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Recent Advances in Anesthetic Management of a Morbidly Obese Parturient

Essay
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List of Abbreviations

ABW : Adjusted Body Weight

ACOG : American College of Obstetricians and Gynecologists

AFP : Alfa Fetoprotein

AKI : Acute Kidney Injury

ASA : American Society of Anesthesiologists

BMI : Body Mass Index

BPP : Biophysical Profile

BSA : Body Surface Area

CO : Cardiac Output

CPAP : Continuous Positive Airway Pressure

CS : Cesarian Section

CSE : Combined Spinal Epidural

CSF : Cerebrospinal Fluid

CT : Computed Tomography

CVD : Cardiovascular Disease

CVP : Central Venous Pressure

DM : Diabetes Mellitus

EFW : Estimated Fetal Weight

EKG : Electrocardiogram

ERV : Expiratory Reserve Volume

ETT : Endotracheal Tube

FFM : Free Fat Mass

FIO_2 : Fraction of Inspired Oxygen

FRC : Functional Residual Capacity

GDM : Gestational Diabetes Mellitus

GFR : Glomerular Filtration Rate

IAP : Intra-Abdominal Pressure

IBW : Ideal Body Weight

ICU : Intensive Care Unit

IL : Interleukin

ILMA : Intubating Laryngeal Mask Airway

IRV : Inspiratory Reserve Volume

IV : Intravenous

IVF : Invitro Fertilization

LBW : Lean Body Weight

LMA : Laryngeal Mask Airway

LV : Left Ventricle

NAFLD : Non Alcoholic Fatty Liver Disease

NSAID : Non-Steroidal Anti-Inflammatory Drug

NST : Non Stress Test

NTD : Neural Tube Defect

OD : Outer Diameter

OR : Operating Room

OSA : Obstructive Sleep Apnea

PEEP : Positive End Expiratory Pressure

RAMP : Rapid Airway Management Positioner System

RCOG : Royal College of Obstetricians and Gynecologists

RV : Residual Volume

SGAs : Supraglottic Airway Devices

SV : Stroke Volume

TAP : Transverse Abdominis Muscle

TBW : Total Body Weight

TNF : Tumor Necrosis Factor

TV : Tidal Volume

UK : United Kingdom

V/Q : Ventilation/Perfusion

VBAC : Vaginal Birth after Cesarian

VLDL : Very Low Density Lipoprotein

VTE : Venous Thromboembolism

WHO : World Health Organization

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INTRODUCTION

Obesity has become a public health epidemic in many nations worldwide, and is a serious health problem among reproductive-aged women. Morbid obesity and its comorbid conditions place the parturient and fetus at increased risk of complications related to pregnancy, surgery and anesthesia. ***[Vricella L, 2010]***

Obesity is linked to a number of co-morbidities, including type 2 diabetes, cancer and cardiovascular diseases. ***[Hanley, 2010]***

Morbid obesity accentuates the physiological changes associated with pregnancy. It is not uncommon in the morbidly obese parturient to see systolic and diastolic dysfunction of the left ventricle, pulmonary hypertension and obstructive sleep apnea. Moreover, endothelial dysfunction, a consequence of insulin resistance and dyslipidemias, may predispose these patients to pregnancy induced hypertension. [***Wolf M, 2001***]

The physiological and anatomical changes caused by both obesity and pregnancy increase the potential of an unanticipated difficult airway, impossible mask ventilation and rapid desaturation during the apneic phase. Morbidly

obese patients undergoing open abdominal surgery are at increased risk for serious respiratory complications including pulmonary embolism, pneumonia, atelectasis, aspiration and respiratory failure ***[Yu CK, 2006].***

Surgery in this patient population is considered high risk but careful planning, preoperative risk assessment, adequate anesthetic management, strict venothrombotic event prevention, and effective postoperative pain control will all help to reduce risk. ***[Ankichetty, 2012]***

Increased vigilance needs to occur not only during induction of anesthesia, but also during emergence and recovery. Moreover, vigilance should be maintained in the postoperative period for the development of complications such as hypoxemia, atelectasis and pneumonia, deep venous thrombosis and pulmonary embolism, pulmonary edema, postpartum cardiomyopathy, postoperative endometritis, wound infection and dehiscence. ***[Saravanakumar, 2006]***

Aim of the essay

Our study aims to provide an insight into the magnitude and pathophysiological features of obese parturient, maternal and neonatal associated risks, along with peculiar anesthesiological management strategies.