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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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FEASIBILITY AND EFFECTIVENESS OF GENERAL ANESTHESIA WITH OPIOIDS VERSUS OPIOID-FREE ANESTHESIA PLUS TRANSVERSUS ABDOMINIS PLANE BLOCK ON POSTOPERATIVE OUTCOMES AFTER MINI GASTRIC BYPASS SURGERY

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Abstract.

Introduction: Opioid-free anesthesia (OFA) is increasingly used at present in surgical practice by many hospitals as a new and very promising anesthesiologic regimen. This study aimed to compare the efficacy of standard general anesthesia with opioids with so-called opioid-free anesthesia on postoperative outcomes of patients who underwent gastric bypass surgery.

Materials and methods: This randomized, single-blind clinical study enrolled 103 patients scheduled for elective gastric bypass surgery. They were assigned randomly to receive either general anesthesia without opioids plus transversus abdominis plane (TAP) block (Group 1: 53 patients) or general anesthesia with opioids (Group 2: 50 patients). 21.4% (22/103) males and 78.6% (81/103) females were operated. The average age of patients was 40.9 and the average BMI – 48.4.

Results: Patients from both groups (patients who received general anesthesia + TAP and patients who received general anesthesia with opioids) were assessed for postoperative pain at rest using a 0-to-10 visual analog pain scale (0 = no pain, 5 = moderate pain, and 10 = the most severe pain possible). In group 1 - 34% (18/53) of patients did not receive any medication against pain and 66% (35/53) received Dexalgin Inject 25mg/ml 2 ml. There was no need in opioids. In group 2 - 10% (5/50) of patients did not receive any medication against pain, 38% (19/50) received Dexalgin Inject 25mg/ml 2 ml and 52% (26/50) received Dexalgin Inject 25mg/ml 2 ml + Promedol 20mg/ml 1ml.

Conclusion: Type of anesthesia is a significant predictor of postoperative outcomes, such as pain intensity, extubation time, intensive care stay, and hospital length of stay in patients undergoing gastric bypass surgery. Patients, who received (OFA) plus (TAP) block had better pain control than those who received general anesthesia with opioids. No opioids were used in group 1. In addition, the duration of hospital stay in group 1 was shorter, and the average cost for postoperative hospital stay was 2.39 times lower than in group 2. OFA can be used as a reliable and effective anesthesiologic technique in patients scheduled for bariatric surgery.

Key words. Opioid-free anesthesia, Dexalgin, Gastric bypass surgery, Pain.

Introduction.

"Opioid-free anesthesia" (OFA) is a new method that can be considered as an alternative to opioid-based anesthesia [1-22,5-12,15,16,19,20]. Traditional anesthesia, which often involves the use of opioids, has been the standard for many years and is actively practiced by anesthesia professionals worldwide. As P. Lavand'homme has stated recently OFA is certainly more than "the dream of some opioid-phobic doctors" [7]. It is known that the use of opioids is associated with various serious complications, both intraoperative and in the postoperative period. Examples include respiratory and cardiovascular depression, postoperative nausea, and vomiting (PONV), hyperalgesia, and an increased risk of physical dependence with long-term use, among others [1,13-16,18-20].

Particularly in bariatric surgery patients, who already have a higher risk of postoperative complications due to their main chronic conditions such as obesity-related obstructive sleep apnea, metabolic syndrome, (high blood pressure, low level of HDL cholesterol and insulin resistance, high blood triglycerides) type 2 diabetes, COPD and others, the use of opioids may further increase the risk, especially in respiratory and cardiovascular system.

OFA, through the use of dexmedetomidine and TAP (transversus abdominis plane block), is proposed as a beneficial and safer alternative anesthesia method. This approach aims to reduce or completely replace the use of opioids during the perioperative period and mitigate the associated complications [3,4,15,16].

During the postoperative period, rapid rehabilitation is crucial for reduction, both surgical and nonsurgical complications. Addressing this concern, Enhanced Recovery After Surgery (ERAS) principles may be implemented, demonstrating promising results in reducing postoperative complications and promoting faster recommends the use of multimodal anesthesia, reducing the use of opioids, or replacing them entirely during the perioperative period [4,17,20].

The aim of this study was to compare the efficacy of standard general anesthesia with opioids with so-called opioid-free anesthesia (OFA) on postoperative outcomes of patients underwent gastric bypass surgery.

Materials and Methods.

This is a prospective, randomized, single-blind clinical study was conducted at American Hospital Tbilisi, from, 01.01.2021 – 31.12.2023. The study was approved by Medical Ethics Committee of American Hospital Tbilisi (Georgia).

The study included 103 patients who required anesthesia for gastric bypass surgery. They were assigned randomly to receive either general anesthesia without opioids plus transversus abdominis plane (TAP) block (Group 1: 53 patients) or general anesthesia with opioids (Group 2: 50 patients). 21.4% (22/103) males and 78.6% (81/103) females were operated. 47.6% (49/103) had mild systemic disease (ASA II), 52.4% (54/103) had severe systemic disease without incapacitate (ASA III).

Average age of patients was 40.9; Average BMI – 48.4.

There were no significant differences of age and BMI means between two groups (patients who received general anesthesia + TAP and patients who received general anesthesia with opioids) (Table 1 and Graphs 1,2).

There were no significant differences between two groups based on ASA class (patients who received general anesthesia + TAP and patients who received general anesthesia with opioids) (Table 2 and Graphs 3,4).

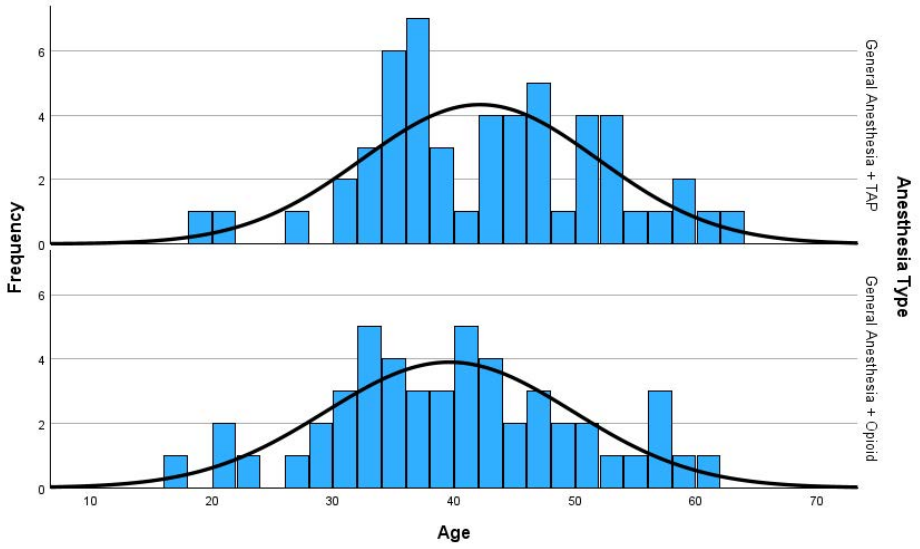
The patients were monitored for extubation time, patients' length of stay at ICU (based on Aldrete Scale), patients' hospital length of stay and total postoperative hospital stay expenses, as well as for postoperative pain management plan.

Anesthesia Regimens.

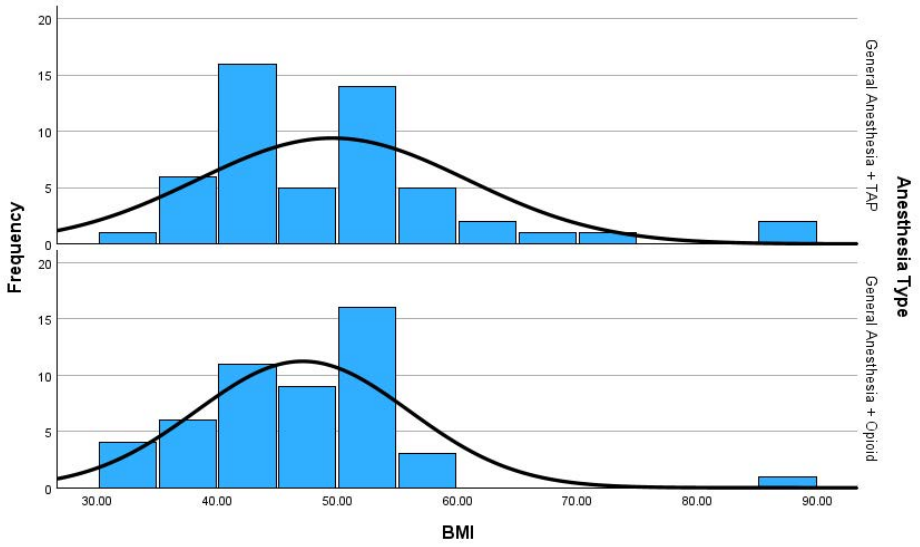
Patients randomized to group 1 (general anesthesia without opioids plus transversus abdominis plane (TAP) block) received:

Table 1. *Distribution of patients by age and BMI.*

Group Statistics					
	Anesthesia Type	N	Mean	Deviation	Error Mean
Age	General Anesthesia + TAP	53	42.1 3	9.771	1.342
	General Anesthesia + Opioid	50	39.60	10.224	1.446
BMI	General Anesthesia + TAP	53	49.5760	11.25436	1.54591
	General Anesthesia + Opioid	50	47.1040	8.88422	1.25642



Graph 1. *Distribution of patients by age.*



Graph 2. *Distribution of patients by BMI.*

Induction of anesthesia: Propofol 200 mg + Dexmedetomidine 80mcg + Lidocaine 70mg + Rocuronium 70mg.

Maintenance of anesthesia: Sevoflurane MAC 1.5 + Dexmedetomidine 0.5mcg/kg/h.

Reversal agent: Sugammadex 200mg.

PONV prophylaxis: Ondansetron 4mg. + Dexamethasone 4 mg.

TAP BLOCK: Bupivacaine 0,25% 20cc bilaterally total 40 cc.

Patients randomized to group 2 (general anesthesia with opioids) received:

Induction of anesthesia: Propofol 200 mg + Fentanyl 200mcg + Lidocaine 70mg + Rocuronium 70mg.

Maintenance of anesthesia: Sevoflurane MAC 1.5 + Fentanyl 200mcg.

Reversal agent: Sugammadex 200mg.

PONV Prophylaxis. Ondansetron 4mg + Dexamethasone 4 mg.

Surgery: All patients underwent mini gastric bypass surgery.

Results.

Discrete data were compared using a chi-square test; as continuous variables had skewed distribution, parametric analysis could not be used and nonparametric Mann-Whitney U-test was performed for analysis.

For all analyses a difference is designated as statistically significant at $P < .05$, two-tailed.

Patients from both groups (patients who received general anesthesia + TAP and patients who received general anesthesia with opioids) were assessed for postoperative pain at rest using a 0-to-10 visual analogue pain scale (0 = no pain, 5 = moderate pain, and 10 = the most severe pain possible). Patients with score <3, 22.33% (23/103) received no medication, patients with score between 2-5, 52.43% (54/103) received Dexalgin Inject 25mg/ml 2 ml and rest of patients with score ≥5, 25.24% (26/103) received Dexalgin Inject 25mg/ml 2 ml + Promedol 20mg/ml 1ml (Table 3).

The hypothesis that there was no relationship between the anesthesia type and the pain management method is rejected by Chi-Square test results. There is a significant relationship between the anesthesia type and the pain management method: $\chi 2(2, N=103)=38.03$, $p < .05$. most impact on results has analgesia with/without opioids (Table 4).

In group 1 (general anesthesia without opioids plus transversus abdominis plane (TAP) block) 34% (18/53) of patients did not receive any medication against pain and 66% (35/53) received Dexalgin Inject 25mg/ml 2 ml. There was no need in opioids.

In group 2 (general anesthesia with opioids) 10% (5/50) of patients did not receive any medication against pain, 38% (19/50) received Dexalgin Inject 25mg/ml 2 ml and 52% (26/50) received Dexalgin Inject 25mg/ml 2 ml + Promedol 20mg/ml 1ml.

After surgery, the times patients met predetermined criteria for release from intensive care unit (based on Aldrete Scale) and discharge from the hospital, as well as extubation time were recorded (Tables 5 and 6).

The hypothesis, that there were no differences in postoperative outcomes including extubation time, ICU and hospital stay duration between defined groups (patients who received general anesthesia + TAP and patients who received general anesthesia with opioids) was tested. Mann-Whitney U-test was performed (skewed distribution) (Tables 7 and 8).

The hypothesis that the patients underwent gastric bypass surgery who had general anesthesia with opioids and the patients underwent gastric bypass surgery who had general anesthesia without opioids plus transversus abdominis plane (TAP) block have no differences in postoperative outcomes was rejected for all three outcome variables.

Anesthesia type effect on hospital length of stay:

The test revealed the significant difference between the two groups – patients who received general anesthesia + TAP and patients who received general anesthesia with opioids. $U=132$, $p < .001$; ngroup 1(general anesthesia + TAP) =53, ngroup 2 (general anesthesia + opioids) =50; (Graph 5).

Anesthesia type effect on Extubation Time:

The test revealed the significant difference between the two groups – patients who received general anesthesia + TAP and patients who received general anesthesia with opioids. $U=1.5$, $p < .001$; ngroup 1(general anesthesia + TAP) =53, ngroup 2 (general anesthesia + opioids) =50; (Graph 6).

Anesthesia type effect on ICU stay:

The test revealed the significant difference between the two groups – patients who received general anesthesia + TAP and patients who received general anesthesia with opioids. $U=52$, $p < .001$; ngroup 1(general anesthesia + TAP) =53, ngroup 2 (general anesthesia + opioids) =50 (Graph 7).

Based on patients' hospital length of stay, stay at ICU and extubation time, postoperative hospital stay expenses were assessed (Tables 9,10 and Graph 8).

There is a significant difference in postoperative hospital stay costs for two groups (patients who received general anesthesia

Table 2. *Anesthesia type by ASA classification.*

Anesthesia Type *ASA class crosstabulation					
			ASA class		
			mild systemic disease	**Severe systemic disease, not incapacitating**	**Total**
Anesthesia Type	General Anesthesia + TAP	Count	25	28	53
		% within Anesthesia Type	47.2%	52.8%	100.0%
	General Anesthesia + Opioid	Count	24	26	50
		% within Anesthesia Type	48.0%	52.0%	100.0%
Total		Count	49	54	103
		% within Anesthesia Type	47.6%	52.4%	100.0%

Table 3. *Anesthesia Type *Postop. Pain Management Crosstabulation.*

Anesthesia Type * Postop. Pain Management Crosstabulation						
			Postop. Pain Management			
			none	**without opioid**	**with opioid**	**Total**
Anesthesia Type	General Anesthesia + TAP	Count	18	35	0	53
		Expected Count	11.8	27.8	13.4	53.0
		% within Anesthesia Type	34.0%	66.0%	0.0%	100.0%
		Standardized Residual	1.8	1.4	-3.7	
	General Anesthesia + Opioid	Count	5	19	26	50
		Expected Count	11.2	26.2	12.6	50.0
		% within Anesthesia Type	1 0.0%	38.0%	52.0%	100.0%
		Standardized Residual	-1.8	-1.4	3.8	
Total		Count	23	54	26	103
		Expected Count	23.0	54.0	26.0	103.0
		% within Anesthesia Type	22.3%	52.4%	25.2%	100.0%

Table 4. *Chi-Square test results.*

Chi-Square Tests			
	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi- Square	38.033[a]	2	<.0 01
Likelihood Ratio	48.569	2	<.0 01
Linear-by-Linear Association	30.959	1	<.0 01
N of Valid Cases	103		
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.17.			

Table 5. *After surgery, the times patients met predetermined criteria for release from intensive care unit (based on Aldrete Scale) and discharge from the hospital, as well as extubation time were recorded.*

Statistics				
		Hospital Length of Stay hours	**ICU Stay (Aldrete Scale) hours**	**Extubation Time min.**
N	Valid	103	103	103
	Missing	0	0	0
Mean		30.8350	1.9830	5.55
Std. Deviation		12.49086	0.62681	5.179
Skewness		2.415	-0.150	0.700
Std. Error of Skewness		238	238	238
Minimum		24.00	1.00	1
Maximum		80.00	3.50	19

Table 6. *After surgery, the times patients met predetermined criteria for release from intensive care unit (based on Aldrete Scale) and discharge from the hospital, as well as extubation time were recorded.*

Statistics					
Anesthesia Type			**Hospital Length of Stay hours**	**ICU Stay (Aldrete Scale) hours**	**Extubation Time min.**
General Anesthesia + TAP	N	Valid	53	53	53
		Missing	0	0	0
	Mean		24.6415	1.5377	1.17
	Std. Deviation		1.69948	.47887	0.509
	Skewness		3.277	-.155	3.013
	Std. Error of Skewness		.327	.327	.327
	Minimum		24.00	1.00	1
	Maximum		33.00	2.00	3
General Anesthesia + Opioid	N	Valid	50	50	50
		Missing	0	0	0
	Mean		37.4000	2.4550	10.20
	Std. Deviation		15.37026	.36430	3.569
	Skewness		1.424	1.451	.292
	Std. Error of Skewness		.337	.337	0.337
	Minimum		25.00	2.00	3
	Maximum		80.00	3.50	19

Table 7. *Mann-Whitney U-test.*

Ranks				
	Anesthesia Type	**N**	**Mean Rank**	**Sum of Ranks**
Hospital Length of Stay hours	General Anesthesia + TAP	53	29.49	1563.0 0
	General Anesthesia + Opioid	50	75.86	3793.00
	Total	103		
Extubation Time min	General Anesthesia + TAP	53	27.03	1432.50
	General Anesthesia + Opioid	50	78.47	3923.50
	Total	103		
ICU Stay (Aldrete Scale) hours	General Anesthesia + TAP	53	27.98	1483.0 0
	General Anesthesia + Opioid	50	77.46	3873.00
	Total	103		

Table 8. *Mann-Whitney U-test.*

Test Statistics[a]			
	Hospital Length of Stay hours	**Extubation Time min.**	**ICU Stay (Aldrete Scale) hours**
Mann-Whitney U	132.000	1.500	52.000
Wilcoxon W	1563.000	1432.500	1483.000
Z	-8.188	-9.192	-8.576
Asymp. Sig. (2-tailed)	<.001	<.001	<.001

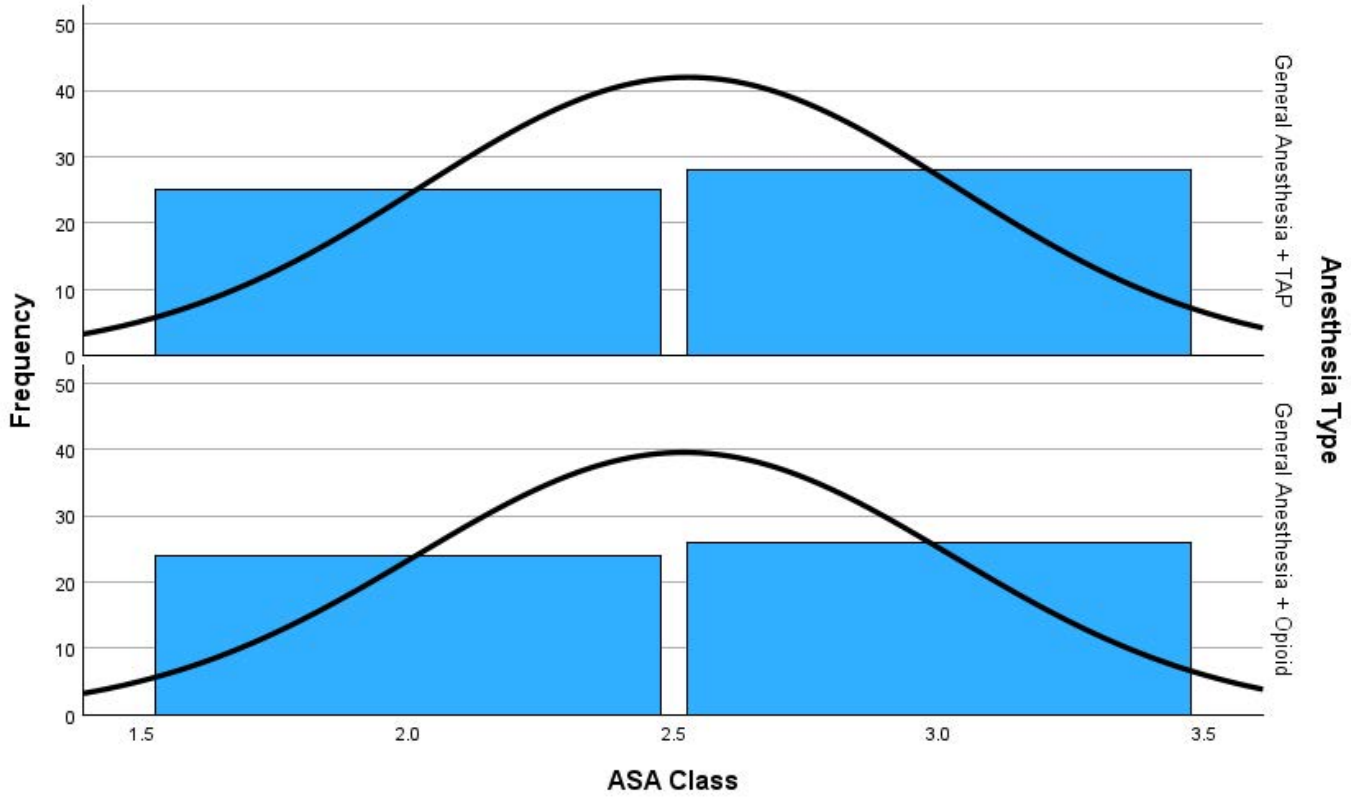
a. Grouping Variable: Anesthesia Type

Table 9. *Based on patients' hospital length of stay, stay at ICU and extubation time.*

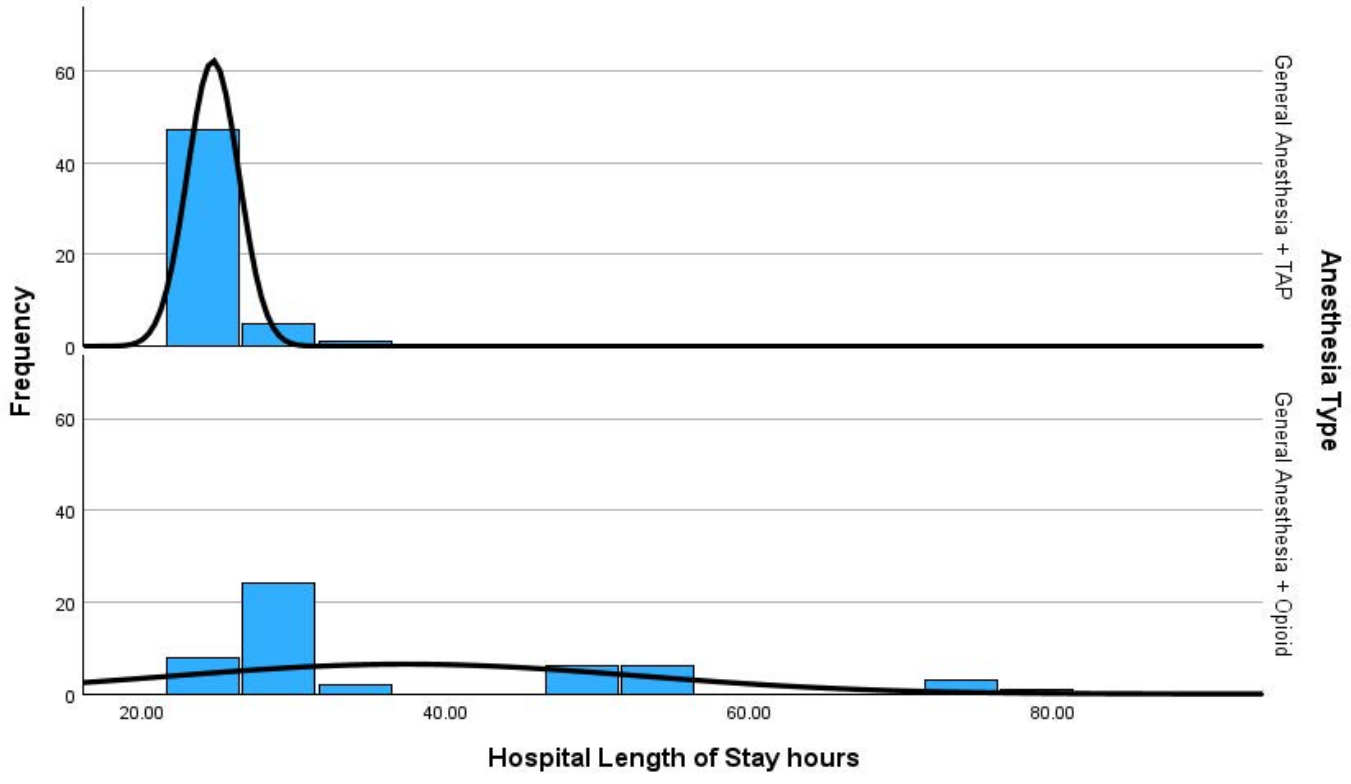
Statistics		
Total Cost GEL		
N	Valid	103
	Missing	0
Mean		819.5146
Std. Deviation		393.03943
Minimum		450.00
Maximum		2006.67

Table 10. *Based on patients' hospital length of stay, stay at ICU and extubation time, postoperative hospital stay expenses were assessed.*

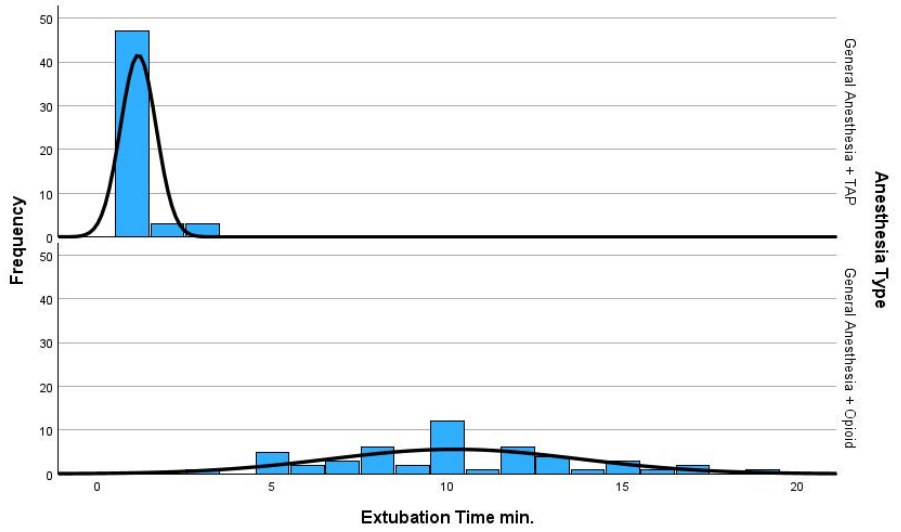
Statistics			
Total Cost GEL			
General Anesthesia + TAP	N	Valid	53
		Missing	0
	Mean		489.6226
	Std. Deviation		34.44406
	Minimum		450.00
	Maximum		590.00
General Anesthesia + Opioid	N	Valid	50
		Missing	0
	Mean		1169.2000
	Std. Deviation		278.96863
	Minimum		745.00
	Maximum		2006.67



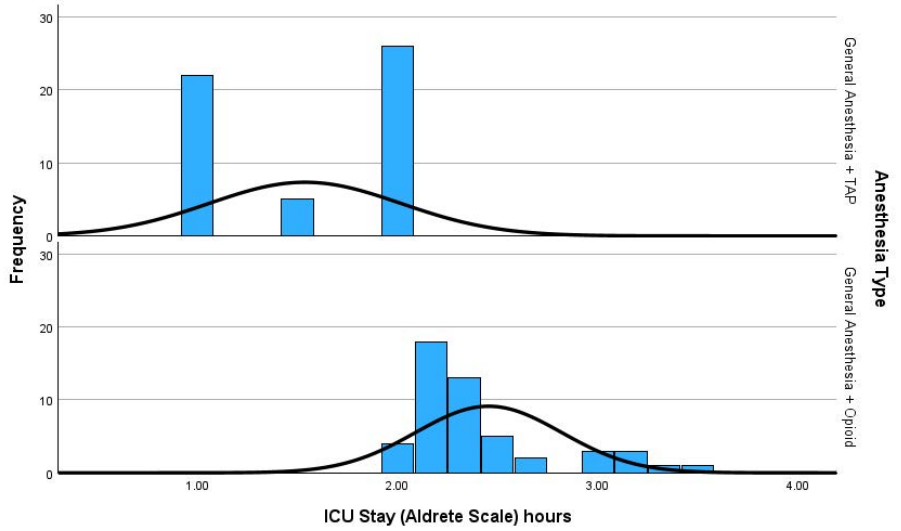
Graph 3,4. *Anesthesia type by ASA classification.*



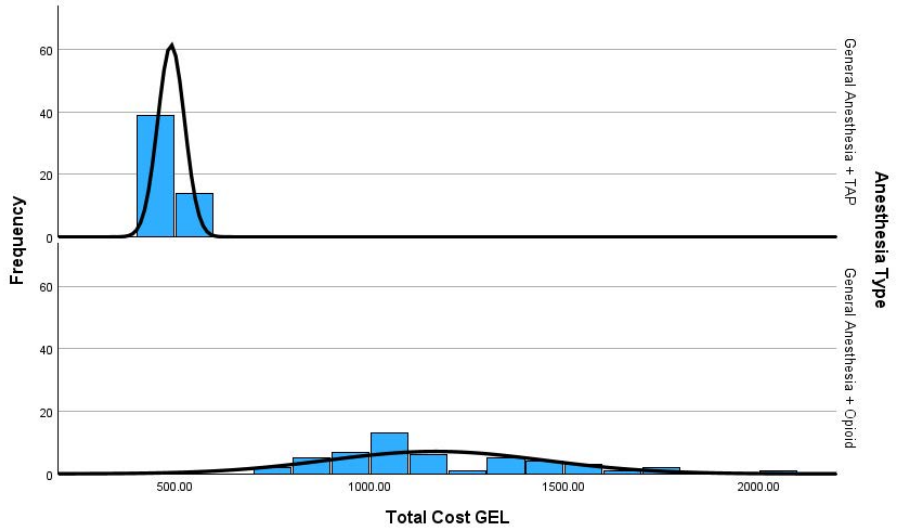
Graph 5. *Hospital length of stay hours.*



Graph 6. *Extubation time (min).*



Graph 7. *ICU stay hours.*



Graph 8. *Total cost (GEL).*

+ TAP and patients who received general anesthesia with opioids). For group 1 (general anesthesia + TAP) average cost for postoperative hospital stay was 489.6 GEL, for group 2 (general anesthesia + opioids) – 1169.2 GEL. As a result, the duration of hospital stay in group 1 (general anesthesia + TAP) is shorter, and the average cost for postoperative hospital stay is 2.39 times lower than in group 2 (general anesthesia + opioids).

Discussion.

The problem of optimal pain management: Reducing the giving of opioids in the intra- and postoperative period, to avoid side effects, shorten hospital stays, and have satisfied patients is very important for all hospitals still today. Analgesia is an essential part of anesthesia, and it plays a significant role in outcomes during the intraoperative and postoperative periods. Historically, the use of opioid-based analgesia is well-known in the management of intra and postoperative pain [8,11]. Literature sources indicate that the use of opioids plays a negative role in the rapid rehabilitation of patients. The use of opioids can prolong the extubation time, complicate the postoperative rehabilitation process, increase the risk of complications, lead to prolonged hospitalization, and impose a financial burden on the hospital [1,13,15-19]. It is worth mentioning that 75% of patients experience ineffective pain management during the postoperative period, necessitating the use of opioids, which contradicts the goals of the ERAS (Enhanced Recovery After Surgery) protocol [17,19,21]. The incorporation of multimodal analgesia, such as dexmedetomidine and (TAP) block, significantly reduces the risk of postoperative complications [3,4]. Our goal was to study the postoperative period in patients managed with non-opioid multimodal analgesia. Our study results demonstrate that patients managed with multimodal non-opioid anesthesia achieve better postoperative outcomes, including rapid extubation, reduced postoperative pain intensity, decreased hospital stay, and lower financial costs. Consequently, based on our findings, multimodal non-opioid anesthesia can be considered as an alternative method that ensures safer and more effective analgesia during both intraoperative and postoperative periods.

Conclusion.

In our study it has been shown, that this type of anesthesia is a significant predictor of postoperative outcomes, such as pain intensity, extubation time, intensive care stay, and hospital length of stay in patients undergoing mini gastric bypass surgery. General anesthesia without opioids plus transversus abdominis plane (TAP) block provides better postoperative pain relief, improves the overall outcome, and shortens the intubation time, intensive care stay, and hospital length of stay. Patients, who received general anesthesia without opioids plus transversus abdominis plane (TAP) block had better pain control than those who received general anesthesia with opioids, in addition, no opioids were used in group 1 (general anesthesia + TAP). OFA also demonstrated favorable outcomes in both medical and financial aspects, suggesting that this method could be recognized as an alternative anesthesia approach with superior results. OFA can be used as a reliable and effective anesthesiologic technique in patients scheduled for bariatric surgery.

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