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A RECTUS SHEATH BLOCK IN OPEN HYSTERECTOMY

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ABSTRACT

Introduction: Open gynecological surgery results in a large wound and severe postoperative pain, and adequate postoperative analgesia is necessary. Rectus sheath block (RSB) is used to block the sensory nerves of the anterior abdominal wall, thereby contributing to pain relief after lower abdominal surgeries. RSB provides effective perioperative analgesia and is related to lower perioperative opioid consumption and decreased opioid-related adverse effects. The prospective randomized study explores the effect of RSB on the evaluation of the postoperative pain following transabdominal open hysterectomy.

Objective: The aim of this study is to evaluate the use of bilateral Ultrasound (US)-guided RSB on the evaluation of the postoperative pain.

Patients and Methods: This prospective randomized study was carried out on 70 females, ASA I or II, presented for elective open hysterectomy under general anesthesia (GA) and randomly classified into 2 equal Groups 1 and 2, of 35 patients each ; Group 1 (n=35) is the control Group, where the patients received standard general endotracheal anesthesia; patients in Group 2 (n=35), the tested Group, received RSB with 40 ml ropivacaine 0.375% (20ml each side) before surgery and standard endotracheal anesthesia. Mean arterial Blood pressure (MAP) and Heart rate (HR) were measured as baseline, after induction of general anesthesia (GA), every 15 min until completion of surgery, immediately after recovery, at 6h, 12h, and 24 h postoperatively. The primary outcome was the evaluation of the postoperative pain using the Visual Analogue Scale (VAS). Secondary outcomes included the measurement of the opioid consumption (intraoperative) and the amount of analgesics (postoperative) and some postoperative medical data as well.

Results and conclusion: Postoperative VAS scores showed significantly high pain scores in patients in Group 1, VAS 0 with a mean value of 9.46 (9.14-9.78), VAS 1 mean value of 8.46 (7.49-8.97), and VAS 2 with a mean value of 7.03 (6.44-7.62). Comparatively, Group 2 recorded significantly low pain scores - VAS 0 with a mean value of 1.26 (-,65-1.87), VAS 1 had a mean value of 2.74 (2.18-3.3), and VAS 2 had a mean value of 3.75 (0.25-1.25), respectively. The use of RSB as an adjuvant to GA had reduced intraoperative opioid consumption, time to first bowel motility and discharge from bed, postoperative analgesic consumption and shorter post-anesthesia care unit discharge time. Furthermore, patients of the test Group 2 showed greater satisfaction.

Keywords: Visual Analogue Scale (VAS), Rectus Sheath Block (RSB), open hysterectomy, postoperative pain

INTRODUCTION

Hysterectomy is a safe and suitable procedure for patients suffering from advanced pelvic malignancies and other pelvic pathologies that are unsuitable for vaginal or laparoscopic surgery [1]. Hysterectomy often results in significant pain and slow recovery, and postoperative pain is easily overlooked. Therefore, persistent opioid use is reported in 5%, regardless of the surgical route [2]. Inadequate analgesic management after gynecologic surgery is a major driver of postoperative complications, delayed recovery, and increased opioid use [3]. Considered on their own, these aspects do not necessarily mirror the recovery of most patients undergoing anesthesia and surgery [4]. With the development of ultrasound, the nerve blockade of certain muscles on abdominal wall has become easier and more practical. Rectus sheath block (RSB) is one of the regional anesthetic techniques developed recently, in which a local anesthetic is injected into the space between the rectus abdominis muscle and its posterior sheath using ultrasound. RSB has become popular in the anesthesia of various abdominal surgeries due to its high success rate and rare complications [5, 6]. RSB is increasingly utilized as a part of multimodal anesthesia in laparotomy surgeries [7]. It provides an analgesic effect for midline incisions by blocking the 7th to 11th intercostal nerve branches located in the rectus abdominis sheath [8].

OBJECTIVE

The aim of this original study was to evaluate the postoperative analgesic effect of the rectus abdominis sheath block (RSB) during open hysterectomy, scoring the pain and the level of analgesia with the Visual Analogue Scale-VAS [9].

MATERIALS AND METHODS

A prospective randomized study of 70 consecutive patients undergoing open hysterectomy was conducted at the Specialized Hospital for Gynecology and Obstetrics "Mother Teresa" – Skopje, North Macedonia.

The study included 70 patients who met the following inclusion criteria: Patients scheduled for open gynecological surgery, between the ages of 20-60 years, BMI < 32%, no serious comorbidities (ASA-American Society of Anesthesiologists classification) of 1-2.

Exclusion criteria: Any history of allergy to ropivacaine, ketoprofen and tramadol, coagulopathy, needle site infection, and patients with an ASA classification >2.

All patients included in the study from the Group 1 and Group 2 (n = 70) were anesthetized under general anesthesia according to the following protocol: 1. Preoperative preparation: Premedication of 8 mg dexamethasone and 4 mg ondansetron were administered. This was done to prevent postoperative nausea and vomiting. 2. Induction into general endotracheal anesthesia was performed with the application of propofol 2 mg/kg, fentanyl 0.4 μg/kg and rocuronium 0.8 mg/kg, to facilitate intubation. 3. Maintenance, with propofol 20 μg/kg/h and remifentanil 25 μg/kg/h.

Patients in tested Group 2 (n=35) received standard general anesthesia and ultrasound-guided RSB bilaterally para-umbilically, with 40 ml ropivacaine 0.375% (20ml each side) was administered.

Intraoperatively, hemodynamics and respiratory parameters were monitored with non-invasive methods for continuous perioperative monitoring. Cardiac activity was monitored with electrocardiography (ECG), mean arterial pressure (MAP), heart rate per minute (bpm), peripheral arterial saturation (SpO2), and end-tidal carbon dioxide (EtCO2), recorded at identical 15-minute intervals throughout the operation (15 min, 30 min, 45 min, 1 hour and 1.5 hours for measurement of the parameters) and on 6h, 12h and 24h after the operation.

The primary outcome was the evaluation of the level of the postoperative pain using the Visual Analogue Scale (VAS), during transabdominal open hysterectomy. Secondary outcomes included the evaluation of the intraoperative consumption of opioid and pain medication, post-anesthesia care unit discharge time (PACU time), time to first bowel motility, time to first discharge from bed, postoperative analgesic consumption, urine output, postoperative nausea and vomiting (PONV), and patient satisfaction.

STATISTICAL ANALYSIS

Data processing was performed using the statistical software programs Microsoft Excel, MedCalc 23.0, and JASP.

The data are presented with their mean, standard deviation (SD), standard error (SE) and 95% CI, and for the descriptive parameters of the populations of interest with absolute numbers and percentages.

The Mann-Whitney U-test and ANOVA tests were used when comparing and testing hypotheses.

Statistical significance level was set to a value of $p < 0.05$.

RESULTS

The characteristics of the two study group, including age, ethnicity, Body mass index, ASA classification, education use of medications, cigarette and alcohol consumption are presented in Table 1, including some other important medical data.

The first part of the Table 1 Part A shows the homogeneities of the groups ($p> 0.05$), second part of the Table 1 Part B shows the patient demographic distributions. The patients are mainly distributed in ASA Score-American Society of Anesthesiology score of 2 (65.71 %), no smokers (88.57%) and Elementary school degree >40%.

Table 2 presents the perioperative medical data of the participants in the two groups. The statistical analysis of intraoperative data for patients of Group 1 presents an anesthesia time in minutes with an overall time 120.14 minutes (105.72-Th134.57) and a mean operation time of 103.43 minutes (89.57-117.26). The intraoperative mean propofol consumption was at 550.29 milligrams (512.82-587.75), and mean fentanyl consumption was at 191.43 micrograms (164.72-218.14). These were used for induction into general anesthesia. Intraoperative remifentanil consumption of 1240.00 micrograms (1130.67-1349.33) for endurance of analgesia, as a part of general anesthesia. Urine intraoperative had an overall output of 1157.14 milliliters (909.46-1404.82).

Also the intraoperative data for patients of Group 2 show a mean anesthesia time in minutes at 1121.43 minutes (112.31-130.55) and a mean operation time of 103.86 minutes (88.42 - 104.74). Intraoperative mean propofol consumption was at 595.43 milligrams (559.07-631.79), and mean fentanyl consumption was at 154.29 micrograms (138.42-170.15). Both were used for induction into general anesthesia. Intraoperative remifentanil was excluded. Overall urine intraoperative output was 901.43 milliliters (705.12-1097.74).

A statistically significant higher use of opioids is found in the control (Group 1) ($p<0.05$).

Table 3 presents the values of the Mean arterial blood pressure (MAP), measured three

Table 1 part B. *Statistical demographic patient distributions data in Groups*

GROUPS	Age	Body height	Body weight	Body mass index (BMI)	ASA I II III
Group 1- (n=35)	50.91±6.87	162±5.98	74.89±10.59	28.58±4.07	9 26 0 %-25 74.2
Group 2- (n=35)	50.69±9.33	162.17±7.3	79.83±13.98	30.07±5.47	13 22 0 %37 62.82
T test	0.907124	0.912827081	0.083396371	0.1912722772	
p	0.91	=1	0.045	0.197	
p< 0.05	statistical	significance			

Table 1 part B. *Statistical demographic patient distributions data in Groups*

Patients	N=70	Mean (SD) or %
Ethnicity		
Albanian	34	48.57 %
Macedonian	29	41.43 %
Roma	6	8.57 %
Turkish	1	1.43 %
Medicament therapy-hypertension		
Yes	25	35.71 %
No	45	64.29 %
ASA	70	
1	24	34.29 %
2	46	65.71 %
Education		
Elementary school degree	30	42.86 %
High school degree	27	38.57%
University degree	11	15.71%
Illiterate	2	2.86%
Smoking		
Yes	8	11.43 %
No	62	88.57 %
Alcohol		
Yes	0	0%
No	70	100%

times at the ward. The table also shows postoperative pain scores, measured using the Visual analog scale. Group 1 was measured at the following five time points: VAS 0 (immediately after awakening), VAS 1 (6 hours after surgery), VAS 2 (12 hours after surgery), and VAS 3 (24 hours after surgery) and VAS 4 (48 hours after surgery). The results of the VAS score showed significantly high pain scores in the VAS 0 with a mean value of 9.46 (9.14-9.78), VAS 1 mean value of 8.46 (7.49-8.97), and VAS 2 with a mean value of 7.03 (6.44-7.62), and further shown a

Table 2 *Intraoperative data for patients in the two groups*

Intraoperative data	**Group 1 Mean± SD**	**Group 2 Mean± SD**	**t-student test**	**p**
Anesthesia time (min)	120.14 ±40.3162	121.43±25.4827	0.1601	0.8733
Operation time (min)	103.43±38.6607	103.86±24.1041	0.0559	0.9556
Intraoperative propofol (mg)	550.29±104.687	595.43±101.614	1.8421	0.0698
Intraoperative fentanyl (µg)	191.43±74.6501	154.29±44.3439	2.5325	**p=0.0136**
Intraoperative remifentanil (µg)	1240.00±305.519	0±0	24.0523	**p=0.0001**
Intraoperative crystalloids (ml)	1791.43±347.283	1848.57±328.428	0.7133	p=0.4781
Intraoperative colloids (ml)	128.57±223.905	14.29±84.5154	2.8230	**p=0.0062**
Urine output (ml)	1157.14±692.151	901.43±548.592	1.7129	p=0.0913

p<0.05- statistical significance

half value decrement in VAS 3 with mean value of 4.91(4.25-5.58), until final lowest value of the VAS 4 with mean value of 3.40 (2.76-4.04). The Visual analog scale was measured in Group 2 at the following five time points: VAS 0 (immediately after awakening), VAS 1 (6 hours after surgery), VAS 2 (12 hours after surgery), and VAS 3 (24 hours after surgery) and VAS 4 (48 hours after surgery). The results of the VAS score showed significantly low pain scores in the VAS 0 with a mean value of 1.26 (-,65-1.87), VAS 1 mean value of 2.74 (2.18-3.3), and VAS 2 with a mean 3.75 (0.25-1.25). The VAS score continued with stabile parameters of VAS 3 with a mean value of 2.38 (1.83-2.94) and VAS 4 with a mean value of 0.94 (0.52-1.37) as a lower value, respectively. The results showed that postoperative blood pressure was stable in the both groups (1 and 2), without any statistical significant difference (p>0.05) between the groups. There was a high statistical significance in the level of postoperative pain between the Groups, with the low level of pain in the tested Group 2 (p<0.001).

The analysis of the correlation between the postoperative mean arterial pressure (MAP) and the developed pain in the Control Group 1 showed a weak positive correlation after 6 hours of surgery, a negative correlation after 12 hours of surgery and very positive correlation after 24h of surgery; in the tested Group 2, a very positive correlation exists only 6 hours after surgery (r=0.346).

Tables 4 and 5 presents the overall consumption of pain suppressant drugs in the Groups 1 and 2, used in the period up to 48 hours after the operation. The results for the control Group 1 show a high use of these medicines in the first 24 hours after the operation. Duration of PACU

Table 3. *Postoperative values of Mean arterial pressure (MAP) measured in three times and the level of the pain in VAS score*

GROUPS	MAP 1	MAP 2	MAP 3
Control Gr **1** (n=35)	92.21±8.88	93.35±10	95.26±9.48
Research Gr **2** (n=35)	93.86±8.98	91.77±9.12	95.37±9.162
t- test	0.762288398	0.493917714	0.962229094
p	0.451	0.623	0.3427

Legend: MAP 1 - 6 hours after surgery;
MAP 2 – 12 hours after anesthesia; MAP 3 - 24 hours of anesthesia

GROUPS	VAS 0	VAS 1	VAS 2	VAS 3	VAS 4
Control Gr **1** (n=35)	9.46±0.89	8.46±1.44	7.03±1.641	4.91±1.848	3.40±1.794
Research Gr **2** (n=35)	1.26±1.7	2.74±1.55	3.40±1.438	2.38±1.55	0.94±1.186
T test	25.2813	15.9948	12.6441	8.46138E-07	1.42037E-09
p	<0.001	< 0.001	< 0.0001	< .00001	< .00001
CORRELATION Control Gr 1 Research Gr 2		(r) 0.009956115 0.346559509	(r) -0.01006 0.001949	(r) 0.23411544 -0.1387599	

* p< 0.05 statistical significance

stay of 189.29 minutes (166.02-212.55). Duration of mean time to peristalsis recovery of 1355.43 minutes (1284.1-1426.75) and mean time to first discharging from bed of 1330.00 minutes (1292.73-1367.27). PONV with a mean value of 5.54 (3.89-7.19), and sufficient patient satisfaction of 8.03 (7.43-8.63).

Table 5 presents overall consumption of pain suppressant drugs used in the period up to 48 hours after the operation, and shows a reduced use of these medications in the first 24 hours after operation, a shorter stay in the PACU of 140.43 minutes (120.49-160.36), the duration of mean time to first bowel sound of 1155.57 minutes (1108.61-1202.54) and mean time to first discharging from bed of 1176.00 minutes (1141.04-1210.96). The table also shows a PONV with a mean value of 8.14 (6.78-9.5), and a high level of patient satisfaction of 9.09 (8.71-9.46).

DISCUSSION

Postoperatively, the patients with applied bilateral US-guided RSB and standard general anesthesia (Group 2), had significantly lower pain scores in the VAS 0, with a mean value of 1.26 (-, 65-1.87), VAS 1 mean value of 2.74 (2.18-3.3), and VAS 2 with a mean 3.75 (0, 25-1.25). The pain scores continued with stabile parameters of VAS 3 with a mean value of 2.38 (1.83-2.94) and VAS 4 with a mean value of 0.94 (0.52-1.37). The low pain scores measured using the Visual Analog Scale prove that regional anesthesia techniques provide excellent postoperative analgesia and improve the quality of postoperative recovery [10]. The patients with applied standard general anesthesia (Group 1), showed significantly higher pain

Table 4. *Statistical data and results for patient Group 1- postoperative data*

Postoperative data Group 1	Mean	Median	SD	Margin of error	95% CI
Postoperative paracetamol (mg)	1400.00	1250	514.495	184.106	1215.89-1584.11
Postoperative tramadol (mg)	150.00	150	46.8480	16.7640	133.24-166.76
Postoperative metamizole (gr)	17.43	20	4.3046	1.5407	15.89-18.97
Postoperative ketoprofen (mg)	86.86	0	98.4731	35.2375	51.62-122.09
Duration of PACU stay (min)	189.29	200	65.0202	23.2667	166.02-212.55
Time to peristalsis recovery (min)	1355.43	1300	199.318	71.3240	1284.1-1426.75
Time to first discharging from bed (min)	1330.00	1320	104.166	37.2749	1292.73-1367.27
PONV	5.54	6.5	4.6134	1.6508	3.89-7.19
Urine output total 24 h (ml)	2248.57	2000	970.404	347.248	1901.32-2595.82
Patient satisfaction	8.03	8	1.6784	0.6006	7.43-8.63

Table 5. *Statistical data and results for patient Group 2-postoperative data*

Postoperative data	Mean	Median	SD	Margin of error	95% CI
Postoperative paracetamol (mg)	614.29	1000	595.148	212.967	401.32-827.25
Postoperative tramadol (mg)	62.86	100	59.8316	21.4101	41.45-84.27
Postoperative metamizole (gr)	8.43	10	4.1606	1.4888	6.94-9.92
Postoperative ketoprofen (mg)	60.00	0	79.2612	28.3627	31.64-88.36
Duration of PACU stay (min)	140.43	160	55.7089	19.9348	120.49-160.36
Time to first bowel sound (min)	1155.57	1200	131.242	46.9637	1108.61-1202.54
Time to first discharging from bed (min)	1176.00	1170	97.6924	34.9581	1141.04-1210.96
PONV	8.14	10	3.8051	1.3616	6.78-9.5
Urine output total 24 h (ml)	2658.57	2500	767.011	274.466	2384.1-2933.04
Patient satisfaction	9.09	9	1.0395	0.3719	8.71-9.46

scores in the measured 4 timings (VAS 0, VAS 1, VAS 2, VAS 3 and VAS 4) with mean value of 3.40 (2.76-4.04).

The high pain scores measured using the Visual Analog Scale prove that general anesthesia without adjuvant RSB, does not provide good postoperative analgesia nor does it improve the quality of postoperative recovery. This was found also in the research of other authors [11]. In regard to patients with GA, intraoperative mean propofol consumption showed a mean value of 526.80 milligrams (492.11-561.49), and mean fentanyl consumption of 192.00 micrograms (164.83-219.17) used for induction into general anesthesia. The mean intraoperative remifentanil consumption of 1240.00 micrograms (1130.67-1349.33) for the endurance of analgesia, as a part of general anesthesia [12]. The overall consumption of pain suppressant drugs used during the period up to 48 hours after the operation, shows a higher use of these medicines in the first 24 hours after the operation, with mean value of paracetamol use of 1400 mg (1215.89-1584.11), mean value of tramadol use of 150 mg (33.24-166.76) and mean value of metamizole use of 17.43 mg (15.89-18.97) [13]

The patients anesthetized with GA and adjuvant RSB, showed an intraoperative mean propofol consumption that was slightly higher than in Group 1: 595.43 milligrams (559.07-631.79) vs. 526.80 milligrams (492.11-561.49) ($p>0.05$), due to longer anesthesia and operation time and higher Body mass index among the patients of Group 2. The mean fentanyl consumption of 154.29 micrograms (138.42-170.15) is used for induction into general anesthesia. The use of intraoperative remifentanil was excluded. The overall consumption of pain suppressant drugs in the patients of Group 2, in the period up to 48 hours after the operation, shows a reduced use of these medications in the first 24 hours after the operation, with mean value of paracetamol use of 614.29 mg (401.32-827.25), a mean value of tramadol use of 62.86 mg (41.45-84.27) and a mean value of metamizole use of 8.43 mg (156.94-9.92) [11]. However, the consumption of pain suppressant drugs among patients in the Control group (Group 1), in the period up to 48 hours after the operation, shows a higher use of these medications during the first 24 hours after operation, with a mean value of paracetamol use of 1400 mg (1215.89-1584.11), a mean value of tramadol use of 150mg (33.24-166.76) [13].

In addition, the analysis of the postoperative medical discomfort caused by PONV, showed by the incidence of mean value of 5.54 (3.89-7.19) in patients with GA (Group 1) vs. 8.14 (6.78-9.5), in the patients of the tested Group 2. These findings are due to high perioperative opioid application as an important risk factor of PONV and tremors [14]. Patents from control Group 1, showed longer times staying in the PACU, at 189.29 minutes (166.02-212.55), vs. 140.43 minutes (120.49-160.36) in the Group with RSB. Also, the longer duration of the first peristalsis and mean time to first discharge from bed. Those observations were described and from other authors [15], what was explained as a prolonged effect of the postoperative pain and the use of opioids in the postoperative period [16].

The demographic and the baseline perioperative characteristics, types and duration of the surgeries, incision length of the laparotomies, anesthesia and operation time and are comparable between both groups.

During this study, there were no complications associated with RSB, such as puncture site infection and bleeding, or local anesthetic toxicity. US-guided RSB is a safe technique and was performed under general anesthesia. Patients were treated with appropriate multi-modal anesthesia and provided adequate analgesia.

CONCLUSION

This study shows that postoperative VAS scores in patient anesthetized with general anesthesia (Group1) were higher [mean value of 9.46 (9.14-9.78; 8.46 (7.49-8.97), and 7.03 (6.44-7.62)] compared to the patients who, beside general anesthesia, received US-guided RSB (Group 2) $p<0.05$. The use of RSB resulted with significantly lower postoperative pain scores [with a mean value of 1.26 (-,65-1.87), VAS 1 mean value of 2.74 (2.18-3.3), and VAS 2 with a mean value of 3.75 (0,25-1.25)], respectively, reduced intraoperative opioid consumption, resulted in better bowl movements, time to first discharge from bed, postoperative analgesic consumption and shorter post-anesthesia care unit discharge time. Furthermore, patients with US-guided RSB (Group 2) showed greater satisfaction from anesthesia. Thus, the wide-

spread use of RSB as safe and less cumbersome patient oriented method in gynecological surgery is recommended.

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Резиме

БЛОКОТ НА ОБВИВКАТА НА МУСКУЛОТ РЕКТУС АБДОМИНИС КАЈ ОТВОРЕНА ХИСТЕРЕКТОМИЈА

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Вовед: Отворената гинеколошка хирургија резултира со голема рана и силна постоперативна болка, и потребна е соодветна постоперативна аналгезија. Блокадата на обвивката на мускулот ректус абдоминис (RSB) се користи за блокирање на сензорните нерви на предниот абдоминален sид, со што придонесува за ублажување на болката по операциите на долниот дел од абдоменот. RSB обезбедува ефикасна периоперативна аналгезија и е поврзан со помала периоперативна потрошувачка на опиоиди и намалени несакани ефекти поврзани со опиоидите. Проспективната рандомизирана студија го истражува (евалуира) ефектот на RSB врз евалуацијата на постоперативната болка по трансабдоминална отворена хистеректомија.

Цел: Целта на оваа студија е да се евалуира употребата на билатерален RSB воден со ултразвук (US) врз евалуацијата на постоперативната болка.

Пациенти и методи: Оваа проспективна рандомизирана студија е спроведена на 70 пациентки, ASA I или II, пријавени за елективна отворена хистеректомија под општа анестезија (GA) и класифицирани по случаен избор во 2 еднакви групи 1 и 2 од по 35 пациенти секоја; Групата 1 (n = 35) е контролна група, каде што пациентите примаат стандардна општа ендотрахеална анестезија; пациентите во Групата 2 (n = 35), тестираната група, примаат RSB со 40 ml ропивакаин 0,375 % (20 ml од секоја страна) пред операцијата и стандардна ендотрахеална анестезија. Просечниот артериски крвен притисок (MAP) и срцевиот ритам (HR) беа мерени како почетна вредност, по индукција во општа анестезија, на секои 15 минути до крајот на операцијата, веднаш по закрепнувањето, на 6 часа, 12 часа и 24 часа постоперативно. Примарниот исход беше евалуација на постоперативната болка со користење визуелна аналогна скала (VAS). Секундарните исходи вклучуваа мерење на потрошувачката на опиоиди (интраоперативно) и количината аналгетици (постоперативно), како и некои постоперативни медицински податоци.

Резултати и заклучок: Постоперативните VAS-резултати покажаа значително високи резултати за болка кај пациентите од Групата 1 – VAS 0 со средна вредност од 9,46 (9,14-9,78), VAS 1 средна вредност од 8,46 (7,49–8,97) и VAS 2 со средна вредност од 7,03 (6,44–7,62). Споредбено со Групата 2 регистрирани се значително ниски резултати за болка – VAS 0 со средна вредност од 1,26 (-0,65–1,87), VAS 1 средна вредност од 2,74 (2,18-3,3) и VAS 2 со средна вредност од 3,75 (0,25–1,25), соодветно. Преоперативното користење на RSB доведе до намалена интраоперативната потреба за опиоиди и постоперативна потрошувачка на аналгетици, побрза појава на перисталтика и прво станување од кревет, пократко време на отпуштање од единицата за постанестезиолошка нега. Понатаму, пациентите кај кои како адјувант беше користен RSB, покажаа поголемо задоволство.

Клучни зборови: визуелна аналогна скала (VAS), блок на обвивката на мускулот ректус абдоминис (RSB), отворена хистеректомија, постоперативна болка