



*Department of Anesthesia and Intensive
care and Pain Management*

EFFECT OF DEXMEDETOMIDINET IN MORBIDLY OBESE PATIENTS UNDERGOING LAPAROSCOPIC GASTRIC BYPASS SURGERY

Thesis

*Submitted for Partial Fulfillment of M.D. Degree
in Anesthesiology*

Presented by:

Mohamed Ahmed Hamdy

M.B.B.Ch. - M.Sc in Anesthesia

Supervised by:

Professor DR. / Bahera Mohamed Tawfek

Professor of Anesthesia and Intensive care

Faculty of Medicine –Ain shams university

Professor DR. / Alaa Eid Mohamed

Professor of Anesthesia and Intensive care

Faculty of Medicine –Ain shams university

DR. / Fahmy Saad Latif

Assistant professor of Anesthesia and Intensive care

Faculty of Medicine –Ain shams university

DR. / Alaaddin Samir El-Kateb

Lecturer of Anesthesia and Intensive care

Faculty of Medicine –Ain shams university

Ain Shams University

Faculty of Medicine

2011



جامعة عين شمس

كلية الطب

قسم التخدير و الرعاية المركزة و علاج الألم

**دراسة تأثير عقار الديكساميثيدوميدين على مرضى السمنة
المفرطة أثناء إجراء جراحات التحويل المعدية بواسطة المنظار
رسالة مقدمة توطئة للحصول على الدكتوراة في التخدير**

مقدمة من:

الطبيب / محمد أحمد حمدي

بكالوريوس الطب و الجراحة – ماجستير التخدير – كلية الطب – جامعة عين شمس

تمت إشرافه

الأستاذ الدكتور / بهيرة محمد توفيق

أستاذ التخدير و الرعاية المركزة – كلية الطب – جامعة عين شمس

الأستاذ الدكتور / علاء عيد محمد

أستاذ التخدير و الرعاية المركزة – كلية الطب – جامعة عين شمس

الدكتور / / فهمي سعد لطيف

أستاذ مساعد التخدير و الرعاية المركزة – كلية الطب – جامعة عين شمس

الدكتور / علاء الدين سمير الكاتب

مدرس التخدير و الرعاية المركزة – كلية الطب – جامعة عين شمس

جامعة عين شمس

كلية الطب

٢٠١١

ACKNOWLEDGEMENT

First of all, I am deeply grateful to **ALLAH**.

I would like to express my deepest gratitude and appreciation to **Prof. Dr. Bahera Mohamed Tawfek**, Professor of Anesthesiology and Intensive Care, Faculty of Medicine, Ain Shams University, for her kind guidance, continuous help and support through this work and it was a great honor to finish this work under her supervision.

I am very grateful to **Prof. Dr. Ala Eid Mohamed**, Professor of Anesthesiology and Intensive Care, Faculty of Medicine, Ain Shams University for her positive supervision during the preparation of this thesis and for the extensive time and effort to offer every possible help to complete this work.

Special appreciation to **Dr .Fahmy Saad Latef**, Assistant Professor of Anesthesiology and Intensive Care, Faculty of Medicine, Ain Shams University for his kind advice, valuable instructions and continuous support which was the corner stone in the completion of this work.

I'm greatly thankful to **Dr. Aladdin Samir El-kateb** lecturer of anesthesia and intensive care, faculty of medicine, Ain Shams University, for great help and cooperation during the whole work.

Last but not least, I would like to present a lot of thanks to my family, friends, and to my colleagues, whose without their help and support, this work could not come to birth.

Mohamed Hamdy

CONTENTS

• List of tables	I
• List of figures	III
• List of abbreviations	IV
• INTRODUCTION	1
• AIM OF THE WORK	4
• REVIEW OF LITERATURE:	
○ Pharmacology of dexmedetomidine	5
○ Obesity	24
○ Anesthetic considerations for bariatric surgery	44
• PATIENTS AND METHODS	65
• RESULTS	75
• DISCUSSION	84
• CONCLUSIONS AND RECOMMENDATION	91
• SUMMARY	92
• REFERENCES	98
• Arabic summary	—

LIST OF TABLES

No	Table	Page
Table (1)	Classification of Obesity and Levels of Risk Associated with Increasing Body Mass Index ...	27
Table (2)	Systemic Consequences of Obesity	28
Table (3)	Features Associated with Metabolic Syndrome .	29
Table (4)	Clinical Criteria for Diagnosing Metabolic Syndrome	30
Table (5)	STOP-Bang scoring	34
Table (6)	Key Issues in the Management of Obese Patients Requiring Attention Preoperatively	45
Table (7)	Key Issues in the Management of Obese Patients Requiring Attention from Anesthetic Induction to Emergence	50
Table (8)	Ramsay Sedation Score. (RSS)	72
Table (9)	Comparison between the two Groups as Regard the Demographic data	75
Table (10)	Comparison between the two Groups as Regard duration of surgery	76
Table (11)	Comparison between the two Groups as Regard Propofol consumption, intraoperative mean arterial pressure (MAP) and mean intraoperative heart rate (HR)	76

LIST OF TABLES (CONT...)

Table (12)	Comparison between the Three Groups as Regard Postoperative pain score, (VAS) postoperative mean arterial pressure (MAP) and mean postoperative heart rate (HR)	78
Table (13)	Comparison between the two Groups as Regard postoperative sedation score (Ramsay Sedation Score):	80
Table (14)	Comparison between the Three Groups as Regard, postoperative mean arterial pressure (MAP) and mean postoperative heart rate	80
Table (15)	Comparison between the two Groups as Regard Changes in postoperative Arterial Carbon Dioxide Tension (PaCO ₂)	81
Table (16)	Comparison between the two Groups as Regard postoperative nausea and vomiting (PONV)	82
Table (17)	Comparison between the two Groups as regard the lowest postoperative Spo ₂ ,respiratory rate and Need for supplemental O ₂ beyond the first 2 postoperative hours	83

LIST OF FIGURES

No.	Figure	Page
Figure (1)	Fat thickness	25
Figure (2)	Obesity Induced Cardiomyopathy	39
Figure (3)	The Visual Analogue Score (VAS)	51
Figure (4)	Surgical lifts are used to build a "staircase"	52
Figure (5)	The obese patient should be positioned in a semi-recumbent position	53
Figure (6)	The Correct Position for Direct Laryngoscopy in a Morbid Obese Patient	56
Figure (7)	Radiograph of postoperative Day 1 Gastrografin swallow	60
Figure (8)	The Visual Analogue Score (VAS)	71
Figure (9)	Comparison between the two Groups as Regard intraoperative Propofol consumption and postoperative 24h morphine consumption	77
Figure (10)	Comparison between the two Groups as Regard Mean intraoperative mean arterial pressure (MAP) and mean intraoperative heart rate (HR)	77
Figure (11)	Comparison between the two Groups as Regard Postoperative pain score	79
Figure (12)	Comparison between the two Groups as Regard Mean postoperative mean arterial pressure (MAP) and mean intraoperative heart rate (HR)	81
Figure (13)	Comparison between the two Groups as Regard Changes in postoperative Arterial Carbon Dioxide Tension (PaCO ₂)	82

LIST OF ABBREVIATIONS

ABG	Arterial blood gases
AHI	Apnea/hypopnea index
ASA	American society of anesthesiologists
b/m	beat per minute
Bi-PAP	Bi-level positive airway pressure
BMI	Body mass index
cm	Centimeter
CPAP	Continuous positive airway pressure
DJD	Degenerative joint disease
dL	Deciliter
DM	Diabetes mellitus
DVT	Deep vein thrombosis
EBW	Excess body weight
ECG	Electrocardiogram
FDA	Food and drug administration
FRC	Functional residual capacity
G	Gauge
GA	General anesthesia
GERD	Gastroesophageal reflux disease
GFR	Glomerular filtration rate
GI	Gastrointestinal
gm	Gram

LIST OF ABBREVIATIONS (CONT...)

h	Hour
I:E	Inspiratory : expiratory
IBW	Ideal body weight
ICU	Intensive care unit
IM	Intramuscular
IU	International unit
IV	Intravenous
IVC	Inferior vena cava
JVP	Jugular venous pressure
Kg	Kilogram
kg/m ²	Kilogram per meter square
L	Liter
LBM	Lean body mass
LMWH	Low molecular weight heparins
MAP	Mean arterial blood pressure
mg	Milligram
min	Minute
ml	Milliliter
mmHg	millimetre mercury
µg	Microgram
NIDDM	Non-insulin dependent diabetes mellitus
NIH	National Institutes of Health

LIST OF ABBREVIATIONS (CONT...)

NMDA	N-methyl-D-aspartate
NSAIDs	Non-steroidal anti-inflammatory drugs
OR	Operating room
OSA	Obstructive sleep apnea
OSAHS	Obstructive sleep apnea/hypopnea syndrome
OSAS	Obstructive sleep apnea syndrome
PA	Pulmonary artery
PaCO ₂	Arterial Partial pressure of carbon dioxide
PACU	Postanesthesia care unit
PaO ₂	Arterial Partial pressure of oxygen
PCA	Patient-Controlled Analgesia
PE	Pulmonary embolism
PEEP	Positive end expiratory pressure
PONV	Postoperative nausea and vomiting
SaO ₂	Arterial oxygen saturation
TBW	Total body weight
TMJ	Temperomandibular joint
US	United States
VAS	Visual Analogue Score



INTRODUCTION



AIM OF THE WORK



REVIEW OF LITERATURE



PATIENTS AND METHODS



RESULTS
