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التوثيق الالكتروني والميكروفيلم

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بعض الوثائق الأصلية تالفة

بالرسالة صفحات
لم ترد بالأصل

Faculty of Medicine
Department of Anesthesia,
Intensive Care & Pain Management

Comparison between volume controlled ventilation and pressure controlled ventilation as regards effects on respiratory parameters and need of postoperative ventilation in laparoscopic bariatric surgeries

Thesis

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By

Ramy Hasan Naser Ibrahim Zoair
M.B., B.Ch., M.Sc., Ain Shams University

Supervised by

Professor Doctor / Amir Ibrahim Mohamed Salah
Professor of Anesthesiology, Intensive Care and Pain Management
Faculty of Medicine, Ain Shams University

Professor Doctor/ Adel Mikhail Fahmy Shonoda
Professor of Anesthesiology, Intensive Care and Pain Management
Faculty of Medicine, Ain Shams University

Doctor/ Khaled Mostafa Khalaf
Lecturer of Anesthesiology, Intensive Care and Pain Management
Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University
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Ramy Hasan Naser Ibrahim Zoair

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List of Abbreviations

Abb.	Full term
ABG	*Arterial blood gases*
BIPAP	*Bi-level positive airway pressure*
BMI	*Body mass index*
C_{dyn}	*Dynamic compliance*
CPAP	*Continuous positive airway pressure*
CT	*Computerized tomography*
$EtCo_2$	*End tidal carbon dioxide*
FiO2	*Fraction of inspired oxygen*
ERV	*Expiratory reserve volume*
FEV_1	*Forced expiratory volume in one second*
FRC	*Functional residual capacity*
FVC	*Forced vital capacity*
HR	*Heart rate*
IBW	*Ideal body weight*
ICU	*Intensive care unit*
MAC	*Minimal alveolar concentration*
MAP	*Mean arterial pressure*
OHS	*Obesity hypoventilation syndrome*
OSA	*Obstructive sleep apnea*
$P(A\text{-}a)O_2$	*Alveolar-arterial oxygen gradient*
$PaCo_2$	*Arterial partial pressure of carbon dioxide*
PACU	*Post-anesthesia care unit*
PaO_2	*Arterial partial pressure of oxygen*

List of Abbreviations (Cont...)

Abb.	Full term

PCA.....: Patient controlled analgesia

PCV.....: Pressure controlled ventilation

PEEP.....: Positive end expiratory pressure

PIP.....: Peak inspiratory pressure

SA node..... : Sinoatrial node

SD.....: Standard deviation

TLC.....: Total lung capacity

VC.....: Vital capacity

VCV.....: Volume controlled ventilation

V_T.....: Tidal volume

VTE.....: Vascular theombo Embolism

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INTRODUCTION

Obesity is a complex disease having multifactorial etiology. It is caused by abnormal or excessive accumulation of adipose tissue in the body. Obesity became an epidemic which had worsened for the last 50 years. It is considered to be the second most common cause of preventable death after smoking. It is associated with many medical conditions and can lead to serious complications. A 5% to 10% weight loss can improve health, quality of life, and economic burden of individuals and countries ***(Akinkuotu et al., 2019).***

Volume controlled ventilation mode (VCV) is commonly used during general anesthesia. The minute ventilation is fixed while pulmonary resistance and compliance influence the airway pressure. A constant flow is used in volume controlled ventilation (VCV) to deliver tidal volume but this may result in higher airway pressures while in Pressure controlled ventilation (PCV) a decelerating flow is used that reaches the highest value at the beginning of inspiration with a preset pressure limitation to achieve and maintain the set inspiratory pressure quickly followed by decelerating flow ***(Senay et al., 2016)***.

In Laparoscopic surgeries patients may receive low tidal volumes during pneumoperitoneum due to increased pressure. Pneumoperitoneum decreases chest wall and lung compliance and decreases functional residual capacity and these effects lead to decreased alveolar ventilation ***(Aydin et al., 2016).***

It is important to optimize intraoperative mechanical ventilation especially in obese patients to decrease the incidence of postoperative pulmonary complications and to improve the outcome ***(Ball et al., 2015).***

Obesity causes pathophysiological changes that make obese patients prone to peri-operative complications especially pulmonary complications that are the main reason for peri-operative morbidity and mortality after general anesthesia. Pneumonia, atelectasis, carbon dioxide retention may extend to the postoperative period causing delayed discharge from post anesthesia care unit, increased need for respiratory physiotherapy or non- invasive ventilation and increased probability of admission to intensive care unit. Preventing these complications would decrease hospital stay and improve the quality of medical care ***(Tianzhu et al., 2014).***

In obese patients decreased pulmonary compliance results in reduced vital capacity, functional residual capacity (FRC) and total lung capacity. Decreased FRC leads to lung volumes below the closing capacity during normal tidal ventilation causing closure of small airway, ventilation–perfusion mismatch and arterial hypoxemia. Anesthesia worsens this as up to 50% decrease in FRC happens in obese patients under anesthesia in comparison with 20% among the non-obese ***(Ogunnaike and Whitten, 2006).***

AIM OF THE WORK

This study aims to compare the effect of volume controlled ventilation and pressure controlled ventilation on respiratory parameters and the need of postoperative ventilation for morbidly obese patients undergoing laparoscopic bariatric surgery in order to decrease complications.