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Comparative Study Between Multimodal Perioperative Analgesia and Thoracic Epidural Analgesia after Open Bariatric Surgery in Morbidly Obese Patients

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بسم الله الرحمن الرحيم

﴿قالوا سبحانك لا علم لنا إلا ما علمتنا

إنك أنت العليم الحكيم﴾

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(البقرة : ٣٢)

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List of Abbreviations

Abbreviation	Meaning
ABG	Arterial blood gases
AGB	Adjustable gastric banding
AHI	Apnea/hypopnea index
APGARS	Acute post-gastric reduction surgery
ApoB	Apolipoprotein B
ASA	American society of anesthesiologists
b/m	beat per minute
Bi-PAP	Bi-level positive airway pressure
BMI	Body mass index
CC	Closing capacity
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
ERV	Expiratory reserve volume
FDA	Food and drug administration
FEV1	Forced expiratory volume in one second
FIB	Fibrinogen
FRC	Functional residual capacity
G	Gauge
GA	General anesthesia
GERD	Gastroesophageal reflux disease
GFR	Glomerular filtration rate
GI	Gastrointestinal

List of Abbreviations (cont...)

gm	Gram
h	Hour
HDL-C	High-density lipoprotein cholesterol
hsCRP	High-sensitivity C-reactive protein
I:E	Inspiratory : expiratory
IBW	Ideal body weight
ICU	Intensive care unit
IL-6	Interleukin-6
ILMA	Intubating laryngeal mask airway
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
LDL	Low-density lipoprotein
LMWH	Low molecular weight heparins
MAP	Mean arterial blood pressure
mg	Milligram
min	Minute
ml	Milliliter
mmHg	millimetre mercury
MO	Morbid obese
NASH	Nonalcoholic steatohepatitis
NCEP	National Cholesterol Education Program
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
P	Probability
PA	Pulmonary artery
$PaCO_2$	Arterial Partial pressure of carbon dioxide
PACU	Postanesthesia care unit
PAI	Plasminogen activator inhibitor
PaO_2	Arterial Partial pressure of oxygen
PCA	Patient-Controlled Analgesia
PE	Pulmonary embolism
PEEP	Positive end expiratory pressure
PONV	Postoperative nausea and vomiting
REM	Rapid eye movement
RPF	Renal plasma flow
SaO_2	Arterial oxygen saturation
SD	Standard deviation
TBW	Total body weight
TGs	Triglycerides
TMJ	Temperomandibular joint
TNF-α	Tumor necrosis factor-α
US	United States
VAS	Visual Analogue Score
VBG	Vertical banded gastroplasty
V_D	Volume of distribution
WHR	Waist-to-hip ratio

LIST OF ABBREVIATIONS (CONT...)

%	Percent
°C	Celsius
µg	Microgram

INTRODUCTION

Introduction

Morbid obesity is associated with an increased prevalence of numerous physical ailments. The frequency and severity of co-morbid conditions is directly proportional to the weight of the patient. Based on the guide published by the National Institutes of Health, body mass index (BMI) (kg/m^2) is used to classify obesity. Most consider morbid obesity to refer to patients with a BMI $\geq$ 40 kg/m^2 or a BMI $\geq$ 35 kg/m^2 if co-morbid conditions exist ***(Gross et al., 2006).***

The condition of morbid obesity presents a challenge to the anesthesiologist because of the altered cardiopulmonary physiology and the associated pathologies including hypertension, coronary artery disease, obstructive sleep apnea, and diabetes mellitus ***(Ebert et al., 2006).***

Morbid obesity is one of the most prevalent medical disease states in the world, yet few treatment modalities have existed up until the past decade. During the past years, innovations in surgical techniques have improved. Surgery performed for the treatment of morbid obesity commonly referred to as bariatric surgery. As a result of the increase in the number of persons undergoing bariatric surgery, the anesthesiologist has been faced with the task of managing morbidly obese patients whose anesthetic managements are complicated not only by the virtue of their weight and the presence of significant co-existing diseases but also by the complexity of the surgical procedure ***(Vallejo et al., 2007).***

Surgical approaches designed to treat obesity can be classified as malabsorptive or restrictive. Malabsorptive procedures are rarely used at

present. Restrictive procedures include the vertical banded gastroplasty (VBG) and gastric banding, including adjustable gastric banding (AGB) ***(Ogunnaike et al., 2002).***

The pain from an open bariatric surgical procedure can be quite significant. Epidural analgesia has become a common practice for patients undergoing gastric bypass. However, placement of the epidural catheter in obese patients can be time-consuming and technically difficult ***(Schumann et al., 2003).*** There is growing interest for less demanding modes of perioperative analgesia such as wound infiltration with local anesthetic combined with systemic medications to achieve multimodal analgesia ***(Cashman and Dolin, 2004).***

For adequate analgesic management, timing of drug administration is extremely important. High hopes were associated with the use of drugs before the surgical injury – pre-emptive analgesia. With time the method was modified and the drugs were used throughout the perioperative period – the supply started before surgical injury and continued through the intra- and postoperative period – preventive analgesia. Local anesthetics field infiltration before the skin incision reduce peripheral sensitization, by inhibiting transduction and decreasing neurogenic inflammation at the injury site, and decreases central sensitization by inhibiting transmission of nociceptive stimuli to the spinal cord. Re-infiltration the wound with a local anesthetics before the placement of sutures, prolong its action over the early postoperative period ***(Daszkiewicz and Wyleżoł, 2010).***

AIM OF THE WORK