Comparison of Ultrasound Guided Transversus Abdominis Plane Block versus Intraperitoneal and Periportal Bupivacaine Infiltration in Post Operative Analgesia after Laparoscopic Cholecystectomy

Thesis

Submitted for Partial Fulfillment
of Master Degree in ***Anesthesia***

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2019

Acknowledgments

First and foremost, I feel always indebted to ***Allah*** *the Most Beneficent and Merciful.*

I wish to express my deepest thanks, gratitude and appreciation to ***Prof. Dr. Sherif Samir Wahba Rezk Allah****, Professor of Anesthesia, Intensive Care and Pain Management, Faculty of Medicine, Ain Shams University, for his meticulous supervision, kind guidance, valuable instructions and generous help.*

Special thanks are due to ***Prof. Dr. Hadeel Magdy Abdel Hameed Mohamed****, Assistant Professor of Anesthesia, Intensive Care and Pain Management, Faculty of Medicine, Ain Shams University, for her sincere efforts, fruitful encouragement.*

I am deeply thankful to ***Dr. Mohammed Abdel Mohsen Abdel Naeem Esmaeil****, Lecturer of Anesthesia, Intensive Care and Pain Management, Faculty of Medicine, Ain Shams University, for his great help, outstanding support, active participation and guidance.*

I would like to express my hearty thanks to all my family for their support till this work was completed.

Mina Elia Haleem Eshak

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List of Abbreviations

Abb.	Full term
AAGBI	*Association of Anesthetists of Great Britain and Ireland*
ABP	*Arterial blood pressure*
CNS	*Central nervous system*
CPR	*Cardio pulmonary resuscitation*
CVS	*Cardio vascular system*
ECG	*Electrocardiography*
EO	*External oblique*
EO	*External oblique muscle*
GA	*General anesthesia*
h	*Hours*
HR	*Heart rate*
hr	*Hour*
hrs	*Hours*
HS	*Highly significant*
IO	*Internal oblique*
IP	*In-Plane*
IV	*Intravenous*
K	*Potassium*
L1	*Iliohypogastric nerve*
Lap Chole	*Laparoscopic cholecystectomy*
LAs	*Local anesthetics*
LAST	*Local anesthetics systemic toxicity*
min	*Minute*

List of Abbreviations cont...

Abb.	Full term
Na	*Sodium*
NIBP	*Non-invasive blood pressure*
NRS	*Numerical rating scale*
NS	*Non significant*
NSAIDs	*Non-steroidal anti- Inflammatory drugs*
OOP	*Out of plane*
OR	*Operation rooms*
PC	*Peritoneal cavity*
S	*Significant*
SpO2	*Pulse oximetry*
SPSS	*Statistical Package for Social Science*
TA	*Transversus abdominis*
TAP	*Transversus abdominis plane*
US	*Ultrasound*
USG	*Ultrasound guided*
VAS	*Visual Analogue Scale*

INTRODUCTION

Since the concept of day case surgeries are getting more popular, surgeons and anesthesiologists are trying their best to provide adequate post operative analgesia. The proper management of post operative pain ensures early ambulation of patients and obviates many post operative Complications ***(Sinha et al., 2016).***

The most common modality for post operative pain management has remained the parenteral use of Non-steroidal anti- Inflammatory. drugs (NSAIDs) and opioids. The intraperitoneal and periportal infiltration with local anesthetic agents has also remained a popular method to take care of immediate post operative pain. This technique is virtually cost free, rapid and hardly requires any special technical experience or equipment for its use. But as there are advances in anesthetic techniques, more and more regional blocks are being tried to take care of post operative pain. The choice of anesthetic block technique depends upon the site of surgical incision proposed. Transversus abdominis plane (TAP) block is a novel approach in which local anesthetic agent is injected into the plane between the internal oblique and transversus abdominis muscles ***(Kuthiala et al., 2017).***

The technique of TAP block has been found to be a safe and effective tool in a variety of general, gynecological, and urological surgery, and it is suggested as part of the multimodal

anesthetic approach to enhance recovery after lower abdominal surgeries ***(Barazanchi et al., 2018).***

Transversus abdominis plane (TAP) block is a regional anaesthetic technique which blocks neural afferents from the anterolateral abdominal wall. With the aid of ultrasound or anatomical landmark guidance, local anesthetic is injected into the transverses abdominis fascial plane, where the nerves from T6 to L1 are located. The initial clinical trials assessing the analgesic effect of TAP blockade showed an effect for up to 24 h postoperatively ***(Kuthiala et al., 2017).***

The current study has tried to find out whether TAP block is able to provide prolonged analgesic effect as compared to intraperitoneal and periportal infiltration with local anesthetic agent. The outcome measures evaluated with the pain score at various intervals using Visual Analogue Scale.

AIM OF THE WORK

The aim of this study has been to test the efficacy of TAP block versus intraperitoneal and periportal infiltration with local anesthetic agent specially to provide postoperative analgesia after laparoscopic cholecystectomy.

Chapter 1

ANATOMICAL CONSIDERATIONS

Gallbladder

The **gallbladder** is a gastrointestinal organ located within the right hypochondrial region of the abdomen. This intraperitoneal, pear-shaped sac lies within a fossa formed between the inferior aspects of the right and quadrate lobes of the liver.

The primary function of the gallbladder is to concentrate and store **bile** which is produced by the liver. As part of the gustatory response, the stored bile is then released from the gallbladder in response to cholecystokinin.

Anatomical Relations

The gallbladder is entirely surrounded by **peritoneum**, and is in direct relation to the visceral surface of the liver.

It lies in close proximity to the following structures:

- **Anteriorly and superiorly** – inferior border of the liver and the anterior abdominal wall.
- **Posteriorly** – transverse colon and the proximal duodenum.

- **Inferiorly** – biliary tree and remaining parts of the duodenum. ***(Tebala et al., 2004)***

Anatomical Structure (figure 1)

The gallbladder has a storage capacity of 30-50ml and, in life, lies anterior to the first part of the duodenum. It is typically divided into three parts:

- **Fundus** – the rounded, distal portion of the gallbladder. It projects into the inferior surface of the liver in the mid-clavicular line.

- **Body** – the largest part of the gallbladder. It lies adjacent to the posteroinferior aspect of the liver, transverse colon and superior part of the duodenum.

- **Neck** – the gallbladder tapers to become continuous with the cystic duct, leading into the biliary tree.

    - The neck contains a mucosal fold, known as Hartmann's Pouch. This is a common location for gallstones to become lodged, causing cholestasis.

(Tebala et al., 2004)

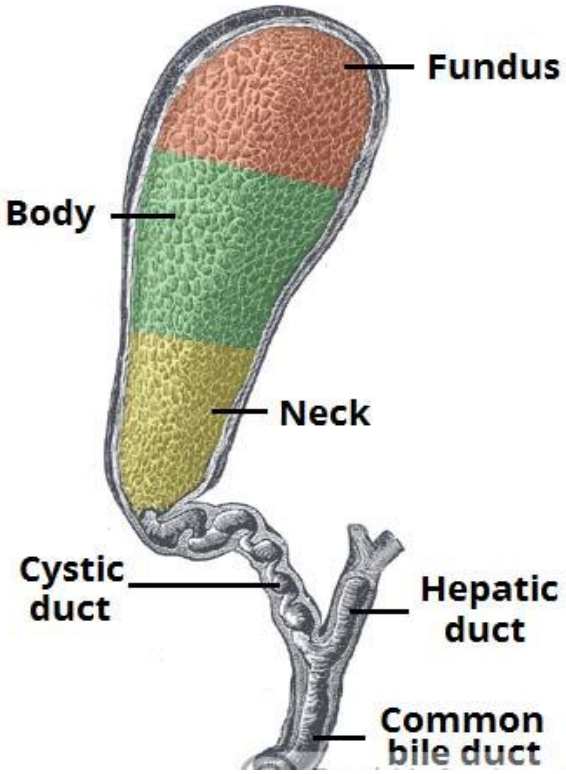

Figure (1): Anatomical structure of the gallbladder ***(Tebala et al., 2004)***.

- **The Biliary Tree**
  - The **biliary tree** is a series of gastrointestinal ducts allowing newly synthesized bile from the liver to be concentrated and stored in the gallbladder (prior to release into the duodenum).
  - Bile is initially secreted from hepatocytes and drains from both lobes of the liver via canaliculi, intralobular ducts and collecting ducts into the left and right hepatic ducts. These ducts amalgamate to form the **common hepatic duct**, which runs alongside the hepatic vein.