COMPARATIVE STUDY OF ULTRASOUND GUIDED TRANSVERSUS ABDOMINIS PLANE BLOCK USING BUPIVACAINE WITH AND WITHOUT HYALURONIDASE IN LAPAROSCOPIC BARIATRIC SURGERY

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ABSTRACT:

Background: *Transversus abdominis plane (TAP) block is atechnique of regional anesthesia, which reduces the pain derived from abdominal wall incisions, decreases general anesthesia requirements, and increases hemodynamic stability. Hyaluronidase is an enzyme considered as the "spreading factor", facilitating the spread of local anesthetic solutions. It has been shown to produce reliable blockade with better spread and therefore better quality of block when used with local anesthetics.*

Aim of the work: *The aim of this study is to compare the efficacy of Injection of Bupivacaine 0.25% and Injection of Bupivacaine 0.25% with Hyaluronidase 1500 Uin ultrasound guided transversus abdominis plane block.*

Patients and methods: *This double blinded randomized controlled clinical trial study was conducted in the Department of anesthesia, Faculty of Medicine, Ain Shams University and general hospitals during the period from 1st January 2018 to 31stDecember 2018 after being approved by the department ethical Committee. The study population included 60 bariatric patients which were randomly divided into 2 groups (30 patients in each group);*

Group A: *TAP block with Bupivacaine 0.25% 19 ml+1 ml normal saline (loading dose) followed by continuous infusion of Bupivacaine 0.25% at a rate of 4ml/hr.; i.e., 96 ml/24hrs.*

Group B: *TAP block with Bupivacaine 0.25% 19 ml+ Hyaluronidase 1500 U 1ml (loading dose) followed by continuous infusion of Bupivacaine 0.25%+ Hyaluronidase 50 U at a rate of 4ml/hr.; i.e., 96 ml/24hrs.*

Results: *the group of TAP block with Bupivacaine and Hyaluronidase (Group B) had statistically lower NRS 2nd, 4th, 6th, 8th,16th, 22ndand 24th postsurgical day (p=0.28, 0.42,0.018, 0.003, 0.003, 0.004 and 0.041 respectively). Also Group B had statistically lower mean of opioid consumption in 2nd, 4th, 6th, 8th,16th, 22th and 24th postsurgical day with overall lower mean of opioid consumption among group B (p=0.002).Regarding vital data among both groups was non-significant (p≥ 0.2).*

Conclusion: *Our findings support the use of ultrasound guided TAP block using liposomal bupivacaine with hyaluronidase as part of multimodal analgesia for bariatric surgery based on decreased postoperative opioid requirements.*

Key words: *Bupivacaine, Hyaluronidase, TAP block, Bariatric surgery.*

INTRODUCTION:

Obesity is a serious global epidemic and poses a significant health threat to humans such as type 2 diabetes mellitus (T2DM), chronic kidney disease, depression, stroke, coronary artery disease (CAD), osteo-arthritis, back pain, stress incontinence, gallstones and malignancies. These conditions are a result of both physiologic changes as well as inflammatory changes associated with obesity. These comorbi-dities, in addition to the type and invasive-ness of anesthesia and surgical procedure, are correlated with the incidence and severity of postoperative complications[(1)].

Over 220,000 bariatric procedures, including laparoscopic gastric-bypass surgery (LGBS), are performed annually worldwide and this number is increasing exponentially[(2)].

Postoperative analgesia after surgeries under general anesthesia is usually provided by systemic opioids, non-steroidal anti-inflammatory drugs or epidural analgesia. Other techniques which have been effectively used are Transversus Abdominis Plane (TAP) block and paravertebral block[(3)].

Transversus abdominis plane (TAP) block is an excellent technique of regional anesthesia especially for our targeted obese patients, as it reduces the pain derived from abdominal wall incisions, decreases general anesthesia requirements, opioid consumption and increases hemodynamic stability[(4)].

Bupivacaine is the longest acting and most cardiotoxic local anesthetic if inadvertently administered intravenously. It has been used successfully over the years since its introduction and has become the yardstick for all other long acting local anesthetics. Interestingly, at low concentra-tion, bupivacaine has the propensity for sensory blocks while mildly sparing the motor blocks (differential sensitivity)[(5)].

Hyaluronidase is an enzyme considered as the "spreading factor", facilitating the spread of local anesthetic solutions by hydrolyzing the interstitial barrier. It has been shown to produce reliable blockade with better spread and therefore better quality of block when used with local anesthetics in ophthalmic procedures, plastic surgeries and orthopedic procedures in different concentrations [(6)].

AIM OF THE WORK:

The aim of this study is to compare the efficacy of Injection of Bupivacaine 0.25% and Injection of Bupivacaine 0.25% with Hyaluronidase 1500 Uin ultrasound guided Transversus Abdominis Plane block for bariatric surgeries performed under general anesthesia with respect to:

a) Quality of analgesia, time to peak analgesia and duration of post-operative analgesia.

b) Need for rescue analgesic and reduction in 24 hour intravenous opioid consumption.

c) Adverse effects if any.

PATIENTS AND METHODS:

Patients:

This double blinded randomized controlled clinical trial study was conducted in the Department of anesthesia, Faculty of Medicine, Ain Shams University and general hospitals during the period from 1st January 2018 to 31stDecember 2018 after being approved by the department ethical Committee. The study population included

60 bariatric patients with the following criteria; ASA physical status I and II, age (18-40) years old, and with BMI>35 and <50 kg/m^2. Patients with significant coagulopathies, allergy to amide local anesthesia, significant respiratory, cardiac or systemic diseases, on analgesics in the past 24 hours, had infection at the site of puncture and who refused the procedure were excluded from the study.

60 Patients were randomized into two equal groups:

- **Group A:** TAP block with Bupivacaine 0.25% 19 ml+1 ml normal saline (loading dose) followed by continuous infusion of Bupivacaine 0.25% at a rate of 4ml/hr.; i.e., 96 ml/24hrs.
- **Group B:** TAP block with Bupivacaine 0.25% 19 ml +Hyaluronidase 1500 U 1ml (loading dose) followed by continuous infusion of Bupivacaine 0.25%+ Hyaluronidase 50 U at a rate of 4ml/hr.; i.e., 96 ml/24hrs.

Methods:

- Preoperative evaluation for all patients was done including: Full history, routine investigations and proper physical examination. Only ASA I and II patients were enrolled in the study.
- General anesthesia was induced using fentanyl 1-3 µg/kg IV and propofol 2-4 mg/kg IV and endotracheal intubation was facilitated with atracurium 0.5 mg/kg IV or succinylcholine 1.5 mg/kg IV. Maintenance of anesthesia was inhaled via isoflurane 1.1% in a 40:60 mixture of oxygen and air. Positive pressure ventilation was initiated with tidal volume and rate adjusted to maintain an end-tidal PCO2 of 30-40 mmHg. Muscle relaxation was antagonized with neostigmine 50µg/kg IV and atropine 0.01 mg/kg IV routinely.
- Prior to extubation, all patients received controloc 40 mg IV and ondansetron 4 mg IV for antiemetic prophylaxis. All weight-adjusted doses used for general anesthesia were calculated on a basis of ideal body weight plus 30%.
- For patients randomized into 2 groups, US guided TAP blocks were administered at the end of surgery and prior to extubation, by using an oblique subcostal approach. Sonosite M-Turbo Ultrasound machine was used.
- While in the supine position, the skin of both sides of the abdominal wall was sterilized with 2% chlorhexidine in 70% isopropyl alcohol solution.
- Under sterile conditions, high frequency linear array transducer (5-12) MHz was positioned inferior and parallel to the costal margin in mediolateral orientation. The external oblique, internal oblique and transverse abdominis muscles were identified at midaxillary line. A 18G, short bevel echogenic needle was inserted medially and in plane to the US beam until the tip lied between the fascia of internal oblique and transversus abdominis muscle layers with insertion of bilateral catheters for continuous infusion with an infusion set connected to the nozzle of each catheter.

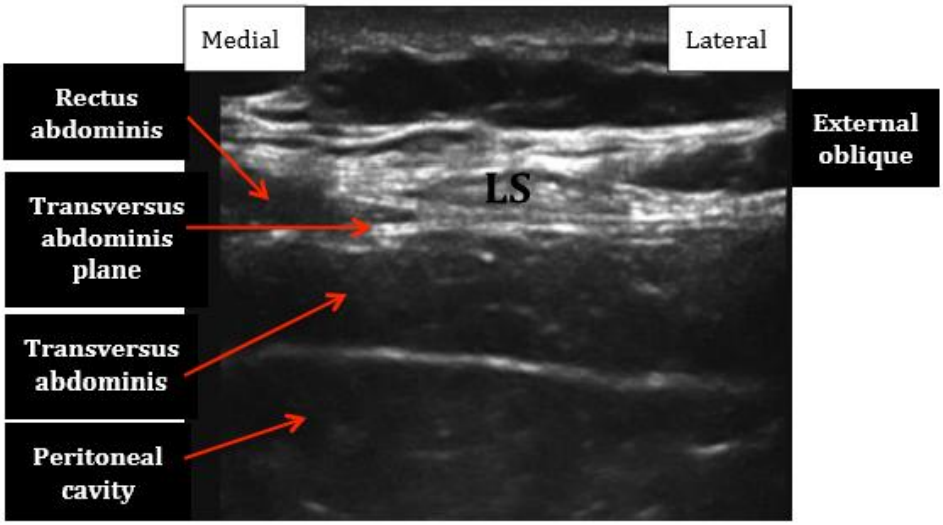

Figure (1): Ultrasound image of the subcostal transversus abdominis plane as you scan laterally from the midline along an oblique line form the xiphoid process towards the anterior superior iliac spine.

Note the lateral border of rectus abdominis and the origin of external oblique muscle

- Following the completion of surgery, patients were transferred to postoperative anesthesia care unit (PACU) for monitoring for the first time and then observed regularly every 2 hours for 24 hours postoperatively.
- Catheters were removed 24 hours post operatively and patients were discharged.
- Assessments
  - Postoperative hemodynamic variables as blood pressure, heart rate and SPO2. All assessed in PACU immediate after patient's arrival and then assessed regularlyevery 2 hours for 24 hours postoperatively.
  - NRS (numeric rating scale) a pain scoring system used by the patient, the patient put a mark on a horizontal line which reads "no pain at all" at one end 0 end, and "worst pain imaginable" at the other end at 10 [7].
  - Dosing of IV analgesics was based on patient reported pain intensity assessed using a numeric rating scale. For patient-reported NRS scores > 4, a dose of nalbuphine 4mg I.V. was added as rescue analgesia (repeat if needed during the first 24 hours postoperatively) and the total amount of analgesic requirements per day was calculated.
  - Side effects, such as hypotension, bradycardia, allergic reaction if any, nausea or vomiting.

Results were analyzed using SPSS (ver. 23.0; IBM, Chicago, IL, USA). Quantitative data was displayed in the form of mean ± standard deviation (SD). Qualitative data was demonstrated through figures of frequency and percentage. Charts were used to illustrate data and relations where appropriate and $p < 0.05$ was accepted as indicating statistical significance.

RESULTS:

Table(1): Demographic data in both groups

	Group A (n=30)	Group B (n=30)	Test value	p-value
Age (years)	34.6±1.09	34.5±1.04	0.482	0.506[1]
Female, n (%)	24(80)	21(70)	1.196	0.116[2]
Male, n (%)	6 (20)	9 (30)	0.982	0.082[2]
BMI (kg/m2)	41±0.21	39.2±0.30	2.120	0.541[1]
ASA I II	 18(60) 12 (40)	 14(46.70) 16(53.3)	1.982	0.083[2]

Abbreviations;BMI body mass index

In this table the demographic data were comparable between the two groups. The mean age was 34.6 years in group A and 34.5 years in group B. As regards gender, females were 80-70% and males around 20-30% in group A and group B respectively. The mean preoperative body mass index (BMI) was 41 kg/m^2 in group A and 39.2 kg/m2 in group B. As shown in table 5 there was no statistically significant difference between the 2 groups regarding the demographic data.

Table (2): Co-morbidities in both groups

	Group A (n=30)	Group B (n=30)	Test value	p-value
Diabetes mellitus *n (%)*	12(40)	15 (50)	1.761	0.219[2]
Hypertension *n (%)*	8(26.7)	8(26.7)	---	1.00[2]
GERD *n (%)*	5(16.7)	7(23.3)	0.971	0.532[2]
Sleep apnea *n (%)*	6(20)	8(26.7)	1.237	0.308[2]
Hyperlipidemia *n (%)*	6(20)	7(23.3)	0.063	0.872[2]

Abbreviations;GERD gastro esophageal reflux disease

This group of data is the co-morbidities which were comparable between the 2 groups. As regards DM, hypertension, GERD, sleep apnea and hyperlipidemia their percentages were 40, 26.7, 16.7, 20, 20% in group A and 50, 26.7, 23.3, 26.7, 23.3% in group B. As shown in table 6 there was no statistically difference in both groups regarding co-morbidities.

Table (3): Procedures were done in both groups

	Group A (n=30)	Group B (n=30)	Test value	p-value
Sleeve gastrectomy	21(70%)	20(66.7%)	0.072	0.514[2]
Roux-en-Y gastric bypass	7(23.3%)	8(26.6%)	0.091	0.592[2]
Duodenal switch	2(6.7%)	2(6.7%)	---	1.00[2]

1. Man-Whitney test; 2. Chi-square test *Statistical significant as $p<0.05$

In this group of data, most patients underwent sleeve gastrectomy, gastric bypass and duodenal switch,which was statistically non-significant between both groups ($p > 0.05$).

Table (4): Measurements of Systolic, diastolic Blood Pressure, HR and SPO2 of the patients in both groups .

		Group A (n=30)	Group B (n=30)	*P*-value
Sys. BP (mmHg)	2 hours	91.17±4.639	94.00±4.807	0.343[1]
	4 hours	96.13±6.196	99.97±6.261	0.471[1]
	6 hours	102.03±3.368	103.97±3.459	0.231[1]
	12 hours	113.80±1.495	115.30±1.512	0.203[1]
	18 hours	114.67±4.759	116.20±4.909	0.245[1]
	24 hours	124.00±2.491	127.17±2.520	0.203[1]
Dia. BP (mmHg)	2 hours	65.17±4.639	66.00±4.807	0.343[1]
	4 hours	66.13±6.196	69.97±6.261	0.471[1]
	6 hours	71.00±4.983	74.33±5.040	0.203[1]
	12 hours	76.40±1.993	77.73±2.016	0.203[1]
	18 hours	86.40±4.484	87.90±4.536	0.203[1]
	24 hours	87.72±3.698	88.50±2.980	0.848[1]
HR (beat/min)	2 hours	57.00±9.322	60.33±9.589	0.786[1]
	4 hours	64.00±9.322	66.33±9.589	0.786[1]
	6 hours	70.90±7.924	71.33±8.151	0.786[1]
	12 hours	72.80±6.525	73.33±6.712	0.786[1]
	18 hours	74.10±10.720	75.33±11.028	0.786[1]
	24 hours	75.40±10.254	76.67±10.548	0.786[1]
SPO2 (%)	2 hours	95.20±2.683	95.70±2.693	0.84[1]
	4 hours	95.20±2.683	95.70±2.693	0.81[1]
	6 hours	94.57±2.738	95.27±2.778	0.76[1]
	12 hours	94.23±3.137	94.87±3.329	0.88[1]
	18 hours	94.40±2.920	95.07±3.039	0.72[1]
	24 hours	94.97±2.988	95.57±2.897	0.67[1]

1. Independent t-test; *Statistically significant at $p < 0.05$

This table found no significant differences between both groups regarding blood pressure, HR and SPO2.

Table (5): NRS among both groups

Postsurgical time		Group A (n=30)	Group B (n=30)	p-value
		No. (%)	No. (%)	
2 hour	NRS>4 NRS<4	6(20) 24(80)	5(16.7) 25(83.3)	0.028*
4 hour	NRS>4 NRS<4	4(13.3) 26(86.7)	3(10) 27(90)	0.042*
6 hour	NRS>4 NRS<4	2(6.7) 28(93.3)	1(3.3) 29(96.7)	0.018*
8 hour	NRS>4 NRS<4	1(3.3) 29(96.7)	0 (0) 30 (100)	0.003*
10 hour	NRS>4 NRS<4	0 (0) 30 (100)	0 (0) 30 (100)	
12 hour	NRS>4 NRS<4	2(6.7) 28(93.3)	2(6.7) 28(93.3)	1.0
14 hour	NRS>4 NRS<4	2(6.7) 28(93.3)	1(3.3) 29(96.7)	
16 hour	NRS>4 NRS<4	1(3.3) 29(96.7)	0 (0) 30 (100)	0.003*
18 hour	NRS>4 NRS<4	0 (0) 30 (100)	0 (0) 30 (100)	
20 hour	NRS>4 NRS<4	1(3.3) 29(96.7)	1(3.3) 29(96.7)	1.0
22 hour	NRS>4 NRS<4	4(13.3) 26(86.7)	2(6.7) 28(93.3)	0.004*
24 hour	NRS>4 NRS<4	3(10) 27(90)	2(6.7) 28(93.3)	0.041*

Chi square test; *Statistical significant as p<0.05

This table found that group B had statistically lower NRS 2nd, 4th, 6th, 8th,16th, 22th and 24th postsurgical day (p=0.28, 0.42,0.018, 0.003, 0.003, 0.004 and 0.041 respectively).

Table (6): Mean postsurgical opioid consumption in both groups.

Postsurgical opioidconsumption (mg)	Group A (n=30)	Group B(n=30)	p-value
	Mean ± SD	Mean ± SD	
2 hour	0.80 ±0.36	0.67±0.15	0.031*
4 hour	0.53± 1.02	0.4±0.24	0.015*
6 hour	0.27± 0.52	0.13±0.48	0.026*
8 hour	0.13± 1.13	0	0.001*
10 hour	0	0	
12 hour	0.27± 0.19	0.27±0.19	1.0
14 hour	0.27± 0.27	0.13±0.45	
16 hour	0.13± 0.48	0	0.001*
18 hour	0	0	
20 hour	0.13± 0.46	0.13±0.44	1.0
22 hour	0.53± 0.62	0.27±0.17	0.024*
24 hour	0.40±0.53	0.27± 0.19	0.047*
Total	3.33±1.62	2.27±1.25	0.037*

Man-Whitney test; *Statistical significant as p<0.05

This table found that group B had statistically lower mean of opioid consumption in 2nd, 4th, 6th, 8th,16th, 22ndand 24thpostsurgical day with overall lower mean of opioid consumption among group B (p=0.002).

Table (7): Postoperative side effects in groups

	Group A (n=30)	Group B (n=30)	Test value	p-value
Hypotension n(%)	7 (23.3)	5 (16. 7)	2.972	0.055[1]
Bradycardia n(%)	2 (6.7)	1 (3.3)	0.721	0.982[1]
Pruritis n(%)	4 (13.3)	3 (10)	2.27	0.059[1]
Nausea n(%)	8 (26.7)	6 (20)	1.53	0.051[1]
Vomiting n(%)	5 (16.7)	3 (10)	1.960	0.061[1]

This table showed that the rates of hypotension, bradycardia, pruritis, nausea, and vomiting among group A and group B are close with statistical insignificant differences between the two groups (p>0.05).

Table (8): Correlations between NRS pain scores and patients characteristics

	Hyalurionidase use	
	r	p-value
Opioid consumption	-0.519	0.001*
NRS pain scores	-0.500	0.002*

This table found that hyalurionidase use had significant indirect moderate correlations with opioid consumption and NRS pain score.

DISCUSSION:

The study population included 60 bariatric patients who were randomized into two groups: Group A: TAP block with Bupivacaine 0.25% 19 ml+1 ml normal

saline (loading dose) followed by continuous infusion of Bupivacaine 0.25% at a rate of 4ml/hr.; i.e., 96 ml/24hrs. Group B: TAP block with Bupivacaine 0.25% 19 ml + Hyaluronidase 1500 IU 1ml (loading dose) followed by continuous infusion of Bupivacaine 0.25% + Hyaluronidase 50 IU at a rate of 4ml/hr.; i.e., 96 ml/24hrs.

In the current study, the two groups were compared regarding their demographic data (age, sex, BMI and ASA scores), comorbidities, surgical procedures, hemodynamic variations, side effects, pain assessment according to NRS and opioid consumption according to pain intensity (NRS).

As regards demographic data (age, sex, BMI and ASA scores), there was no statistically significant variation between the two study groups. This provided a uniform platform to evenly compare the results obtained. Also there were no significant changes between the two groups of patients as regards patient's comorbidities. As regards procedure done, most patients underwent sleeve gastrectomy in both groups.

Also with assessment of hemodynamic variables, there were no significant differences between both groups as regards blood pressure, heart rate and SPO2 with hemodynamic stability in both groups (with p-value >0.05).

Similarly to the present study, ***Said and Balamoun*** **(8)** had shown that continuous bupivacaine TAP block provided through an epidural catheter passed through laparoscopic ports in laparoscopic sleeve gastrectomy reduced pain and opioid consumption with hemodynamic stability.

In the present study, there was a statistical insignificant difference (with p-value >0.05) between the two groups as regards postoperative side effects as hypotension, bradycardia, pruritis, nausea, and vomiting.

A systematic review of eleven randomized controlled trials demonstrated high levels of patient satisfaction, increased time to first analgesia request, and reduced postoperative nausea and vomiting with the addition of TAP block vs. placebo to spinal anesthesia for cesarean delivery **(9).**

In consistent to the current study, ***Bhakta and colleagues*** **(10)** found that patients undergoing TAP block with liposomal bupivacaine required more antiemetic over the first 24 h after surgery, though this finding was not significant over the entire admission.

As regards NRS and opioid consumption (given according to pain intensity based on NRS) in the present study, the group of TAP block with Bupivacaine and Hyaluronidase (Group B) had statisticallylower NRS 2^{nd}, 4^{th}, 6^{th}, 8^{th},16^{th}, $22^{nd}$and 24^{th} postsurgical day (p=0.28, 0.42,0.018, 0.003, 0.003, 0.004 and 0.041 respectively). Also Group B had statistically lower mean of opioid consumption in 2^{nd}, 4^{th}, 6^{th}, 8^{th},16^{th}, $22^{nd}$and 24^{th} postsurgical day with overall lower mean of opioid consumption among group B (p=0.002).

Similarly, ***McDonnell and colleagues*** **(11)**performed a study on the analgesic efficacy of TAP block for patients undergoing large bowel resection. TAP block reduced NRS pain scores on emergence and at all postoperative time points, including at 24 hours. Morphine requirements in the first 24 hours were also reduced.

In consistent to the present study, ***Tak Kyu and colleagues*** **(12)**performed a randomized, double blind, placebo controlled trial to assess the effect of preoperative ultrasound guided TAP block on pain after laparoscopic surgery for colorectal cancer. The TAP block did not offer enough benefit for clinical efficacyin terms of postoperative pain (assessed by NRS) or analgesic consumption.

Multiple studies have demonstrated that TAP block is a safe and effective component of postoperative pain control, increasing the time to first request for narcotics and reducing overall narcotic consumption[13]**.** The results for bariatric surgery procedures, however, are mixed.

In contrast to the present study, a previous randomized controlled double-blind trial tested the analgesic efficacy of TAP block after laparoscopic gastric bypass surgery. The authors injected one shot of 30 ml of 0.25% bupivacaine with 1:200,000 epinephrine bilaterally. However, the results were disappointing; TAP block was no better than local anesthetic infiltration into trocar insertion site and systemic analgesia [14].

In the current study, we resorted to continuous TAP block to overcome the problem of short duration; we aimed to cover the first 24 hours after surgery. The technique of continuous TAP block has been previously reported by *Gómez-Ríos and Paech* [15] as an effective postoperative analgesic in various types of surgery including renal transplant, living liver donors, and open abdominal aortic aneurysm repair. TAP infusion was associated with significant opioid sparing and better patient mobility after surgery in six gynecologic and obstetric patients. It was shown to provide postoperative analgesia and reduced opioid consumption comparable to epidural analgesia [16]. A meta-analysis of eight randomized clinical trials demonstrated reduction of postoperative morphine requirements and severity of pain after hernia surgery with TAP block[17].

Our finding of decreased opioid requirements is consistent with the one other study that also used liposomal bupivacaine, as well as a study using catheter based 24 hours infusion [8]***.Said and Balamoun***[8], had concluded that continuous bupivacaine TAP block provided through an epidural catheter passed through laparoscopic ports improved postoperative outcome of laparoscopic sleeve gastrectomy in terms of reduced postoperative pain scores, sparing morphine consumption, and early recovery items.

In *Hakim and Ahmed* [18] study, ninety patients received ultrasound guided brachial plexus block through supraclavicular approach. Comparison between groups revealed non-significant differences as regards the time of first analgesic dose. The total dose of morphine given during the first 24 hours postoperatively was significantly higher in patients received lignocaine and bupivacaine plus normal saline containing 900 IU (90 IU/ml) hyaluronidase group. The use of hyaluronidase as an adjuvant to the local anesthetic reduces the time to reach complete sensory block of ultrasound-guided supraclavicular brachial plexus blocks and therefore shortens the total anesthetic time before operation. Although it also reduces the block duration, hyaluronidase had only a little effect on the total analgesic duration and on the consumption of postoperative analgesics.

Benrhaiem and colleagues [19] reported that Hyaluronidase enhances the diffusion of lidocaine and bupivacaine from the peribulbar location into the blood. This effect results in a shorter onset of anesthesia. The effect of hyaluronidase on the anesthetic duration of action in peribulbar anesthesia remains to be evaluated. The increased speed of blood absorption of local anesthetics induced by hyaluronidase does not change the C_{max} which was significantly less than reported toxic thresholds.

These findings are important in light of the opioid epidemic and the shift toward multimodal pain management approaches that can provide effective opioid sparing postoperative analgesia. Prescription of postsurgical opioids is nearly universal among surgical patients; Up to 14% of patients prescribed an opioid for postsurgical pain experienced an Opioid Related Adverse

Effects (ORAE), which is associated with increased hospital length of stay, greater risk of readmission, greater inpatient mortality, and higher total costs [20]. The Centers for Disease Control and American College of Surgeons have both recommended that physicians limit the use of opioids postoperatively [21,22].Our findings suggest that the addition of hyalurionidaes to Bupivacaine is a multimodal pain management protocol may be an effective opioid sparing strategy for bariatric surgeries.

Strengths of this study are that it is design as a prospective and blinded study. Also, we looked at secondary outcomes such as pain score, nausea and vomiting, patient satisfaction, or opioid use.

Conclusion:

Our findings support the use of ultrasound guided TAP block using liposomal bupivacaine with hyalurionidase as part of multimodal analgesia for bariatric surgery based on decreased postoperative opioid requirements.

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دراسة مقارنة بين تخدير المستوى المستعرض للبطن باستخدام الموجات الصوتية عن طريق إضافة دواء الهيالوريندازإلى البوبيفاكين أو استخدام البوبيفاكين وحده في جراحات السمنة بالمنظار

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المقدمة: بالرغم من طبيعة التدخل الإختراقى المحدود لعمليات السمنه بالمنظار، إلا أن الألم قد يكون متوسطا أو شديدا فى فترة ما بعد العملية مباشرة. تخدير المستوى المستعرض للبطن هو تقنية تعمل على تقليل الألم المصاحب لجروح البطن، وتقليل احتياجات البنج الكلي مما يساعد على زيادة استقرار العلامات الحيوية للمريض.هيالوريندازهو إنزيم يعتبر مثل عامل الانتشار الذي يسهل انتشار محاليل المخدر الموضعي(ليجنوكين، بوبيفاكين، ليفوبوبيفاكين، روبيفاكين) عن طريق تكسير الحاجز بين الخلايا، وقد وجد أنه حقق تخدير موضعي يعتمد عليه عن طريق تحسين انتشار المخدر الموضعي، وبالتالي أعطى جودة أحسن للتخدير الموضعي.

الهدف من الدراسة: تهدف هذه الدراسة إلى مقارنة كفاءة حقن بوبيفاكين ٠،٢٥%، وحقن بوبيفاكين ٠،٢٥% مع هيالوريندازز ١٥٠٠ وحدة في المستوى المستعرض للبطن باستخدام الموجات الصوتية.

المرضى و طرق البحث:تم إجراء هذه الدراسة خلال الفترة من ١ يناير ٢٠١٨ حتى ٣١ ديسمبر ٢٠١٨ فى كلية الطب، مستشفيات جامعة عين شمس.في هذه الدراسة ، يتم تقسيم ٦٠ مريضاً لعلاج السمنه عشوائياً إلى مجموعتين :

المجموعة الأولى: سوف يتم تخديرهم كلياً وإعطائهم تخدير المستوى المستعرض للبطن باستخدام بوبيفاكين ٠،٢٥%.

المجموعة الثانية: سوف يتم تخديرهم كلياً وإعطائهم تخدير المستوى المستعرض للبطن بواسطة بوبيفاكين ٠،٢٥% مع هيالوريندازز ١٥٠٠ وحدة.

النتائج: أظهرت نتائج هذه الدراسة أن متوسط استهلاك المجموعة الثانية للمواد الأفيونية فى الثمانى ساعات الثانية و الثالثة من اليوم أقل من المجموعة الاولى و ذلك بدلالة إحصائيةبما يعادل ٠,٠٢. كما أظهرت أن للمجموعة الثانية نسبة إحصائيه أقل فى التصنيف الرقمى للألمخلال الثمانى ساعات الثانية و الثالثة من يوم ما بعد الجراحة بدلالة إحصائية ٠,٠٠٢، ٠,٠١٨ على التوالى. و فيما يتعلق بالعلامات الحيوية للمرضى فكانت النتائج متقاربة بالنسبه للمجموعتين بدلالة إحصائية ≤ ٠,٢.

الخلاصة: تشير هذه النتائج إلى أن إدارة الألم متعدد الوسائط الذي يتضمن تخدير المستوى المستعرض للبطن بواسطة الموجات فوق الصوتيةباستخدام البوبيفاكين و هيالورونيديز نهج فعال لتحسين النتائج في المرضى الذين يخضعون لجراحات لعلاج السمنه و ذلك من خلال تقليل معدل استهلاك المواد الأفيونية بعد العمليات الجراحية.