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A Comprehensive Evaluation of Quality of Life in Iraqi Patients Undergoing Tab Block Anesthesia: Insights from a Cross-Sectional Study

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Abstract: The objective of this study is to evaluate the quality of life (QoL) of Iraqi patients undergoing tab block anesthesia. A cross-sectional study was conducted to ascertain the QoL of patients. The study was based on the principle of comparison and utilised demographic data and information related to patients from several hospitals in Iraq over the period from 2022 to 2024. The study encompassed a total of 220 patients, who were evaluated based on various parameters and their quality of life prior to undergoing anaesthesia. The evaluation of quality of life was conducted using the QoR-40 scale. The principal postoperative complications were identified, with a total of 48 complications recorded, affecting 48 patients in the TAB Block group and 17 patients in the second group. The quality-of-life parameters of patients were evaluated according to five criteria: comfort, emotions, physical independence, pain, and PONV 24. It is evident that statistically significant differences were found for physical independence with a p-value of <0.001. The majority of studies have compared TAB block with other analgesic techniques, either by wound infiltration or by intravenous analgesia in various upper and lower abdominal surgeries.

Keywords: TAB block, BMI, QOL, PONV, Anesthesia, Complications.

INTRODUCTION

The utilisation of various methods of general and local anaesthesia in thyroid surgery is currently practice. However, the employment of general anaesthesia is associated with the absence of control over the function of the recurrent nerves, which may be subjected to damage during the surgical procedure [Betrán, A. P. *et al*., 2007; Leung, A. *et al*., 2004; Hirose, M. *et al*., 1996]. Furthermore, there exists a high risk of complications following intubation. The employment of epidural anaesthesia in the cervical region has not achieved widespread use due to the possibility of blocking the phrenic nerves and the risk of administering subarachnoid anaesthesia, which can subsequently result in "high block [Buvanendran, A. *et al*., 2009; Bujedo, B. M. *et al*., 2011]".

The efficacy of other local anaesthetic methods is only approximately 80%, and in 20% of cases, the administration of narcotic analgesics, sedatives, antipsychotics, or a different type of painkiller is necessary. Conductive anaesthesia of the cervical plexus, according to Winnie, is not employed due to the high risk of blocking the phrenic and recurrent laryngeal nerves, which can result in respiratory depression [Rafi, A. N, 2001; El-Dawlatly, A. A. *et al*., 2009; Smith, B. H. *et al*., 2001].

The transverse abdominal plane (TAB) block was initially described as an abdominal wall block based on anatomical references and involves the administration of a local anaesthetic (LA) in the transverse abdominal plane via the Petit triangle using the loss-of-resistance technique [Leadley, R. M. *et al*., 2014; Garnaes, K. K. *et al*., 2021]. The use of ultrasound-guided TAB was first documented in 2007 and has since become widely employed in upper and lower abdominal surgery, although its integration into routine clinical practice remains limited. The advent of ultrasound-guided technology has made it possible to reduce the risk of block failure, which is unacceptable with the anatomical reference technique, as well as to reduce the potential complications associated with the technique, although these are described and perhaps underestimated due to publication bias [Lo Buono, V. *et al*., 2021; Wakaizumi, K. *et al*., 2014]. The use of ultrasound has allowed the development of new methods [Schiltenwolf, M; Kalliomäki, M.-L. *et al*., 2008]

The transverse abdominis plane block (TAB block) is a segmental regional anaesthesia technique used in surgeries involving the anterior abdominal wall5-7; it was first described by Rafi in 20018, who suggested the use of this technique with the aim of providing postoperative analgesia by administering a single dose of local anaesthetic using superficial anatomical references for the location of said plane. [Hozo, S. P. *et al*., 2005]

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A survey of the international literature reveals significant variations in the choice of local anaesthetic agent, its volume, concentration, and administration technique among the studies conducted to date. In light of these variations, several authors have undertaken the task of compiling the available information on the dose of local anaesthetics. [Civitella, A. *et al*., 2005]

In 2012, they conducted a systematic review and described that for a single injection TAB block, the dose and volume of local anesthetic were calculated in seven studies based on the patient's weight with a total dose of 2 to 3 mg/kg for ropivacaine and 2 mg/kg for bupivacaine. In contrast, a further 10 studies reported the utilisation of "pre-determined" local anaesthetic volumes of 15 to 20ml. When converted to doses per kilogram, these volumes correspond to a dose of 2.2 to 3.5 mg/kg for ropivacaine and 1.2 to 2.4 mg/kg for bupivacaine. [Diyaolu, M. *et al*., 2021]

With regard to the volume of local anaesthetic, the author reported that in two of four clinical trials, better postoperative pain relief was reported when low volumes of less than 15 ml were used; in four of five trials, medium volumes of 15 to 20 ml were used; and in six of nine trials, high volumes of more than 20 ml were given. [Doble, J. A. *et al*., 2018]

MATERIAL AND METHOD

A cross-sectional study was conducted to ascertain the quality of life of patients. The study was based on the principle of comparison and utilised demographic data and information related to patients from several hospitals in Iraq over the period from 2022 to 2024. A total of 220 patients were included in the study, which was divided into two groups based on the anaesthetic agent used during surgical operations or for pain relief. The first group comprised 160 patients who utilised TAB. In relation to the second group, the control group comprised 60 patients (sufentanil group). A comparison was conducted between the two groups according to several surgical procedures in order to analyse the principle of comparison and ascertain statistical differences, as well as to determine the quality of life of patients in Iraq.

The combined conduction anesthesia method is performed in the following manner: the patient is placed in the supine position with the head turned to the opposite side, and a 2% lidocaine solution, 5 ml on each side, is injected into the lateral surfaces of the transverse processes of the fourth cervical vertebra (total dose of lidocaine 100 mg). An electrically insulated needle is then inserted at the intersection of the lines running along the posterior edge of the sternocleidomastoid muscle and another parallel to the cervical fold. The needle is withdrawn through the middle of the cricoid cartilage, where the transverse process of the fourth cervical vertebra is palpated. The correct location of the needle cut was determined by the contraction of the trapezius muscle when pulses were applied to the needle from an electrogenerator (monophagic rectangular pulses with a frequency of 60 per minute and a current of 6 mA), while the negative electrode was on the opposite side. After the introduction of 5 ml of a 2% lidocaine solution, the contractions subsided and ceased. Conduction anaesthesia of the cervical plexus was then performed on the opposite side, with a total of 10 mL of 2% lidocaine solution (200 mg) being injected on both sides.

The demographic data and information pertaining to patients undergoing abdominal surgery in Iraq were analysed using statistical analysis software IBM SOFT SPSS 22 and Microsoft Excel 2013. The real value and arithmetic meaning were identified, in addition to the logistic regression of the patient's outcomes. Furthermore, all the graphs were created using Microsoft Excel 2013.

RESULTS

This study examined the impact of utilising TAB in conjunction with another anaesthetic technique on patients who underwent multiple surgical procedures in Iraq. The study identified the patients' quality of life before and after the anaesthetic agent was administered. As demonstrated in Table 1, the ages of patients in both groups ranged from 30 to 50 years, and obesity was identified in patients in both groups. With regard to the presence of concomitant diseases, high blood pressure was the most prevalent condition in this study, as illustrated in Table 1.

Table 1: Evaluation of the general demographic characteristics of patients who underwent anesthesia in Iraq for 220 patients

v	TAP, n=160	C=n,60 Sodium chloride 60 ml	P-value
Age			

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Mean and sd	40.2±3.8	38.2±2.6	0.938
BMI			
Overweight	99	40	0.03
Obese	61	20	0.094
Sex			
Male	70	30	0.81
Female	90	30	<0.001
Comorbidities			
Hypertension	33	10	0.04
Diabetes	20	5	0.066
Bone and joint diseases	20	12	0.77
Other	17	10	0.527
None	70	23	0.73
Smoking			
Yes	30	5	0.88
No	130	55	0.63
Alcohol			
Yes	10	3	0.77
No	150	57	0.61
Operation time (min)			
Mean and sd	55.2±14.4	39.9±6.65	0.002

The study comprised two groups: one undergoing Controvert anaesthesia and the other undergoing TAP. The study population included 220 patients, and the surgeries were divided into two groups. The most common surgery in this study was open abdominal surgery. As demonstrated in the figure, statistical significance was found for patients who underwent abdominal surgery.

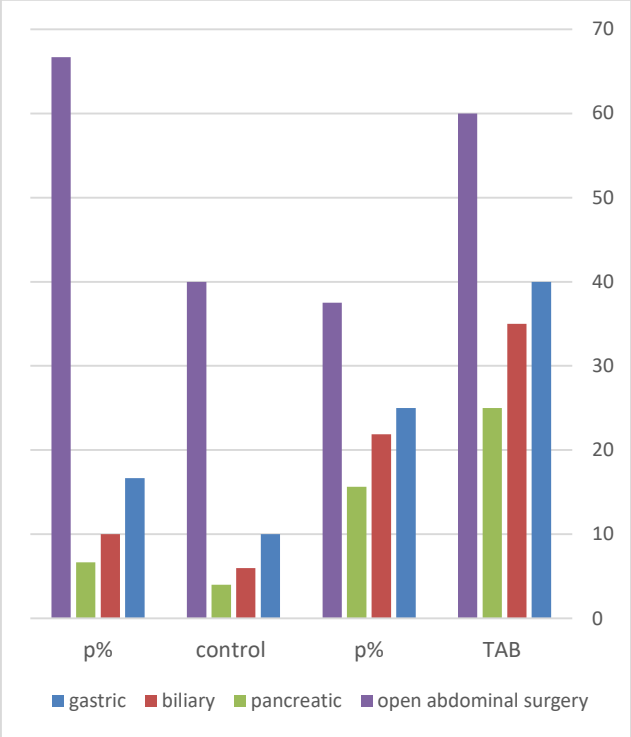

Figure 1: Distribution of patients according to the surgeries used in this study

The following table presents an evaluation of the parameters and quality of life of patients prior to undergoing anesthesia. An increase in pain scores was observed in both groups across all aspects. The quality of life was assessed using the QoR-40 questionnaire, which ranges from 40 to 200 points, with higher values

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indicating a poorer quality of life, as illustrated in Table 2.

Table 2: Evaluation of the quality of life of patients who underwent anesthesia according to the QoR-40

v	TAP	Control	P-value
Comfort	80.2±20.6	77.8±11.8	0.93
Emotions	90.6±15.6	88.3±15.6	0.82
Physical independence	98.8±17.7	101.7±17.9	0.55
Pain	101.5±18.3	102.6±18.2	0.68
PONV 24	122±13.2	115±14.4	0.71

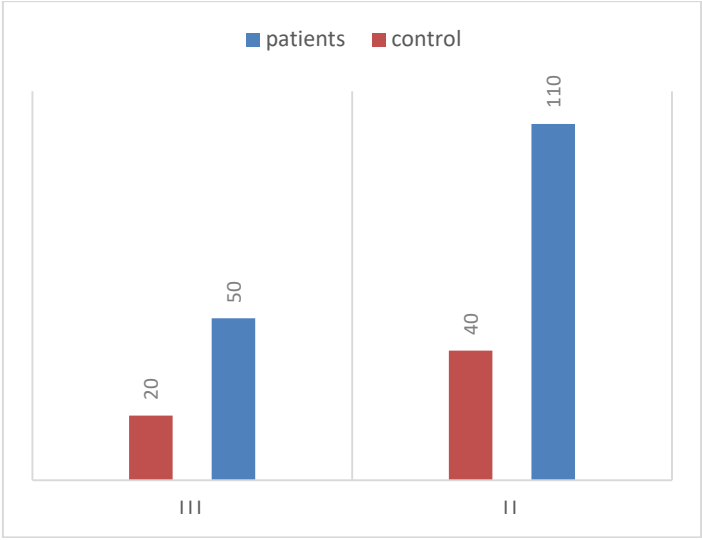

Figure 2: Distribution of patients into two groups according to ASA

As demonstrated in Table 3, the principal postoperative complications were identified. A total of 48 complications were recorded, affecting 48 patients in the TAB Block group and 17 patients in the second group, as shown in Table 3

Table 3: Classification of primary and secondary complications in patients after surgery

V	Tab	C	P-value
Nerve Injury	8 (5)	4 (6.67)	0.74
Transient Paresthesia	10 (6.25)	3 (5)	0.234
Hematoma Formation	7 (4.38)	5 (8.33)	<0.001
Extravasation of Local Anesthetic	13 (8.13)	3 (5)	0.056
Bowel Injury	10 (6.25)	2 (3.33)	0.033
Stay in hospital	2- 6 days	3-9 days	
TIME TO PAIN ONSET AFTER SURGERY, n			
< 1 month	110	40	
From 1 to 1 year	50	20	

As demonstrated in Table 4, the quality-of-life parameters of patients were evaluated according to five criteria: comfort, emotions, physical independence, pain, and PONV 24. It is evident that there were no statistically significant differences between the two groups. However, it should be noted that there has been development in the level of quality of life and the decrease in the poor scores to the criteria that determined the quality of life of patients were observed, but more development was seen in the TAB group compared to the second group. As shown in Table 4, statistically significant differences were found for physical independence with a p-value of <0.001.

Table 4: Assessment outcomes of patients QOL postoperative for two groups

v	TAP	Control	P-value
Comfort	66.2±10.4	66.8±5.5	0.88
Emotions	77.2 ±8.2	79.2 ±6.9	0.75
Physical independence	78.8±6.6	91.1±8.9	<0.001

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Pain	88.3±7.1	91.2±8.1	0.44
PONV 24	95±6.9	100±9.9	0.06

Table 5: Evaluation of the risk factor in this study on patients according to logistic regression

Variable	CIO	P-value
Sex		
Male	1.4 (0.7-1.8)	0.094
Female	1.93 (1.2-3.2)	<0.001
Nerve Injury	2.2 (1.5-4.3)	<0.001
Transient Paresthesia	1.82 (1.1-3.3)	<0.001
Bowel Injury	1.99 (1.56-3.8)	<0.001
Smoking	0.9 (0.4-1.4)	0.08
Obese	2.8 (1.5-4.4)	<0.001

DISCUSSION

Ultrasound-guided TAP in abdominal surgery has been shown to be beneficial in sub umbilical incision surgery and, despite a significantly lower morphine consumption in the first 24 hours, no significant midaxillary approach when compared with placebo, or no subcostal approach when compared with epidural anaesthesia, epidural anaesthesia remains the "gold standard" or preferred technique for this intervention until more evidence is available with TAP. TAP may be a suitable analgesic option for incorporation into a multimodal analgesia regimen, given its capacity to reduce VAS scores at rest and movement, morphine consumption in the first 24 hours, pruritus, and PONV in cases where Intrathecal morphine is not utilised; Canovas *et al*.27 demonstrated that TAP enhances the efficacy of intraspinal opioids, mitigates pain in the initial 24 hours post-surgery, and reduces opioid consumption and adverse effects.

The TAP block, otherwise known as the transverse abdominis plane block, is a technically unchallenging procedure that is known to provide physical pain relief in the abdominal wall (skin, muscle, and parietal peritoneum) from T7 to L1. The TAP block technique was first described by Dr. Ravi in 2001 and is based on anatomical references for localisation. In this article, doctors Luis Enrique Fernández Rodríguez and Marcos Salmerón Martín, who are specialists in anesthesia, resuscitation, and pain management at the Virgen de la Arrixaca University Clinical Hospital, will review the advantages and disadvantages of the block, as well as its technique, medications, and materials. [Emile, S. H. *et al*., 2022]

Among the most obvious disadvantages of the TAP block, we can find:

It does not cover visceral pain: since it is an obstruction of the nerves of the abdominal wall due to the anatomy of the area itself, it does not cover pain with a visceral component. Risk of damage to the viscera: this procedure carries the risk of perforation of the hollow viscera or intraperitoneal injection, although this adverse event is greatly reduced by the use of ultrasound. [La Regina, D. *et al*., 2023]

The potential for toxicity from local anaesthetics is another concern. The use of large amounts of local anaesthetics in a fascial block procedure can lead to systemic toxicity due to the absorption of the same anaesthetic. This risk can be mitigated by calculating the toxic dose and diluting the drug. [Landmann, A. *et al*., 2017]

A substantial decrease of 22 mg [95% confidence interval: -31 to "13 mg"] in morphine consumption over 24 hours was observed. Subgroup analysis revealed that patients who underwent surface TAP block experienced greater morphine savings compared with those who underwent ultrasound-guided TAP block. The utilisation of the TAP block resulted in a reduction in pain at rest and on movement during the initial 24 hours, though the magnitude of this reduction remains uncertain due to the absence of available data. There are only a few studies measuring the effect of block on the incidence of side effects (nausea/vomiting and sedation), with mixed results. The debate raises the issue that despite the promising results regarding the efficacy of TAP block, no recommendation can yet be made given the small number of patients studied. The following lines of study have been described: The optimal dose of local anaesthetic (concentration and volume). [McDonald, V. *et al*., 2022]

The duration of the analgesic effect of the local anaesthetic dose and the possibility of using a

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continuous catheter technique. Distinction between efficacy by surgical procedure. Analgesic results according to the anatomical reference technique or ultrasound, and for each type of surgical procedure. Study of the effectiveness of the TAP block according to the multimodal postoperative analgesic protocol of which it is a part. Effectiveness of this block in the field of laparoscopic surgery. [Narasimhulu, D. *et al*., 2018]

CONCLUSION

The vat majority of studies have compared TAB block with other analgesic techniques, either by wound infiltration or by intravenous analgesia in various upper and lower abdominal surgeries. The results indicate a good performance of TAB block in controlling acute postoperative pain, which is manifested by a reduced need for intravenous opioids as well as a reduced perception of pain by patients. However, important gaps remain regarding the type, volume, and concentration of local anesthetic that should be used for each abdominal surgery in particular, not because safe doses are unknown but because there is no consensus on the ideal dose for the best analgesic effect. Therefore, through research and analysis of what has been described about TAB block.

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