول الراس لِي المراس الم</u>
المائة والنصلة والنارة للطمع العلم العلم العلم
70, 33, 2
Les med will show a list
· · · · · · · · · · · · · · · · · · ·
المترف المتحن المتحن المتحن المتحن الخارجي المتحن الخارجي المتحن المارجي المتحن المارجي المتحن المارجي المتحن المارجي المتحن المارجي المتحن المارجي المتحد ا
سيري البايب

#### Abstract

**Background**: The transesophageal echocardiography (TEE) is an excellent technique for evaluation of pulmonary venous flow (PVF) and can be used to estimate mean left atrial pressure (LAP). **Objective**: To estimate whether PVF pattern detected by TEE can be used to estimate mean LAP. **Material**: 20 critically postoperative open heart surgery were included prospectively in cardiac surgery intensive care unit with mean age of  $39 \pm 17.7$  years, 13 were males. **Methods**: Mean LAP measured either directly or indirectly by Swan Ganz catheter. TEE was done for PVF measurements. **Results**: The results showed that in patients with LAP ( $\leq 15$  mmHg) the systolic component of PVF was predominant while in patients with elevated LAP (> 15 mmHg), the diastolic component of PVF was predominant. The mean LAP was strongly correlated with the ratio of peak X/Y (r = -0.79), the ratio of velocity time integral X/Y (r = -0.73), and the systolic fraction of PVF (r = -0.69). **Conclusion**: PVF from transesophageal pulsed Doppler echocardiography can be used reliably to estimate the mean LAP in critically ill postoperative patients who underwent open heart surgery.

Key word: Transesophageal echocardiography, Pulsed Doppler, Pulmonary venous flow, Left atrial pressure, Pulmonary capillary wedge pressure.

و

## DEDICATION

# To The memory of my father &



To my mother

my wife &

my sons

Nashaat Abdel Halim 1997

### Acknowledgment :

#### First of All,

# Thanks GOD who allowed and helped me to accomplish this work

I would like to express my deepest thanks and grateful appreciation to Prof. Dr. M Sherif Mokhtar, Professor of Cardiology and Critical care Medicine, Faculty of Medicine, Cairo University, to whom I owe more than words can express. His limitless help, valuable advise and kind encouragement are beyond acknowledgment.

I would like to display my very indebtedness to Prof. Dr. Ismael Awad Allah Sallam, Professor of Cardiosurgery, Ain Shams University for his constructive supervision and his kind help in constructing the work. I received a great deal of help from him, that words cannot express.

I owe special gratefulness and much regards to Dr. Hassan Khaled Nagi, Assistant Professor of Critical Care Medicine, Faculty of Medicine, Cairo University, for his helpful and close experienced supervision. His encouragement, guidance and valuable advise were behind the accomplishment of this work.

Nashaat Abdel Halim 1997

## Table of Contents

Subject	Page N
Introduction	
And Aim Of Work	1
The second secon	3
Review of literature	
Pulmonary venous flow	4
Anatomy and physiology of press	4
Anatomy and physiology of PVF Normal PVF by Donnlor ask	4
Normal PVF by Doppler echocardiography  Determination of PVF	8
	19
Relations of PVF to mitral flow velocity  Effects of variable conditions on PVF  ransesophageal Echapartical	25
ransesophageal Echocardiography  History	28
History	68
Safety and complications of PVF Indications of TFF in original Tree Indications of Indic	68
	74
TEE in pediatric population  Benefits of TFF	77
Benefits of TEE	99
Contraindications of TEE	100
	102
	103
	103
Measurement of cardiac output  Measurement of intranslations at	104
Measurement of intrapulmonary shunt  Technique of insertion of pulmonary shunt	111
Technique of insertion of pulmonary artery catheter  Complications of pulmonary artery catheter	114
Complications of pulmonary artery catheter  Assessing benefits and risks of and	115
Assessing benefits and risks of pulmonary artery catheterization	120
***************************************	127

Subject	Page No.
	130
Patients and Methods	141
Results	161
Discussion	171
Summary & Conclusion	174
References	
Arabic summary	