بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / سلوي محمود عقل

بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

ملاحظات: ....

Ultrasound Guided Oblique Subcostal Tranversus Abdominis Plane Block (TAP) Versus both Subcostal and Posterior TAP Block as Postoperative Analgesia in Hepatectomy

Thesis

Submitted for Partial Fulfillment of Master Degree in ***Anesthesia and Intensive Care***

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قالوا

سبحانك لا علم لنا إلا ما علمتنا إنك أنت العليم الحكيم

صدق الله العظيم

سورة البقرة الآية: ٣٢

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Rana Ayman Mohamed Abdelhalim

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List of Abbreviations

Abb.	Full term
CNS	Central nervous system
HR	Heart rate
IOM	Internal oblique muscle
L1	First lumbar nerve
LA	Local anesthetics
MABP	Mean arterial blood pressure
NMDA	N- methyl D- aspartate
PABA	Para-aminobenzoic acid
PACU	Post anesthesia care unit
RAM	Rectus abdominis muscle
S	Significant
SD	Standard deviation
SPSS	Statistical package for Social Science
TAM	Transverse abdominis muscle
TAP	Transverse abdominal plane
TAP	Transversus abdominis plane
VAS	Visual analogue scale

INTRODUCTION

Pain control is vital to achieve enhanced recovery after abdominal surgeries. TAP block had been demonstrated to improve pain related outcomes after abdominal surgeries.

Postoperative pain management for patients undergoing hepatic resection is a challenge due to the risk of perioperative liver dysfunction. TAP block is a promising regional analgesic technique. This study aimed to evaluate the effect of US-guided subcostal approach versus combination of both subcostal and posterior approaches of TAP block.

Hepatic resection had an impressive growth over time. It has been widely performed for the treatment of various liver diseases, such as malignant tumors, benign tumors and calculi in the intrahepatic ducts, hydatid disease, and abscesses. Management of hepatic resection is challenging. Despite technical advances and high experience of liver resection of specialized centers, it is burdened by relatively high rates of postoperative morbidity and mortality ***(Jin et al., 2013).***

Due to the importance of pain control after abdominal surgery, several methods such as transversus abdominis plane (TAP) block were used to reduce the pain after surgery. TAP blocks can be performed using various ultrasound-guided approaches ***(Seyed, 2019).***

Abundant clinical trials have assessed TAP block showing positive analgesic effects. Postoperative pain within 24 h was reduced or at least equivalent in TAP block compared to its comparators. Therefore, TAP block is a safe and effective procedure compared to standard care, placebo and other analgesic techniques ***(Ning Ma, 2017).***

It can be performed through the classical posterior or subcostal approaches. It is commonly used as an adjunct to perioperative analgesia in a wide variety of surgeries, but reports on its role as a sole anesthetic technique are scarce ***(Pradeep, 2019).***

AIM OF THE WORK

The aim of this study is to determine the postoperative analgesic effect of ultrasound guided TAP block via oblique subcostal and posterior approaches in hepatectomy.

ANATOMICAL AND PHYSIOLOGICAL CONSIDERATION

The abdominal wall is a continuous cylindrical myofascial structure that binds to the thoracic cage superior, the pelvic girdle inferior, and the spinal column to the posterior. Boundaries include the anterior, two lateral and one posterior abdominal wall ***(Chin et al., 2017)***. The anatomic planes of the abdominal wall are made of multiple muscular and fascial layers that interdigitate together to form a protective musculofascial layer that protects the visceral organs and provides strength to the body's trunk ***(Sanjay, 2016).***

Anatomy of the anterolateral abdominal wall:

The anterolateral abdominal wall extends between the posterior axillary lines on each side. Upper boundaries are the costal margin of the 7th to 10th ribs and xiphoid process of the sternum, and the inferior boundaries are the iliac crests, inguinal ligament, pubic crest, and symphysis ***(Chin et al., 2017).*** The anterolateral abdominal wall consists of five paired muscles: two vertical muscles. (the rectus abdominis and the pyramidalis) and three-layered flat muscles (the external abdominal oblique, the internal abdominal oblique, and the transversus abdominis muscles) ***(Sanjay, 2016).***

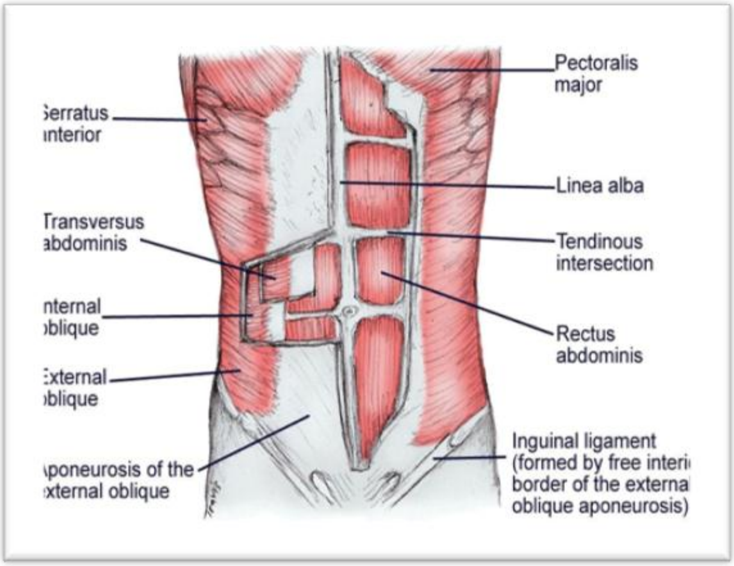

Figure 1: Layers of the abdominal wall ***(quoted from Brian et al., 2013).***

External abdominal oblique muscle

The external abdominal oblique muscle is the largest and most superficial of the three flat abdominal muscles. It originates from the lower eight ribs and the interdigitation of the anterior serratus muscle. As the external abdominal oblique passes in the lower medial direction, its muscle fibers shift from a thick muscle to a fibrous aponeurosis that is inserted medially into the linea alba Inferiorly, the external abdominal oblique aponeurosis is folded back to form the inguinal ligament between the anterior upper iliac spine and the pubic tubercle before it is inserted into the pubic tubercle and the anterior half of the iliac crest. Just medial to its insertion into the pubic tubercle, the aponeurosis splits and forms a superficial (or external) inguinal ring. The external abdominal oblique is Supplied in a segmental pattern by the anterior rami of the lower six thoracoabdominal nerves (T7-T12) ***(Barclay and Gregory, 2014).***

Internal abdominal oblique muscle

The internal abdominal oblique muscle is the 2nd layer of the three paired, flat abdominal muscles. It originates widely from the anterior portion of the iliac crest, the lateral half of the inguinal ligament, and the thoracolumbar fascia. The internal abdominal oblique inserts along the lower boundary of the 10th-12th ribs, the linea alba, and the pubic crest through the conjoint tendon. The muscle fibers of the internal abdominal oblique pass upward in a super-medial orientation, perpendicular to the muscle fibers of the external abdominal oblique ***(Sanjay, 2016).***

The internal abdominal oblique forms a broad aponeurosis that fuses into the midline and contributes to the rectus sheath. Superior to the arcuate line, the internal abdominal oblique aponeurosis splits anteriorly and posteriorly to enclose the rectus muscle and helps form the rectus sheath. However, below the arcuate line, the internal abdominal oblique aponeurosis does not divide and passes anterior to the rectus muscle as part of the anterior rectus sheath. The inferior part of aponeurotic fibers of the internal abdominal oblique muscle drift over the spermatic cord, through the inguinal canal, and the medial fibers fuse with the aponeurosis of the transversus abdominis muscle to form the conjoint tendon ***(Glen, 2016).***

The internal oblique is supplied also in a segmental pattern through the anterior rami of the inferior 6th thoracoabdominal nerves (T7-T12) and first lumbar nerves (iliohypogastric and ilioinguinal nerves) ***(Brian et al., 2013).***

All neurovascular structures that supply the abdominal muscles pass in the plane between the internal abdominal oblique muscle and the transversus abdominis muscle, except the iliohypogastric and ilioinguinal nerves. They pass on the anterior surface of the quadratus lumborum, and then pass laterally into the plane between the transversus abdominis and the internal abdominal oblique. Above the anterior superior iliac spine, they penetrate the internal abdominal oblique to go between this muscle and the aponeurosis of the external abdominal oblique muscle ***(Chin et al., 2017)***

Transversus abdominis muscle

The transversus abdominis is the deepest muscle of the three paired, flat abdominal muscles. It originates on the internal surfaces of the 7th–12th costal cartilages, thoracolumbar fascia, anterior three-fourths of the iliac crest, and lateral third of the inguinal ligament. The transversus abdominis create a wide aponeurosis that helps make up the rectus sheath before it fuses in the midline to the linea alba.