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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 ბაზებიდან.

### 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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## RISK FACTORS FOR THE DEVELOPMENT OF COAGULOPATHY DURING SURGERY IN MECHANICAL JAUNDICE

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### Abstract.

**Background and Objectives:** This prospective study was conducted at the University Hospital NAO "MUS" (Semey Medical University, Non-Profit Joint-Stock Company (NCJSC) of Semey, Kazakhstan. The objective of our investigation was to delineate potential risk factors associated with coagulopathy among patients presenting with mechanical jaundice.

**Materials and Methods:** One hundred eighty-six patients who underwent surgical procedures between October 2020 and September 2022 in Semey, located in East Kazakhstan, were included in this study. Logistic regression analysis was employed to explore independent associations between non-coagulopathy and its respective correlates.

**Results:** The gender distribution among participants was as follows: 68 men (36.6%) and 118 women (63.4%), with an average age of 62.2 years (95% confidence interval: 52-72.4). Coagulopathy was observed in 87.9% of patients (N=163). Nine risk factors associated with the development of coagulopathy were included in the binary logistic regression model: nationality ( $p=0.005$ ), local residence ( $p=0.01$ ), obesity ( $p=0.0001$ ), hemoglobin concentration ( $p=0.003$ ), platelet count ( $p=0.008$ ), total bilirubin level ( $p=0.031$ ), alanine aminotransferase ( $p=0.001$ ), soluble fibrin-monomer complexes ( $p=0.034$ ), and international normalized ratio (INR) ( $p=0.005$ ).

**Conclusions:** The majority of patients developed coagulopathy, and key sources of its occurrence were identified. Surgeons need to pay closer attention to patients of Kazakh ethnicity with obesity, as well as to those with mild anemia, elevated levels of platelet count, soluble fibrin-monomer complexes, alanine aminotransferase, and international normalized ratio, as they are more likely to develop coagulopathy. Additionally, patients with moderate or severe jaundice are also more prone to the development of coagulopathy.

**Key words.** Coagulopathy, obstructive jaundice, bleeding, risk factors, Kazakhstan.

### Introduction.

Mechanical jaundice stands as a significant and persistently unresolved challenge in contemporary surgical practice. Globally, there has been a consistent rise in the prevalence of cholelithiasis, consequently amplifying the population afflicted by mechanical jaundice. The associated mortality rates remain high, ranging from 8% to 44% [1-3].

Surgical interventions in patients presenting with jaundice entail a heightened risk of postoperative complications compared to those performed on non-jaundiced individuals

[4,5]. Perioperative morbidity rates among patients with mechanical jaundice vary between 20% and 30% [6].

Malignant mechanical jaundice (MU) is a serious surgical problem with high morbidity and mortality worldwide. Treatment is usually delayed, and most patients benefit only from palliative care. Surgeons practicing in developing countries face a titanic task in the treatment of MOJ (Malignant obstructive jaundice) due to the lack of minimally invasive endoscopic procedures. Palliative surgery is associated with high morbidity and sometimes mortality [7-9].

Progressive liver failure is widely recognized as a leading cause of fatal outcomes in mechanical jaundice. This failure stems from severe morpho-functional disturbances exacerbated by intoxication, compounded by hemodynamic, rheological, and hemostasiological disorders [5,7]. Some patients may be at a higher risk of bleeding than others, for reasons that were not initially recognized. In other words, there are patients who don't need to take these precautions as they don't have any risk of bleeding. Thus, the task of selecting the most effective treatment strategy for patients facing perioperative bleeding is intricate, primarily due to the complexity of hemostatic dysfunction. Initially, it's crucial to determine whether a patient is at heightened risk for perioperative bleeding. A thorough understanding of the factors contributing to increased morbidity and mortality in these cases is essential for guiding appropriate treatment decisions and ultimately improving survival rates [8].

Surgical treatment of OJ (Obstructive jaundice) depends on the cause, location and severity of the obstruction. Biliary drainage, surgery, and endoscopic intervention are potential treatment options depending on the patient's condition [10].

Our study aims to share our institutional experience in identifying potential risk factors for coagulopathy in patients undergoing surgery while dealing with mechanical jaundice, within our local setting. The aim of this study is to determine whether there is a correlation between certain demographic and research parameters and the chance of developing coagulopathy. To guarantee that resources are allocated to patients who will actually benefit from them.

### Materials and Methods.

The research was conducted in Semey (formerly Semipalatinsk), situated in East Kazakhstan, a prominent industrial center in the country historically known as the Soviet nuclear weapons testing site from 1949 to 1991. With a population of 328,782 as of 2022, Semey boasts two municipal hospitals responsible for providing surgical care to its residents as well as those in

the surrounding rural areas. As Semey represents a typical city in Kazakhstan, our findings may offer insights applicable to similar contexts across the country.

This prospective study involved the analysis of patient data, with individuals categorized into two cohorts based on the presence or absence of coagulopathy. A total of 186 patients diagnosed with mechanical jaundice were included in the study.

Inclusion criteria encompassed all patients aged 18 years and above presenting with mechanical jaundice necessitating immediate treatment. Exclusion criteria comprised individuals under 18 years old, pregnant, or breastfeeding women, and patients declining participation in the study.

The primary objective of our investigation was to identify potential risk factors for coagulopathy in patients afflicted with mechanical jaundice.

We conducted an in-depth analysis of various data parameters. Patients were categorized into four age brackets: 18-44, 45-59, 60-74, and 75-90 years. Disease duration was classified into four intervals: up to 14 days, 15 days to a month, one to six months, and seven months and beyond. Ethnic origin was categorized into two groups: Kazakhs and others. Additionally, patients' medical histories were carefully examined for associated conditions such as hypertension, coronary disease, obesity, and other ailments.

Upon admission, pre-treatment routine blood tests were examined, yielding the following laboratory results: hemoglobin concentration (HGB) (normal range for males: 130-160 g/l, females: 120-140 g/l; mild anemia: 110-90 g/l), hematocrit (normal range for males: 40-48%, females: 36-46%), platelet count (PLT) (normal range: 150,000-400,000 cells per 1 ml of blood), total bilirubin (normal range: 0.5-20.5  $\mu\text{mol/l}$ ), direct bilirubin (normal range: 0-5.1  $\mu\text{mol/l}$ ), indirect bilirubin (up to 16.4  $\mu\text{mol/l}$ ), alanine aminotransferase (ALT) (normal range for males: up to 45 un/l, females: up to 34 un/l), aspartate aminotransferase (AST) (normal range for males: up to 37 un/l, females: up to 31 un/l), soluble fibrin-monomer complexes (normal range: 3-4 ml/100 ml), activated partial thromboplastin time (APTT) (normal range: 21.1-36.5 seconds), fibrinogen (normal range: 2-4 g/l), international normalized ratio (INR) (0.85-1.35), and prothrombin time (PT) (normal range: 11-16 seconds).

### Statistical analysis.

Continuous data were summarized using means (M) and standard deviations (SD), while the proportion of patients developing coagulopathy was accompanied by 95% confidence intervals (CIs) calculated through Wilson's method [11], acknowledged for its superiority over the conventional Wald method. Bivariate associations were explored using the Pearson chi-square test. To ascertain the relationship between independent variables and coagulopathy, multivariate logistic regression was employed. Both crude and adjusted odds ratios (ORs) with corresponding 95% CIs were computed, with the most favorable category serving as the reference group for each variable.

To derive the final regression model, a backward elimination procedure was employed. This approach, preferable to direct methods, minimizes the risk of Type II error and provides

greater statistical power compared to forced entry methods for a given sample size [12]. Statistical significance was defined at  $p < 0.05$ . All analyses were conducted using the Statistical Package for the Social Sciences (SPSS, version 22.0, SPSS Inc., Chicago, IL, USA).

The present study strictly adhered to the ethical guidelines set forth in the Helsinki Declaration of the World Medical Organization. Approval for the study was obtained from the Ethical Committee of Semey State Medical University, as documented in Protocol 2 dated October 28, 2020, with a designated Project Identification Code. Prior to their inclusion, all patients were duly informed about the research objectives and provided informed consent by signing consent forms.

### Results.

The study population predominantly consisted of urban residents (69.9%). Among them, 82.8% (N=154) developed coagulopathy. To facilitate comparative analysis, patients were divided into two groups based on the presence or absence of coagulopathy, comprising 82.8% and 17% of the total, respectively. Table 1 displays the initial characteristics of patients in both groups.

In our sample, the majority were women (63.4%, N=59) and of Kazakh ethnicity (83.9%, N=78). The average age was 62.2 (95% confidence interval: 52-72.4) in the coagulopathy group and 60.7 (95% confidence interval: 54.5-62) in the non-coagulopathy group. Notably, a substantial proportion of respondents in the coagulopathy group (48.1%, N=74) were unemployed or retirees, while the majority in the non-coagulopathy group were employed individuals (43.8%, N=14).

Comparing patient groups, obesity was observed in 100% of patients with coagulopathy and none in the non-coagulopathy group ( $p=0.0001$ ). Additionally, in the non-coagulopathy group, none of the patients experienced a disease duration exceeding 31 days ( $p=0.045$ ). Moreover, coagulopathic bleeding occurred in 100% of patients in the coagulopathy group compared to 11% in the non-coagulopathy group ( $p=0.00001$ ).

In Table 2, we present a comparative analysis of thirteen laboratory parameters between patients with and without coagulopathy. Notably, in the coagulopathy group, there was a significantly higher prevalence of mild anemia (37.5% versus 9.1%,  $p=0.003$ ), elevated platelet count (32.5% versus 0%,  $p=0.008$ ), severe jaundice (18.2% versus 0%,  $p=0.003$ ), increased direct bilirubin levels (100% versus 62.5%,  $p<0.001$ ), elevated alanine aminotransferase (ALT) levels (44.2% versus 0%,  $p=0.001$ ), elevated soluble fibrin-monomer complexes levels (81.2% versus 53.2%,  $p=0.034$ ), and elevated international normalized ratio (INR) (62.5% versus 23.4%,  $p=0.005$ ) compared to the non-coagulopathy group.

Through multivariable logistic regression analysis both crude and adjusted odds ratios (ORs) with corresponding 95% CIs were computed, with the most favourable category serving as the reference group for each variable (refer to Table 3). The final regression model underwent a meticulous backward elimination process, resulting in the exclusion of variables such as disease duration and direct bilirubin.

In the adjusted analysis of sociodemographic variables associated with the development of coagulopathy, one significant

**Table 1.** Comparison of patients with coagulopathy and without coagulopathy (baseline characteristics).

Characteristics	Cogulopathy, N (%)	Non-coagulopathy, N (%)	P value
Age, years			0.303
18- 44	4 (2.6)	0 (0)	
45-59	58 (37.7)	16 (50.0)	
60-74	68 (44.2)	14 (43.8)	
75-90	24 (15.6)	2 (6.3)	
Gender			0.22
Male	52 (33.8)	16 (50.0)	
Female	102 (66.2)	16 (50.0)	
Local residence			0.01
Urban	108 (70.1)	22 (68.8)	
Rural	46 (29.9)	10 (31.8)	
Nationality			0.005
Kazakh	134 (87.0)	22 (68.8)	
Other nationality	20 (13.0)	10 (31.2)	
Employment			0.105
Retiree	74 (48.1)	6 (18.8)	
Unemployed	18 (11.7)	10 (31.3)	
Workers	46 (29.9)	14 (43.8)	
Disabled people	8 (5.2)	2 (6.3)	
Housekeeper	8 (5.2)	0	
Associated diseases			
Hypertension			0.089
Yes	91 (59.4)	12 (50.6)	
No	63 (40.6)	20 (62.5)	
Coronary disease			0.150
Yes	136 (88.3)	32 (100.0)	
No	18 (11.7)	0	
Obesity			0.0001
Yes	154 (100.0)	26 (81.3)	
No	0	6 (18.7)	
Other diseases			0.289
Yes	22 (14.3)	8 (25.0)	
No	132 (85.7)	24 (75.0)	
Disease duration			0.045
Up to 14 days	110 (71.4)	26 (81.2)	
15 to 31 days	8 (5.2)	6 (18.8)	
From one to 6 months	8 (5.2)	0	
More than 6 months	28 (18.2)	0	

factor was local residence: patients from rural areas were more likely to develop coagulopathy compared to those residing in urban areas. Additionally, patients of Kazakh ethnicity were five times more likely to experience coagulopathy than patients of other ethnicities. Patients who had obesity were more prone to coagulopathy. Patients with mild anemia were more prone to developing coagulopathy. Moreover, patients with elevated levels of platelet count, soluble fibrin-monomer complexes, alanine aminotransferase, and international normalized ratio were more likely to develop coagulopathy. Patients with moderate or severe jaundice were more likely to develop coagulopathy compared to the reference categories.

### Discussion.

Obstructive jaundice presents a significant diagnostic and therapeutic challenge for general surgeons, contributing substantially to elevated morbidity and mortality rates [1].

According to existing literature, patients with mechanical jaundice face an augmented risk of bleeding, alongside other complications such as hepatorenal syndrome, hepatic encephalopathy, and sepsis, further exacerbating morbidity and mortality [13,15]. Obstructive jaundice can be complicated by hemorrhagic diathesis, which may occur due to a lack of vitamin K-dependent clotting factors and ultimately as a result of hepatic decompensation and dysfunction [13-14]. Coagulopathy is usually developed in mechanical jaundice as an adverse reaction of the body to a disease that can lead to a dissected intra-osseous clotting syndrome with high risk of death [16]. Solomon C's research revealed that low fibrinogen levels below the normal range of 2.0-4.5 g/l [13] are linked to an increased risk of bleeding [17-19]. Some researchers advocate for the consideration of blood clotting parameters, such as prothrombin time (PT) and international normalized ratio (INR), as key indicators to identify patients at risk of uncontrolled bleeding

**Table 2.** Comparison of patients with and without coagulopathy (Laboratory test).

Characteristics	Cogulopathy, N (%)	Non-coagulopathy, N (%)	P value
Laboratory test			
HGB			0.003
Norm	140 (90.9)	20 (62.5)	
Mild anemia	14 (9.1)	12 (37.5)	
Hematocrit			0.605
Norm	130 (84.4)	30 (93.8)	
Below normal	22 (14.3)	2 (6.3)	
Higher than normal	2 (1.3)	0	
PLT			0.008
Norm	104 (67.5)	32 (100.0)	
Higher than normal	50 (32.5)	0	
Total bilirubin			0,031
Mild jaundice	78 (50.6)	12 (37.5)	
Moderate jaundice form	48 (31.2)	20 (62.5)	
Severe jaundice	28 (18.2)	0	
Direct bilirubin			<0.001
Norm	0	12 (37.5)	
Higher than normal	154 (100.0)	20 (62.5)	
Bilirubin indirect			0.07
Norm	34 (22.1)	15 (46.7)	
Higher than normal	120 (77.9)	17 (56.3)	
ALT			0.001
Norm	86 (55.8)	32 (100.0)	
Higher than normal	68 (44.2)	0	
ACaT			0.11
Norm	72 (46.8)	22 (68.8)	
Higher than normal	82 (53.2)	10 (31.3)	
Soluble fibrin-monomer complexes			0.034
Norm	72 (46.8)	6 (18.8)	
Higher than normal	82 (53.2)	26 (81.2)	
APTT			0.558
Norm	118 (76.6)	24 (75.0)	
Higher than normal	36 (75.0)	8 (25.0)	
Fibrinogen			0.156
Norm	88 (57.1)	20 (62.5)	
Higher than normal	66 (42.9)	12 (37.5)	
INR			0.005
Norm	118 (76.6)	12 (37.5)	
Higher than normal	36 (23.4)	20 (62.5)	
PT			0.092
Norm	102 (66.2)	28 (87.5)	
Higher than normal	52 (33.8)	4 (12.5)	

post-surgery, emphasizing the importance of early intervention to mitigate adverse outcomes [20,21]. Many surgeons believe that INR 1.3 is safe for surgery [22], as studies have shown that it does not lead to an increase in bleeding complications [23] This means that the protrombin time is extended by 4-5 seconds [23].

This study's objective was to determine potential risk factors for coagulopathy in patients who had mechanical jaundice surgery in our local conditions. According to the research results, residing in a rural area increases the likelihood of developing coagulopathy by 3.19 times, as indicated by adjusted odds ratios (OR), compared to urban settings. Similarly, individuals of Kazakh nationality exhibit 4.96 times higher adjusted

OR for coagulopathy onset compared to other ethnicities. It can be linked to a way of life, namely nutrition. High caloric value of dishes and a large amount of meat and milk are the main ingredients of Kazakh dishes. The presence of obesity significantly amplifies the risk of coagulopathy by 17.31 times, while mild anemia and elevated platelet count levels elevate the risk by 6.07 and 7.26 times, respectively.

Moreover, severe jaundice escalates the risk of coagulopathy by 6.53 times in comparison to mild jaundice, according to adjusted ORs. David O. Irabor's study shows that age and high bilirubin levels in gallbladder carcinoma patients increase the risk of bleeding [24]. Notably, previous studies suggest a correlation between elevated bilirubin levels and increased bleeding risk.

**Table 3.** Results of multivariable logistic regression analysis.

Variables	aOR	95% CI
Local residence		
Urban	1.00	Reference
Rural	3.19	1.17-9.72
Nationality		
Kazakh	4.96	1.55-26.46
Other nationality	1.00	Reference
Obesity		
Yes	17.31	6.37-55.8
No	1.00	Reference
Hemoglobin concentration (HGB)		
Norm	1.00	Reference
Mild anemia	6.07	0.98-36.82
Platelet count (PLT)		
Norm	1.00	Reference
Higher than normal	7.26	1.11-46.19
Total bilirubin		
Mild jaundice	1.00	Reference
Moderate jaundice form	2.26	1.07-4.35
Severe jaundice	6.53	1.17-44.08
Alanine aminotransferase (ALT)		
Norm	1.00	Reference
Higher than normal	3.65	1.04-8.38
Soluble fibrin-monomer complexes		
Norm	1.00	Reference
Higher than normal	4.93	1.02-24.67
INR		
Norm	1.00	Reference
Higher than normal	18.8	5.28-64.88

This association is attributed to prolonged obstruction, resulting in diminished synthesis of vitamin K-dependent clotting factors, liver pressure effects hindering clotting factor production, and delayed clearance of endotoxins, potentially leading to mild disseminated intravascular coagulation (DVC) syndrome [25,26].

Hunt R. D. and other studies have shown that bleeding complications in obstructive jaundice have an additional cause from endotoxemia, which can lead to low-grade dissected intrasosseous clotting [27,28]. An elevated alanine aminotransferase (ALT) level increases the likelihood of coagulopathy by a factor of 3.65, while an elevated soluble fibrin-monomer complexes value raises it by 4.93 times, according to adjusted odds ratios (OR), compared to normal levels. Numerous prior studies have consistently identified elevated INR levels as a significant risk factor for coagulopathy development, with an increased INR level associated with 18.8 times adjusted OR for coagulopathy onset.

Our findings should be interpreted with caution taking into account strengths and potential weaknesses of the cross-sectional study design [29]. Another limitation is that we studied the likelihood of developing coagulopathy in patients from only one city, which reduces the generalizability of the results. However, Semey is similar to most medium-sized cities in Kazakhstan in terms of the population's socio-economic characteristics and the quality of healthcare, allowing us to extrapolate our findings to comparable settings. At the same

time, we do not recommend generalizing our results to rural areas, where the socio-demographic characteristics of the population and the availability of surgical care differ from those in urban settings.

### Conclusion.

The majority of patients developed coagulopathy, and key sources of its occurrence were identified. Surgeons need to pay closer attention to patients of Kazakh ethnicity with obesity, as well as to those with mild anemia, elevated levels of platelet count, soluble fibrin-monomer complexes, alanine aminotransferase, and international normalized ratio, as they are more likely to develop coagulopathy. Additionally, patients with moderate or severe jaundice are also more prone to the development of coagulopathy. A comprehensive understanding of the risk factors associated with coagulopathy development in patients with mechanical jaundice is pivotal for accurately predicting the likelihood of coagulopathic bleeding.

### Author Contributions.

Conceptualization, M.T.O., M.J.A.; methodology, M.T.O., M.J.A. and A.S.O.; software, M.T.O.; validation, S.D.Z., M.T.O. and Zh. D.B.; formal analysis, M.J.A., M.T.O. and A.S.O.; investigation, M.T.O.; data curation, M.T.O.; writing—original draft preparation, M.T.O., M.J.A. and S.D.Z.; writing—review and editing, M.T.O. and M.J.A.; visualization, S.D.Z., M.T.O. and Zh. D.B.; supervision, M.T.O.; project administration,

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### **Institutional Review Board Statement.**

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Ethics Committee of the Semey State Medical University (Protocol 2 of October 28, 2020, Project Identification Code).

### **Informed Consent Statement.**

The datasets generated and analyzed during the present study are available from the corresponding author upon reasonable request.

### **Data Availability Statement.**

Data are contained within the article.

### **Conflicts of Interest.**

The authors declare no conflicts of interest.

## **REFERENCES**

1. Ahmad I, Jan AU, Ahmad R. Obstructive Jaundice. *J Postgrad Med Inst.* 2001;15:194-8.
2. Styazhkina S.N, Isteeva A.R, Korotkova K.A, et al. Actual problems of obstructive jaundice in surgery. *International Journal. applied and basic research.* 2016;427430:7-3.
3. Syed N, Mohammad S.A, Umair U.I, et al. Etiological spectrum of obstructive jaundice. *Medical channel.* 2010;16:299-301.
4. Hussain SMA, Fatima T. Operative Mortality and Morbidity of Obstructive Jaundice. *Ann Abbasi Shaheed Hosp Kar Med Dent Coll.* 2000;5:211-4.
5. Uslu A, Narta A, Colak T, et al. Predictors of mortality and morbidity in acute obstructive jaundice: implication of preventive measures. *Hepatogastroenterology.* 2007;54:1331-4.
6. Shrikhande S.V, Barreto G, Shukla P.J. Pancreatic fistula after pancreaticoduodenectomy: the impact of a standardized technique of pancreaticojejunostomy *Langenbecks Arch Surg.* 2008;393:87-91.
7. Ratchik V.M, Break N.V, Orlovsky D.V, et al. Tactics and surgical treatment of obstructive jaundice of various etiologies. *Gastroenterology.* 2014;54:81-87.
8. Buckwater JA, Lawton RL, Tidrick RT. Bypass operation for neoplastic biliary tract obstruction. *Am J Surg.* 1965;109:100-5.
9. Balogun OS, Atoyebi OA. Management of Malignant Obstructive Jaundice: Defining the Relevance of Various Palliative Surgical Options in Resource-Challenged Settings: A Review Article. *J West Afr Coll Surg.* 2022;12:111-119.
10. Liu JJ, Sun YM, Xu Y, et al. Pathophysiological consequences and treatment strategy of obstructive jaundice. *World J Gastrointest Surg.* 2023;15:1262-1276.
11. Grjibovski A.M. Confidence intervals for proportions. *Ekol. Cheloveka.* 2008;6:57-60.
12. Field A. *Discovering Statistics Using IBM SPSS Statistics.* 2nd ed. SAGE Publications; Thousand Oaks, CA, USA: 2005.
13. Carter D.C, Johnstone J. M.S, Macleod I. B. The Gall Bladder, the Bile Ducts and the Pancreas. In: R. F. Rintoul, Ed., *Farquharson's Textbook of Operative Surgery*, 8th Edition, Churchill Livingstone, Edinburgh. 1998:421-449.
14. Nakeeb A, Lillemo K.D, Yeo C.J, et al. Neoplasms of the Exocrine Pancreas. *Surgery, Scientific Principles and Practice.* 3rd Edition, Philadelphia. 2001:885-899.
15. Solomon C, Rahe-Meyer N. In reply. *Transfusion.* 2013;53:1138-1140.
16. Lisman T, Porte RJ. Rebalanced hemostasis in patients with liver disease: evidence and clinical consequences. *Blood.* 2010;116:878-885.
17. Blome M, Isgro F, Kiessling AH, et al. Relationship between factor XIII activity, fibrinogen, haemostasis screening tests and postoperative bleeding in cardiopulmonary bypass surgery. *Thromb Haemost.* 2005;93:1101-1107.
18. Charbit B, Mandelbrot L, Samain E, et al. The decrease of fibrinogen is an early predictor of the severity of postpartum hemorrhage. *J Thromb Haemost.* 2007;5:266-273.
19. Karlsson M, Ternstrom L, Hyllner M, et al. Plasma fibrinogen level, bleeding, and transfusion after on-pump coronary artery bypass grafting surgery: a prospective observational study. *Transfusion.* 2008;48:2152-2158.
20. Badoe E.A, Archampong E.Q, Jaja M.O. *Principles and Practice of Surgery. Liver and Biliary System*, Ghana Publishing Corporation, Tema. 1994:657-688.
21. Shapiro S.S, Martinez J, Harker L.A, et al. *Thrombosis and Haemostasis.* Haematology. Copyright American Society of Haematology, Washington DC. 1992:51-59.
22. Badoe E.A, Archampong E.Q, Jaja M.O.A. *Principles and Practice of Surgery. 2nd Edition, Liver and Biliary System*, Ghana Publishing Corporation, Tema, 1994:657-688.
23. Shapiro S.S, Martinez J, Harker L.A. *Thrombosis and Haemostasis.* Haematology, Copyright American Society of Haematology, Washington DC. 1992:51-59.
24. D. Irabor. The Risk of Impaired Coagulation in Surgical Jaundice: An Analysis of Routine Parameters. *Surgical Science.* 2012;3:116-119.
25. Pavlidis ET, Pavlidis TE. Pathophysiological consequences of obstructive jaundice and perioperative management. *Hepatobiliary Pancreat. Dis Int.* 2018;17:17-21.
26. Egan RJ, Nicholis J, Walker S, et al. Routine coagulation screening is an unnecessary step to ERCP in patients without biochemical evidence a cross-centre study. *Int J Surgery.* 2014;12:1216-1220.
27. Hunt R.D, Allison M.EM, Prentice C.R.M, et al. Endotoxemia, Disturbance of Coagulation and Obstructive Jaundice. *The American Journal of Surgery.* 1982;144:325-329.
28. Pain J.A, Cahill C.J, Bailey M.E. Perioperative Complications in Obstructive Jaundice: Therapeutic Considerations. *British Journal of Surgery.* 1985;72:942-945.
29. Kholmatova K.K, Grjibovski A.M. Cross-sectional studies: Planning, sample size and data analysis. *Ekol. Cheloveka.* 2016;2:49-56.