Ain Shams University
Faculty of medicine
Department of Anesthesia, Intensive care and pain management

Analgesic Efficacy and Outcome of Lumber Epidural Analgesia versus ultrasound guided Trasversus Abdominis Plane block In Laparoscopic Sleeve Gastrectomy

Thesis

Submitted for partial fulfillment of MD degree in anesthesiology

Presented by

Marwa Moustafa Hasan Salem

(M.B.B.Ch) Ain Shams University, (M.Sc) Degree in Anesthesiology
Faculty of Medicine - Ain Shams University

Supervised by

Professor / Mohamed Saeed Abd-El Aziz

Professor and of Anesthesiology and Intensive Care and pain management
Faculty of Medicine - Ain Shams Univeristy

Professor / Sherif Samir Wahba

Professor of Anesthesiology and Intensive Care and pain management
Faculty of Medicine - Ain Shams University

Doctor/ Sanaa Farag Mahmoud

Lecturer of Anesthesiology and Intensive Care and pain management
Faculty of Medicine - Ain Shams University

Doctor/ Moustafa Mohamed sery

Lecturer of Anesthesiology and Intensive Care and pain management
Faculty of Medicine - Ain Shams University

Faculty of Medicine
Ain Shams University
2018

List of Contents

List of Abbreviations

2D	Two-dimensional
ABP	Arterial blood pressure
CBC	Complete blood count
CGRP	Calcitonin gene-related protein
ECG	Electrocardiogram
EOM	External oblique muscle
HR	Heart Rate
INR	International normalized ratio
IOM	Internal oblique muscle
IV	Intravenously
KFT	Kidney function test
LFT	Liver function test
NRS	Numeric Rating Scale
NSAIDs	Non-steroidal anti-inflammatory drugs
PT	Prothrombin time
PTT	Partial thromboplastin time
RAM	Rectus abdominal muscle
RBS	Random blood sugar
SD	Standard deviation
TAM	Transverse abdominal muscle
TAP	Transversus abdominis plane
TAPB	Transverse abdominal plane block
TEA	Thoracic epidural analgesia
US	Ultrasound
VAS	Visual Analogue Score

VDS Verbal Descriptor Scale

VRS Verbal Categorical Rating scale

List of Tables

List of Figures

INTRODUCTION

The recent adoption of pain assessment and management standards follows a growing recognition of the benefits of acute pain control on short-term outcomes, patient satisfaction, quality of life, and in the prevention of development of chronic pain syndromes (**Carr et al., 2011).**

postoperative pain seems to remain a very important factor that can deteriorate the overall quality of recovery after laparoscopic procedures **(De Oliveira et al., 2012).**

.Opioids continue to play a major role in the pharmacologic management of acute postoperative pain but are less efficacious in treating inflammatory or neuropathic pain. Moreover, the use of opioids often leads to undesirable side effects (respiratory depression, central nervous system depression, sedation, circulatory depression, nausea, vomiting, pruritus, urinary retention, impairment of bowel function, and sleep disruption) that can hamper or delay recovery from surgery ***(Chin, 2008)***.

Treatment with other non-opioid modalities (neuroaxial analgesia and peripheral nerve block techniques) has the potential advantage of providing improved analgesia and early mobilization while reducing opioid side effects ***(Chin, 2008).***

INTRODUCTION

Epidural anesthesia and analgesia have the potential to reduce or eliminate the perioperative physiologic stress responses to surgery and thereby decrease surgical complications and improve outcomes ***(Park et al., 2001).***

Transversus abdominis plane (TAP) block is a regional anesthetic technique used to block myocutaneous sensation of anterior abdominal wall. This block has a number of advantages which include technical simplicity, high analgesic effectiveness, opioid sparing, long duration of effect (~30 - 36 hour), minimal side effects in comparison to that associated with neuroaxial analgesia (e.g., hypotension, motor blockade) and opioid analgesia. TAP block may be posterior or subcostal TAP block ***(McDonnell et al.,2007)***.

Valid and reliable pain assessment tools are essential for both clinical trials and effective pain management. Acute postoperative pain can be reliably assessed using physiologic data (heart and respiratory rates) and behavioral responses. Other diagnostic tools are used to assist in assessing the severity and quality of pain experienced by the patients such as Numeric Rating Scales (NRS) or Visual Analogue Scales (VAS). Both these are more powerful in detecting changes in pain intensity than a Verbal Categorical Rating scale (VRS) ***(Breivik* and Stubhaug, 2008*).***

Rapid and uneventful postoperative recovery following general anesthesia in morbidly obese patients undergoing bariatric surgery may offer challenges to anesthesiologists. With improved

surgical techniques and shorter pneumoperitoneum, regional anesthesia may be considered for this laparoscopic procedure in selected cases **(Hung et al., 2015).**

Aim of the work

This study will clinically evaluate and statistically compare between lumber epidural versus transversus abdominus plane block as postoperative Analgesia for laparoscopic sleeve gastrectomy in order to figure out the most possible effective technique for this kind of procedure with most benefits and least side effects.

CHAPTER 1

ANESTHESIOLOGIC CONCERNS IN BARIATRIC SURGERY

Both in developed and under developed countries the total number of obese people and their fraction of the population are increasing, and they live longer. The need for bariatric surgery is rapidly increasing and the concept of fast-track surgery and laparoscopy have made bariatric surgery a cost-effective and efficient way of treating the morbidly obese when other non-surgical options have been unsuccessful. Whereas ambulatory care is evolving for medium invasive bariatric procedures (i.e. gastric banding or minor laparoscopic procedures) in some places, most bariatric patients are still in-patients, although a short stay and accelerated recovery should be feasible and encouraged . There is a general trend, especially in the obese, to supply anesthetic care with loco-regional techniques whenever possible ***(Raeder, 2010).***

Loco-regional techniques have less physiologic and especially respiratory derangement, when used instead of general anesthesia. Also, as ultrasound technology has emerged as a valuable tool in locating regional anesthesia bone-marks in the obese, the use of

brachial plexus techniques and spinal/epidural techniques has grown in the obese ***(Raeder, 2010).***

Body mass index is the most common way of classifying obesity, and this figure is also useful for the anaesthesiologist for classification, risk-stratifying and need of extra consults and measures. However, for dosing of anesthetic drugs, different weight concepts are more useful. Some definitions of weight is listed in the frame below:

Different types of weight:

- Actual weight = Total weight
- Ideal weight: Height - 100 (105 in women)
- Lean weight = fat free body mass
- Corrected ideal weight:= ideal weight + 20-40% of difference to actual weight
- Body mass index: weight / height x height in meters
  (Raeder, 2010).

The list of co-morbidity which are more frequent in the obese population include: diabetes, gastro-oesophageal reflux, and musculo-sceletal pain, sleep apnea syndrome and in more severe cases pulmonary hypoventilation and atelectasis or heart failure, cardio-vascular disease, gastro oesophageal reflux disease (GERD), IV cannulation, drug dosnig, postoperative pain management and PONV ***(Chung, 2010).***

Anaesthetic management of obese patients

Preoperative:

. Fluid and electrolyte abnormalities may occur from dieting or diuretic/laxative use. Serum glucose, electrolytes, liver function tests and creatinine are usually needed preoperatively. ALT is frequently elevated. Fibrinogen may be elevated and fibrinolysis impaired. Obesity is often associated to multiple comorbidities. Preoperative evaluation should focus on the following aspects:

- ***Cardiovascular:*** evaluation is needed for hypertension, heart failure and coronary artery disease. Symptomatic angina or exertional dyspnea are rare because of the lack of mobility of morbidly obese patients, but it does not reflect the increased risk of cardiovascular disease (**Ana Fernandez and Bustamante, 2011).**

- ***Respiratory:*** a thorough airway examination is critical, along with the problems of obstructive sleep apnea (OSA). Lung volumes such as the functional residual capacity (FRC) are reduced in obese patients, and decreased even further in the supine and Trendelenburg positions. Obesity is the greatest single risk factor for OSA. Long-term OSA may lead to obesity hypoventilation (Pickwickian) syndrome, with pulmonary hypertension and cor pulmonarle. A majority of patients affected have increased oral and pharyngeal tissue,

which makes ventilation, intubation, and extubation more challenging. Spirometry and arterial blood gases may be needed preoperatively. The expiratory reserve volume (ERV) is the most sensitive indicator of the effect of obesity on pulmonary function ***(Raeder, 2010).***

- ***Gastrointestinal:*** GI reflux is frequent and the risk of aspiration pneumonitis is greater than in non-obese patients. The use of anti-acid medications should be considered preoperatively (**Ana Fernandez and Bustamante, 2011).**

- ***Metabolic, renal, hepatic, coagulation:*** Insulin resistance and elevated cholesterol and triglycerides are frequent. Abdominal obesity is a common feature of the "metabolic syndrome", along with other abnormalities, i.e. dyslipemia, hypertension and insulin resistance ***(Chung, 2010).***

Intraoperative:

It is mandatory to arrange a surgical table with an adequate weight limit, appropriate support for body parts and cushions.

General anesthesia:

Obese patients present the following challenges:

Airway management: Prolonged preoperative oxygenation and positioning with elevation of head and shoulders above the chest level ("ramped position") (Figure 1) are key to successful airway management. Availability of a video-