

# **GEORGIAN MEDICAL NEWS**

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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 ВИНТИ 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 ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებშიდან.

### WEBSITE

[www.geomednews.com](http://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](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. Корректур авторам не высылаются, 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 computer-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.nlm.nih.gov/bsd/uniform_requirements.html)  
[http://www.icmje.org/urm\\_full.pdf](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 საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ 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. რენტგენოგრაფიების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგების 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 ფხიხლებში 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.

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## POSTOPERATIVE MORPHINE USE IN ABDOMINAL SURGERY: CLINICAL INSIGHTS FROM A ONE-YEAR SINGLE-CENTER RETROSPECTIVE STUDY

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### Abstract.

**Background:** Effective postoperative pain management is essential in abdominal surgery. Morphine remains a cornerstone opioid analgesic, yet variability in dosing and its clinical implications warrant further evaluation.

**Objective:** To evaluate postoperative morphine, use in patients undergoing abdominal surgery over a one-year period, with emphasis on dose distribution, patient characteristics, underlying diagnoses, surgical procedures, and hospital length of stay (LOS).

**Methods:** This retrospective single-center study included adult patients undergoing abdominal surgery who received postoperative morphine. Data on demographics, diagnoses, surgical procedures, morphine dose and route of administration, and LOS were extracted from medical records. Morphine dosing was individualized according to clinical judgment. Continuous variables are presented as mean  $\pm$  standard deviation (SD) or median with interquartile range (IQR).

**Results:** The cohort comprised 39 patients (24 females, 61.5%) with a mean age of  $46.7 \pm 18.5$  years. Bariatric surgery for obesity was the most common procedure ( $n = 22$ ). Morphine doses ranged from 4–10 mg per administration, predominantly given subcutaneously, with a median dose of 6 mg (IQR 5–7 mg); 5 mg was the most frequently administered dose. Higher doses were more commonly observed in oncologic cases. The overall median hospital length of stay (LOS) was 3 days and differed by surgical approach, with a median of 3 days after laparoscopic procedures and 7 days after open surgery. Adverse events were infrequent and mainly included postoperative nausea and vomiting (PONV), while no cases of respiratory depression were recorded.

**Conclusion:** Morphine remains a widely used option for postoperative analgesia in abdominal surgery and, in this cohort, was predominantly administered subcutaneously with individualized dosing. Dose variability appears influenced by patient and procedural factors. Although minimally invasive procedures were associated with shorter hospital stays, this observation should be interpreted cautiously due to differences in underlying diagnoses and surgical complexity. Larger prospective studies are needed to further optimize postoperative opioid use.

**Key words.** Postoperative analgesia, morphine, abdominal surgery, opioid analgesia, length of stay, adverse events, PONV.

### Introduction.

Postoperative pain management is a critical component of surgical care, particularly in abdominal surgery, where tissue trauma, visceral manipulation, and inflammatory responses significantly contribute to patient discomfort. Inadequate analgesia may result in delayed mobilization, prolonged hospitalization, and increased postoperative morbidity [1,2].

Morphine remains a cornerstone in the management of moderate to severe postoperative pain. Despite the growing implementation of multimodal analgesic strategies, it continues to be widely utilized due to its proven efficacy, accessibility, and well-established pharmacological profile. Nevertheless, variability in dosing practices, safety considerations, and potential impacts on recovery outcomes warrant ongoing clinical evaluation [3,4].

The objective of this study was to retrospectively evaluate postoperative morphine use in patients undergoing abdominal surgery over a one-year period, with particular focus on dose distribution, demographic and diagnostic characteristics, and its association with hospital length of stay (LOS).

### Materials and Methods.

This retrospective observational study was conducted at the Department of Abdominal Surgery, Kavaja Hospital, from 1 July 2024 to 30 June 2025. The study included adult patients ( $\geq 18$  years) who underwent abdominal surgical procedures and received morphine for postoperative analgesia. Patients were excluded if they received epidural analgesia, were on chronic opioid therapy, were admitted to the intensive care unit, had incomplete morphine dosing data, or were younger than 18 years.

Data were retrospectively extracted from hospital medical records and institutional documentation systems. The collected variables included demographic characteristics (age and sex), primary clinical diagnosis, type and complexity of surgical procedures, administered morphine dose, route of administration (subcutaneous or intravenous), and length of hospital stay (LOS). Morphine dosing patterns were analyzed in relation to diagnosis, type of procedure, patient age, and postoperative analgesic requirements. Morphine administration followed standard institutional postoperative analgesia protocols, with dose adjustments based on clinical judgment and pain severity.

Continuous variables were presented as mean  $\pm$  standard deviation (SD) or median with interquartile range (IQR), as

appropriate. Categorical variables were expressed as absolute numbers and percentages.

The study was conducted in accordance with the Declaration of Helsinki and received approval from the institutional ethics committee. All patient data were anonymized prior to analysis and handled in full compliance with confidentiality and data protection standards.

## Results.

### Demographic and age characteristics:

The study cohort comprised 39 patients, including 15 males (38.5%) and 24 females (61.5%). The mean age was  $46.7 \pm 18.5$  years, with a range of 19–72 years. Patients were stratified into four age groups: <30, 31–40, 41–60, and >60 years (see Table 1). Females represented the majority of the study population (61.5%), with higher representation observed in patients younger than 30 years and those older than 60 years.

### Clinical diagnoses:

Among the 39 patients, the most prevalent diagnosis was metabolic obesity ( $n = 22$ ), followed by colorectal carcinoma ( $n = 5$ ) and gastric carcinoma ( $n = 3$ ), representing the oncologic subset. The remaining cases comprised diverse abdominal pathologies, each occurring in single instances, including hiatal and inguinal hernias, insulinoma, anorectal fistula, pancreatic pseudocyst, chronic calculous cholecystitis, obstructive or strangulated ileus, and mesenteric tumors. Overall, the study population included a heterogeneous spectrum of metabolic, oncologic, mechanical, and inflammatory gastrointestinal conditions.

### Surgical procedures:

Within the cohort of 39 patients, a wide range of abdominal surgical procedures was performed, reflecting the clinical complexity of the unit. The most frequent intervention was laparoscopic sleeve gastrectomy ( $n = 22$ ), followed by hemicolectomy with ileal resection ( $n = 5$ ).

Other procedures, performed in single cases, included laparoscopic cholecystectomy, inguinal hernia repair, laparoscopic hiatal hernia repair with Dor fundoplication, internal sphincterotomy, and subtotal gastrectomy with Roux-en-Y reconstruction. More complex multistep operations were also documented, such as oncologic resections, total gastrectomy with esophago-jejunal reconstruction, and combined reconstructive procedures. Overall, the operative spectrum ranged from minimally invasive to highly complex radical abdominal surgeries, demonstrating substantial variability in surgical extent within the cohort.

### Morphine dosage:

Subcutaneous administration represented the primary route of postoperative morphine delivery in the study population. One patient with gastric adenocarcinoma required additional intravenous (IV) morphine due to severe postoperative pain (two 5 mg IV doses in addition to 2 mg SC, resulting in a cumulative dose of 12 mg). The most frequently administered dose was 5 mg ( $n = 22$ ), followed by 7 mg ( $n = 10$ ). Higher doses of 8 mg and 10 mg were each administered to 3 patients, while the lowest dose of 4 mg was given to a single patient (Figure 1). The

median morphine dose across the cohort was 6 mg (IQR 5–7 mg; range 4–10 mg per single administration).

Overall, the dosing pattern demonstrates predominant use of moderate-dose morphine. More than half of the patients (56.4%) received a 5 mg morphine dose. Higher or lower doses were observed less frequently across the study population.

The distribution of morphine doses across age groups is summarized in Table 2. Lower doses (5 mg) were more frequent in patients aged <30 and >60 years, whereas doses of 7–8 mg were more frequent in middle-aged groups. The interquartile range (IQR) was consistent across all age groups (5–7 mg), and the overall range varied from 4 to 10 mg. The distribution of doses was relatively uniform across age groups, with variations according to individual patient needs.

Morphine dosing varied by age and diagnosis (Tables 2 and 3). Lower doses (5 mg) predominated in patients <30 and >60 years, whereas middle-aged groups more frequently received 7–8 mg. Bariatric surgery patients mostly received 5 mg, while higher doses were more common in those with malignant pathologies, reflecting individualized postoperative analgesic management.

### Length of hospital stay:

The median length of hospital stay (LOS) among the 39 patients was 3 days (range 1–10 days). The most frequently observed duration was 3 days ( $n = 21$ , 53.8%). Short hospitalizations (1–2 days) and prolonged stays (7–10 days) were relatively uncommon, occurring in 1–3 patients (2.6–7.7%). Intermediate durations of 4 and 6 days were each recorded in 4 patients (10.3%).

Median LOS stratified by diagnosis is presented in Table 4. Patients with adenocarcinoma exhibited the longest median LOS (7 days, range 5–8), whereas anorectal and cholecystectomy cases were associated with shorter stays (1–3 days). Bariatric surgery for obesity demonstrated a median LOS of 3 days (range 3–4), consistent with the minimally invasive nature of the procedures.

The median length of hospital stay (LOS) according to surgical procedure is summarized in Table 5. Patients undergoing laparoscopic surgery had a median LOS of 3 days (range 3–4), whereas those undergoing laparotomy (open abdominal surgery) demonstrated a longer median LOS of 7 days (range 4–10). These findings suggest that hospitalization duration may be influenced by the surgical approach and procedural complexity; however, given the retrospective design of the study, causal relationships cannot be inferred.

### Postoperative Adverse Events:

Adverse events were monitored and managed according to institutional postoperative protocols, with all cases documented in patient records. No life-threatening opioid-related complications were observed. Out of 39 patients receiving morphine, postoperative adverse events were documented in several cases. Postoperative nausea and vomiting (PONV) occurred in 12 patients (30.8%) and were managed with intravenous hydration and Metoclopramide 10 mg IV. Of these patients, 8 were female (33.3% of all females) and 4 were male (26.7% of all males). PONV was observed predominantly among patients who received higher morphine doses (7 mg:  $n = 8$ ; 8 mg:  $n = 2$ ; 10 mg:  $n = 2$ ). Although this pattern may suggest

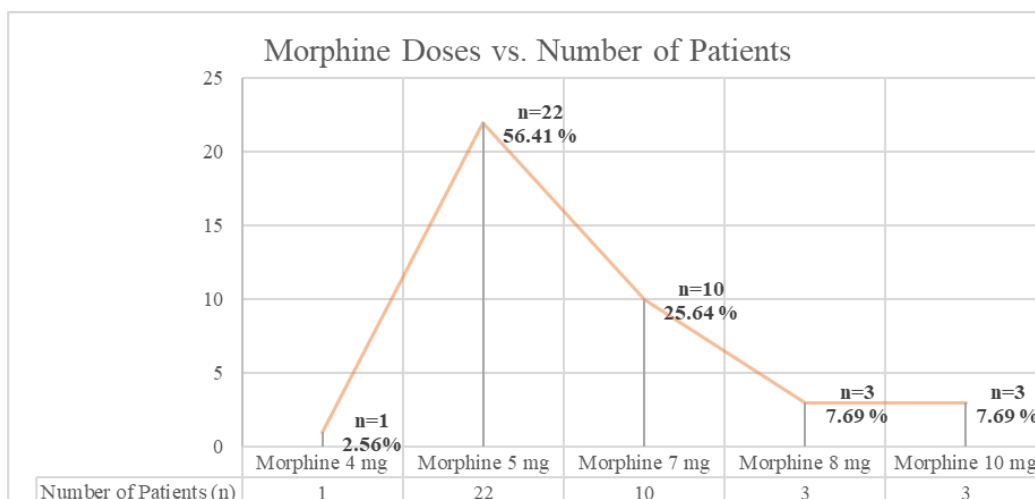


Figure 1. Distribution of morphine doses among study patients.

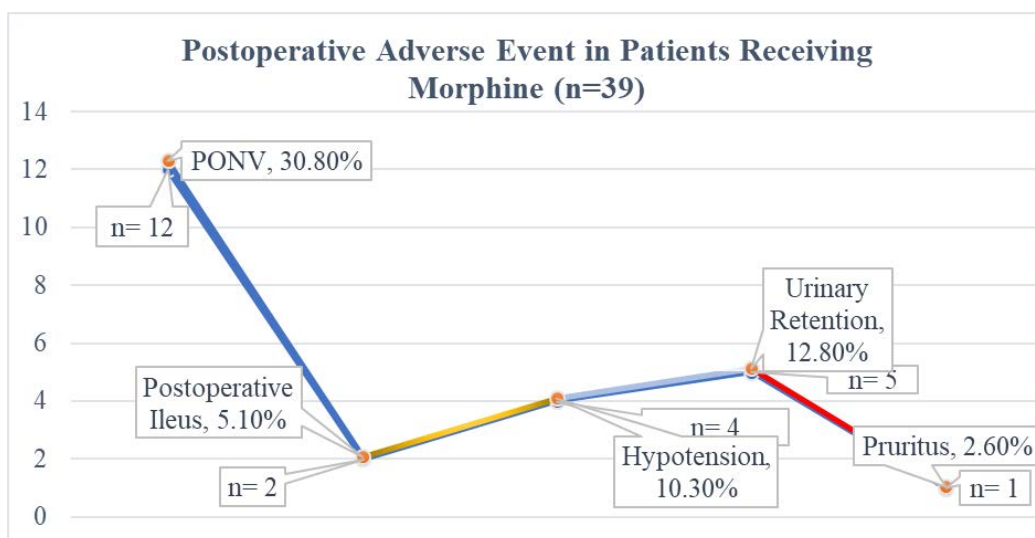


Figure 2. Postoperative adverse events in patients receiving morphine.

Table 1. Age distribution of patients receiving morphine.

Age Groups of Patients	Number of Patients	Percentage
< 30 years	12	30.8%
31–40 years	8	20.5%
41–60 years	6	15.4%
> 60 years	13	33.3%
<b>Total</b>	<b>39</b>	<b>100%</b>

Table 2. Median morphine doses (mg) by age group.

Age Group (years)	Number of Patients (n)	Median	IQR*	Range
<30	12	6 mg	5-7 mg	5 – 10 mg
31–40	8	7 mg	5-7 mg	5 – 8 mg
41–60	6	6 mg	5-7 mg	4 – 8 mg
>60	13	5 mg	5-7 mg	5 – 12* mg
<b>Total</b>	<b>39</b>	<b>6 mg</b>	<b>5-7 mg</b>	<b>4-12 mg</b>

\*IQR (interquartile range) represents the 25th–75th percentile.

\*Includes one patient receiving a cumulative morphine dose (combined SC. and IV administration).

**Table 3.** Morphine dose distribution according to diagnostic categories.

Diagnostic Category	Morphine Dose(s) Administered	n
Obesity (bariatric surgery)	5 mg (n=15); 7 mg (n=5); 8 mg (n=1); 10 mg (n=1)	22
Hernias (inguinal, hiatal)	5 mg (n=1); 8 mg (n=1)	2
Anorectal pathology	5 mg (n=1)	1
Benign biliary disease	5 mg (n=1)	1
Gastric adenocarcinoma	4 mg (n=1); 5 mg (n=1); 10 mg I.V + 2 mg SC(n=1)	3
Colorectal adenocarcinoma	5 mg (n=2); 7 mg (n=2); 8 mg (n=1)	5
Small bowel/mesenteric tumors	7 mg (n=2)	2
Intestinal obstruction (non-oncologic)	5 mg (n=1)	1
Pancreatic pathology	5 mg (n=1); 7 mg (n=1)	2
<b>Total</b>		<b>39</b>

**Table 4.** Median length of hospital stay by diagnosis.

Diagnosis	n	Median LOS (days)	Range (days)
Obesity	22	3	3–4
Oncologic abdominal mass	8	7	5–8
Other abdominal conditions*	9	5	3–10
<b>Total</b>	<b>39</b>	<b>3</b>	<b>1–10</b>

\*Includes ileus (obstructive intestinal syndrome), mesenteric tumors, cholecystitis, anorectal fissure, pancreatic pseudocyst, insulinoma, and other non-oncologic abdominal pathologies.

**Table 5.** Median length of hospital stay by surgical procedure.

Surgical Procedure	n	Median LOS (days)	Range (days)
Laparoscopic surgery	25	3	3–4
Laparotomy (open abdominal surgery)	14	7	4–10

a possible dose-related trend, the limited sample size precluded formal statistical analysis to confirm a significant association.

Postoperative ileus (POI) was observed in 2 patients (5.1%). Management included nasogastric tube placement, nil-per-os (NPO) regimen, and pharmacologic therapy with Metoclopramide 10 mg IV and Neostigmine 1 mg IV following imaging confirmation. Patients who developed POI had a longer hospital stay (median 5.5 days, range 5–6) compared to the overall cohort median of 3 days. Hypotension occurred in 4 patients (10.3%) and was managed with Ephedrine 20 mg IV. Urinary retention was also documented in 5 patients (12.8%) and required urinary catheterization. Pruritus was reported in 1 patient (2.6%) and resolved after administration of Chlorpheniramine 10 mg IV. No cases of respiratory depression or severe sedation were recorded. Given the limited sample size, these findings should be interpreted with caution.

### Discussion.

In this retrospective single-center study evaluating postoperative morphine use in patients undergoing abdominal surgery, a predominantly moderate-dose pattern of morphine administration was observed, with subcutaneous delivery as the principal route and individualized adjustments according to clinical context. A female predominance was noted, with higher representation among patients younger than 30 years and older than 60 years, reflecting the demographic composition of the surgical population during the study period and trends described in similar cohorts [5,6].

The most frequent procedure in this cohort was laparoscopic sleeve gastrectomy, reflecting the global increase in bariatric surgery. Within the study population, patients undergoing minimally invasive procedures generally experienced shorter

hospital stays compared with those undergoing open surgery. However, this observation should be interpreted cautiously. The laparoscopic group consisted predominantly of bariatric procedures, which are typically associated with faster postoperative recovery, whereas the open surgery group included a higher proportion of oncologic resections and other complex abdominal conditions that inherently require longer hospitalization. Consequently, differences in length of stay observed in this cohort are likely influenced by underlying diagnoses and surgical complexity rather than the surgical approach alone.

The finding that 5 mg was the most commonly administered morphine dose is consistent with commonly reported dosing practices in abdominal surgery, where moderate initial opioid doses are frequently employed for postoperative analgesia. Previous studies have described comparable dosing distributions following elective abdominal and laparoscopic procedures, demonstrating that doses in the range of 5–7 mg may provide effective analgesia while limiting opioid-related adverse effects. Variation in dosing across age groups and diagnostic categories further supports the importance of individualized analgesic regimens rather than rigid fixed-dose protocols [3,5].

Subcutaneous administration represented the primary route of morphine delivery in this cohort, with only one patient requiring additional intravenous doses because of severe postoperative pain. This observation is consistent with reports indicating that subcutaneous morphine can provide effective analgesia in selected surgical settings, whereas intravenous administration remains appropriate in situations requiring rapid titration or management of severe pain [7-10].

In the present study, patients undergoing laparoscopic procedures demonstrated a shorter median length of hospital

stay compared with those undergoing open laparotomy. This difference likely reflects the distribution of underlying diagnoses and procedural complexity within the cohort. The laparoscopic group consisted predominantly of bariatric procedures performed for metabolic obesity, which are generally associated with faster postoperative recovery and shorter hospitalization [8]. Previous studies have reported similar findings, particularly within enhanced recovery after surgery (ERAS) protocols following minimally invasive bariatric procedures [7,11]. In contrast, the open surgery group included a higher proportion of oncologic resections and other complex abdominal pathologies requiring more extensive surgical intervention and postoperative care.

Adverse events occurred at frequencies generally comparable to those reported in previous studies of postoperative opioid analgesia [11,12]. Postoperative nausea and vomiting (PONV) was the most frequently observed adverse event in this cohort, occurring in 12 patients (30.8%). A higher proportion of cases was observed among patients receiving morphine doses of 7 mg or higher. However, given the limited sample size, no statistical analysis was performed to evaluate a potential dose–response relationship. Other adverse events, including postoperative ileus, urinary retention, hypotension, and pruritus, occurred at relatively low frequencies, and no cases of respiratory depression or severe sedation were observed during the study period [11,12].

Overall, these findings provide additional real-world data regarding postoperative morphine use across a spectrum of abdominal surgical procedures, highlighting clinical heterogeneity and the practical need for individualized pain management strategies. Similar variability in opioid prescribing patterns has been described in previous surgical series [13]. The absence of severe respiratory complications in this cohort is consistent with careful clinical monitoring and judicious opioid titration as recommended in contemporary perioperative pain management guidelines [3].

The limitations of this study include its retrospective design, single-center setting, absence of a non-morphine control group, and relatively small sample size, which limit generalizability and preclude causal inferences. Prospective investigations incorporating standardized pain scoring systems and multimodal analgesia protocols are warranted to further optimize postoperative opioid management and integrate objective pain outcomes.

### **Conclusion.**

Morphine remains an effective and widely utilized option for postoperative pain management in abdominal surgery. This single-center retrospective analysis demonstrates predominant use of moderate-dose subcutaneous administration, with individualized titration according to surgical complexity and clinical diagnosis. Variability in dosing reflects tailored postoperative analgesic strategies influenced by patient characteristics and procedural extent. Higher doses were more frequently administered in oncologic cases, while minimally invasive procedures in this cohort were generally accompanied by shorter hospital stays compared to open surgery; however, this observation is likely influenced by differences in underlying diagnoses and surgical complexity.

These findings support structured, patient-centred opioid use within standardized institutional protocols. However, the results should be interpreted in light of the limited sample size and retrospective design, and further prospective studies are needed to refine and optimize postoperative analgesic strategies.

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- PK and LH: concept/design, drafting, critical revision
- FS and ED: data collection, analysis
- All authors: final approval

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### რეზიუმე

**ფონი:** ეფექტური პოსტოპერაციული ტკივილის მართვა აბდომინალური ქირურგიის მნიშვნელოვანი კომპონენტია. მორფინი კვლავ წარმოადგენს ერთ-ერთ ძირითად ოპიოიდურ ანალგეტიკს, თუმცა დოზირების ვარიაბელობა და მისი კლინიკური მნიშვნელობა დამატებით შეფასებას საჭიროებს. **მიზანი:** ერთი წლის განმავლობაში აბდომინალურ ქირურგიას დაქვემდებარებულ პაციენტებში პოსტოპერაციული მორფინის გამოყენების შეფასება, განსაკუთრებული ყურადღებით დოზების განაწილებაზე, პაციენტთა მახასიათებლებზე, ძირითადი დიაგნოზების, ქირურგიულ პროცედურებზე და ჰოსპიტალიზაციის ხანგრძლივობაზე (LOS). **მეთოდები:** ეს რეტროსპექტიული ერთცენტრიანი კვლევა მოიცავდა ზრდასრულ პაციენტებს, რომლებმაც გაიარეს აბდომინალური ქირურგიული ჩარევა და პოსტოპერაციულ პერიოდში მიიღეს მორფინი. დემოგრაფიული მონაცემები, დიაგნოზები, ქირურგიული პროცედურები, მორფინის დოზა და შეყვანის გზა, ასევე ჰოსპიტალიზაციის ხანგრძლივობა (LOS) ამოღებულ იქნა სამედიცინო ჩანაწერებიდან. მორფინის დოზირება ინდივიდუალურად განისაზღვრებოდა კლინიკური გადაწყვეტილების საფუძველზე. უწყვეტი ცვლადები წარმოდგენილია საშუალო მნიშვნელობით  $\pm$  სტანდარტული გადახრით (SD) ან მედიანით და ინტერკვარტილური დიაპაზონით (IQR). **შედეგები:** კვლევაში შევიდა 39 პაციენტი (24 ქალი, 61.5%) საშუალო ასაკით  $46.7 \pm 18.5$  წელი. ყველაზე ხშირი პროცედურა იყო ბარიატრიული ქირურგია სიმსუქნის გამო ( $n = 22$ ). მორფინის დოზები მერყეობდა 4–10 მგ-ს შორის თითოეული შეყვანისას და უმეტესად შეჰყავდათ კანქვეშ; მედიანური დოზა იყო 6 მგ (IQR 5–7 მგ), ხოლო ყველაზე ხშირად გამოყენებული დოზა იყო 5 მგ. უფრო მაღალი დოზები უფრო ხშირად აღინიშნებოდა ონკოლოგიურ შემთხვევებში. ჰოსპიტალიზაციის საერთო მედიანური ხანგრძლივობა (LOS) იყო 3 დღე და განსხვავდებოდა ქირურგიული მიდგომის მიხედვით: 3 დღე ლაპაროსკოპიული პროცედურების შემდეგ და 7 დღე ღია ოპერაციების შემდეგ. არასასურველი მოვლენები იშვიათი იყო და ძირითადად მოიცავდა პოსტოპერაციულ გულისრევასა და ღებინებას (PONV); სუნთქვის დეპრესიის შემთხვევები არ დაფიქსირებულა. **დასკვნა:** მორფინი კვლავ ფართოდ გამოიყენება აბდომინალური ქირურგიის შემდეგ პოსტოპერაციული ანალგეზიისთვის და ამ კოჰორტაში ძირითადად კანქვეშ შეჰყავდათ ინდივიდუალურად შერჩეული დოზებით. დოზირების ვარიაბელობა, სავარაუდოდ, დაკავშირებულია პაციენტურ და პროცედურულ ფაქტორებთან. მიუხედავად იმისა, რომ მინიმალურად

ინვაზიური ოპერაციები ასოცირდებოდა ჰოსპიტალიზაციის უფრო მოკლე ხანგრძლივობასთან, ეს შედეგი სიფრთხილით უნდა იქნეს ინტერპრეტირებული ძირითადი დიაგნოზებისა და ოპერაციების სირთულის განსხვავებების გამო. პოსტოპერაციულ პერიოდში ოპიოიდების გამოყენების ოპტიმიზაციისათვის საჭიროა უფრო ფართომასშტაბიანი პროსპექტიული კვლევები.

**საკვანძო სიტყვები:** პოსტოპერაციული ანალგეზია, მორფინი, აბდომინალური ქირურგია, ოპიოიდური ანალგეზია, ჰოსპიტალიზაციის ხანგრძლივობა, არასასურველი მოვლენები, PONV.

### Аннотация

**Введение:** Эффективное послеоперационное обезболивание является важным компонентом лечения в абдоминальной хирургии. Морфин остаётся одним из основных опиоидных анальгетиков, однако вариабельность его дозирования и её клинические последствия требуют дальнейшего изучения.

**Цель:** Оценить применение морфина в послеоперационном периоде у пациентов, перенесших абдоминальные хирургические вмешательства, в течение одного года с акцентом на распределение доз, характеристики пациентов, основные диагнозы, виды хирургических вмешательств и продолжительность госпитализации (LOS).

**Методы:** Данное ретроспективное одноцентровое исследование включало взрослых пациентов, перенесших абдоминальные операции и получавших морфин в послеоперационном периоде. Данные о демографических характеристиках, диагнозах, хирургических вмешательствах, дозе и пути введения морфина, а также продолжительности госпитализации (LOS) были извлечены из медицинской документации. Дозирование морфина индивидуализировалось на основании клинического решения врача. Непрерывные переменные представлены в виде среднего значения  $\pm$  стандартное отклонение (SD) или медианы с межквартильным размахом (IQR).

**Результаты:** В исследование вошли 39 пациентов (24 женщины, 61,5%) со средним возрастом  $46,7 \pm 18,5$  лет. Наиболее распространённым вмешательством была бариатрическая хирургия по поводу ожирения ( $n = 22$ ). Дозы морфина варьировали от 4 до 10 мг за одно введение, преимущественно подкожно, с медианной дозой 6 мг (IQR 5–7 мг); наиболее часто применялась доза 5 мг. Более высокие дозы чаще наблюдались у пациентов с онкологическими заболеваниями. Общая медиана продолжительности госпитализации (LOS) составила 3 дня и различалась в зависимости от хирургического доступа: медиана 3 дня после лапароскопических вмешательств и 7 дней после открытых операций. Нежелательные явления наблюдались редко и включали преимущественно послеоперационную тошноту и рвоту (PONV), при этом случаев угнетения дыхания зарегистрировано не было.

**Заключение:** Морфин остаётся широко применяемым средством для послеоперационной анальгезии в абдоминальной хирургии и в данной когорте преимущественно вводился подкожно с индивидуальным

подбором дозы. Вариабельность дозирования, вероятно, обусловлена особенностями пациентов и хирургических вмешательств. Хотя минимально инвазивные операции ассоциировались с более короткой продолжительностью госпитализации, данное наблюдение следует интерпретировать с осторожностью из-за различий в исходных диагнозах

и сложности операций. Для оптимизации применения опиоидов в послеоперационном периоде необходимы более масштабные проспективные исследования. **Ключевые слова:** послеоперационная анальгезия, морфин, абдоминальная хирургия, опиоидная анальгезия, продолжительность госпитализации, нежелательные явления, PONV