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OBESITY AS A PREDICTOR OF POSTOPERATIVE PAIN AND PROTHROMBOTIC CHANGES IN PATIENTS FOLLOWING ARTHROSCOPIC ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

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Background. Anterior Cruciate Ligament (ACL) injury is one of the most common causes of knee joint instability.

Aim. To determine the clinical and laboratory characteristics of patients with isolated anterior cruciate ligament injury and obesity prior to arthroscopic reconstruction and to identify predictors of increased postoperative pain intensity in this population.

Materials and Methods. A single-center prospective controlled study was conducted involving 90 patients with isolated ACL injury of the knee joint treated between 2022 and 2024 at the Department of Traumatology, Municipal Non-Profit Enterprise of Kharkiv Regional Council "Regional Clinical Hospital". The study group included 38 patients with obesity (Body Mass Index (BMI) ≥30 kg/m²), while the control group comprised 52 non-obese patients. Blood glucose levels and coagulation parameters (Prothrombin Time (PT), ProThrombin Index (PTI), International Normalized Ratio (INR), activated Partial Thromboplastin Time (aPTT), Thrombin Time (TT), and fibrinogen) were assessed. Pain intensity at 1 month after ACL reconstruction was evaluated using the Visual Analog Scale (VAS), and factors associated with pain intensity were analyzed. Statistical analysis was performed using SPSS Statistics 25.0 (IBM, USA), nonparametric methods, and multiple linear regression. This study was conducted as part of the author's dissertation research without external funding or formal clinical trial registration.

Research Ethics. All participants provided informed consent. The study was conducted in accordance with the principles of the Nuremberg Code and the World Medical Association Declaration of Helsinki (1964–2024). Ethical approval was obtained from the Bioethics Committee of Kharkiv National Medical University (Protocol No.4 of April 01, 2025).

Results. Patients with obesity demonstrated a statistically significant but small absolute reduction in aPTT – 31.00 [30.70÷32.25] s versus 31.50 [31.30÷31.70] s in the non-obese group (p=0.014). Both values were within the laboratory reference range. In the final exploratory regression model, obesity (β=0.475; 95% CI [0.205÷0.745]; p=0.001) and higher preoperative pain level (β=0.234; 95% CI [0.062÷0.406]; p=0.008) were the most clinically consistent factors associated with pain intensity at 1 month after ACL reconstruction.

Conclusions. Obesity was independently associated with more severe pain at 1 month following reconstruction. Patients with obesity demonstrated a statistically significant but small absolute difference in aPTT, while other coagulation parameters remained comparable between groups. Clinical thrombotic events were not assessed.

Keywords: *orthopedics and traumatology, arthroscopic reconstruction, pain, VAS, predictors.*

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Introduction

The management of Anterior Cruciate Ligament (ACL) injuries remains a significant challenge in contemporary orthopedics and traumatology. This is due to the high incidence of such injuries and the growing number of patients requiring surgical intervention. Epidemiological data indicate that the incidence of ACL injuries is 91 cases per 100,000 individuals in men, 63 per 100,000 in women, and 77 per 100,000 in the general population [1].

According to numerous studies investigating the primary mechanisms of injury, approximately [70.0÷75.0]% of ACL injuries occur via non-contact mechanisms, underscoring the predominant role of intrinsic biomechanical and neuromuscular factors in their etiology [2]. These findings highlight the need not only for effective preventive strategies but also for the development and implementation of advanced reconstructive techniques for patients who have already sustained injury.

ACL reconstruction is one of the most commonly performed orthopedic procedures, and its incidence continues to rise. In England, the rate has increased from 2 to 24.1 per 100,000 population over the past two decades [3], while in Scandinavia and the United States, it is even higher, ranging from 32 to 52 per 100,000 population [4; 5]. These trends further emphasize the importance of analyzing risk factors and improving surgical techniques for ACL reconstruction.

Particular attention should be given to patients with obesity, as excess body weight significantly increases the risk of ACL injury due to additional biomechanical loading on the knee joint. Obesity represents a major public health concern that adversely affects outcomes of orthopedic interventions, as these patients are more likely to experience complications and prolonged operative time, recovery, and rehabilitation [6].

It has been demonstrated that increased operative time is associated with a higher risk of short-term complications, including infections, thromboembolic events, and prolonged hospital stay. Therefore, reducing operative time is one of the key objectives in minimizing postoperative risks [7].

Available evidence indicates that obesity directly affects the duration of arthroscopic ACL reconstruction: each additional unit increase in Body Mass Index (BMI) prolongs operative time by approximately one minute [8]. These findings underscore the need for a comprehensive approach to preoperative preparation of patients with obesity undergoing ACL reconstruction, as well as for improving predictive models of surgical outcomes.

Accordingly, thorough preoperative assessment of clinical and laboratory parameters in patients with obesity, along with prediction of postoperative complications, represents an important aspect of optimizing surgical management, improving rehabilitation outcomes, and reducing the risk of long-term complications, including post-traumatic osteoarthritis.

The **aim** of this study was to determine the clinical and laboratory characteristics of patients with isolated ACL injury and obesity prior to arthroscopic reconstruction, and to identify predictors of increased postoperative pain intensity in this population.

Materials and Methods

A single-center prospective controlled comparative study was conducted, based on the assessment and analysis of preoperative clinical and laboratory parameters in patients with isolated ACL injury undergoing arthroscopic

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reconstruction. Additionally, associations between anamnestic, clinical, and laboratory characteristics and postoperative pain intensity at 1 month were evaluated using the Visual Analog Scale (VAS). This instrument is widely recognized as one of the most informative tools for assessing patient outcomes following knee injuries and reconstructive procedures, as it allows quantitative evaluation of pain severity.

Blood glucose levels and coagulation parameters were measured, including Prothrombin Time (PT), ProThrombin Index (PTI), International Normalized Ratio (INR), activated Partial Thromboplastin Time (aPTT), and Thrombin Time (TT).

Between 2022 and 2024, a total of 90 patients aged 19 to 67 years, of both sexes, with isolated ACL injury of the knee joint were examined. All patients were treated at the Department of Traumatology of the Municipal Non-Profit Enterprise of Kharkiv Regional Council "Regional Clinical Hospital". Patients were divided into two groups according to BMI category. The study group included 38 individuals with obesity (BMI ≥30 kg/m²), and the control group included 52 individuals without obesity (BMI <30 kg/m²). Randomization was not performed, as group allocation was based exclusively on the presence or absence of obesity according to the BMI criterion. Outcome assessment was not blinded, which should be considered when interpreting the results. However, pain intensity was assessed using a standardized VAS at the predefined follow-up time point of 1 month after surgery. Length of hospital stay was recorded as a perioperative clinical course variable after surgery and before the 1-month pain assessment. Therefore, it was not considered a purely baseline predictor, and its association with pain intensity was interpreted cautiously.

All participants were fully informed about the voluntary nature of their participation and the confidentiality of the data prior to enrollment. Inclusion criteria were: presence of isolated ACL injury, provision of informed consent (both groups), and presence (study group) or absence (control group) of obesity. Exclusion criteria included: absence of isolated ACL injury; presence of diffuse or focal diseases; endocrine disorders; allergic conditions; systemic connective tissue diseases; acute or chronic inflammatory diseases of internal organs; severe decompensated somatic conditions; psychiatric or oncological diseases; acute cardiovascular events; thyrotoxic crisis; severe decompensation of carbohydrate metabolism; poor general physical condition; pregnancy or lactation; chronic alcoholism; and refusal to participate.

The mean age of patients was [36.74±11.14] years in the study group and 39.98±11.65 years in the control group.

Statistical analysis was performed using SPSS Statistics 25.0 (IBM Corp., USA). The distribution of qualitative and quantitative variables was assessed graphically and using the Kolmogorov–Smirnov, Lilliefors, and Shapiro–Wilk tests. Due to significant deviations from normal distribution, nonparametric statistical methods were applied. Data were presented as Median (Me) and interquartile range [Q1÷Q3], where Q1 corresponds to the 25^{th} percentile and Q3 to the 75^{th} percentile.

Associations between variables and the dependent quantitative outcome were evaluated using multiple linear regression analysis, with calculation of β coefficients and their 95% Confidence Intervals (CI). Model performance was assessed using the coefficient of determination (R^2). Regression models were constructed by grouping variables according to their clinical relevance.

Both univariate and multivariate regression approaches were applied, including simultaneous entry and stepwise backward elimination, to identify factors statistically associated with postoperative pain intensity.

Differences between two independent groups were assessed using the Mann–Whitney U test, while paired comparisons were performed using the Wilcoxon signed-rank test.

Statistical significance was set at $p<0.05$. Information on analgesic, antibiotic, and anticoagulant therapy was considered in the regression analysis. However, detailed standardized data on postoperative rehabilitation adherence, physical therapy after discharge, and psychosocial factors were not available.

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Research Ethics

All participants were enrolled after providing informed consent. The study was conducted in full compliance with international and national bioethical standards, including the principles of the Nuremberg Code and the Declaration of Helsinki. Ethical approval was obtained from the Bioethics Committee of Kharkiv National Medical University.

Results

According to the obtained results (*Table*), patients with obesity demonstrated a small but statistically significant difference in aPTT compared with non-obese patients. However, this finding should be interpreted cautiously, as both median values were within the laboratory reference range and other coagulation parameters did not differ significantly between groups.

The study demonstrated a statistically significant difference (p=0.014) in aPTT between groups: 31.50 [31.30÷31.70] s in patients without obesity versus 31.00 [30.70÷32.25] s in patients with obesity. Although shorter aPTT may reflect relatively higher coagulation activity, the absolute between-group difference in the present study was small, and both values remained within the laboratory reference range. Moreover, no significant differences were observed in PT, PTI, INR, fibrinogen, or TT, and clinical thromboembolic events were not assessed. Therefore, the observed aPTT difference should be considered a laboratory finding that may justify further investigation, rather than direct evidence of clinically confirmed thrombotic risk.

No statistically significant differences were observed between groups for other parameters, including blood glucose, PT, PTI, INR, fibrinogen, and TT (p>0.05).

To identify predictors of pain intensity at 1 month following arthroscopic ACL reconstruction, a stepwise multivariate analysis was performed with sequential inclusion of clinical, medico-social, physical, therapeutic, and laboratory variables. This approach allowed for assessment of the stability of baseline predictors and identification of additional factors influencing postoperative pain in the early recovery period.

The analysis demonstrated that obesity (β=0.385; 95% CI [0.104÷0.667]; p=0.008) and preoperative pain level (β=0.230; 95% CI [0.046÷0.414]; p=0.015) were statistically associated with pain intensity at 1 month. These findings suggest that both metabolic characteristics and baseline nociceptive status are clinically relevant factors associated with postoperative pain intensity.

Table. Distribution of patients with isolated ACL injury according to blood glucose levels and coagulation parameters, Me [Q1÷Q3]

Parameters	Obesity		p
	no (n=52)	yes (n=38)	
Glucose, mmol/L	5.25 [4.80÷5.79]	5.30 [4.88÷5.70]	0.784
PT, s	13.20 [12.03÷13.90]	12.45 [11.78÷13.55]	0.067
PTI	96.00 [85.58÷105.53]	98.25 [91.18÷104.70]	0.647
INR, units	1.04 [0.97÷1.07]	0.99 [0.93÷1.04]	0.086
Fibrinogen	2.89 [2.65÷3.45]	3.22 [2.47÷3.58]	0.485
aPTT, s	31.50 [31.30÷31.70]	31.00 [30.70÷32.25]	0.014
TT, s	16.50 [16.50÷16.50]	16.50 [16.48÷16.50]	0.650

Notes: statistical significance of differences between patients with isolated ACL injury of the knee joint without obesity and those with obesity;
PT – Prothrombin Time;
PTI – ProThrombin Index;
INR – International Normalized Ratio;
aPTT – activated Partial Thromboplastin Time;
TT – Thrombin Time.
TT values are presented according to laboratory records rounded to two decimal places; the low variability reflects the narrow range of recorded values and was not caused by a coding error.

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After inclusion of medico-social variables, the model was significantly expanded. In addition to obesity (β=0.426; 95% CI [0.156÷0.696]; p=0.002) and baseline pain level (β=0.247; 95% CI [0.072÷0.422]; p=0.006), elective hospitalization (β=0.317; 95% CI [0.041÷0.594]; p=0.025) and length of hospital stay (β=0.039; 95% CI [0.001÷0.077]; p=0.046) were also statistically associated with pain intensity. However, these variables were interpreted as characteristics of the perioperative clinical course rather than purely baseline predictors. A trend toward an association with sex (β=–0.219; 95% CI [–0.469÷0.032]; p=0.087) suggests potential sex-related differences in pain perception, while age was not a significant factor.

Inclusion of physical parameters (pulse characteristics and blood pressure) did not significantly alter the model, and none of these variables reached statistical significance (p>0.05), indicating limited additional explanatory value for postoperative pain intensity in this dataset. Importantly, obesity and preoperative pain remained stable predictors.

Analysis of treatment-related variables showed no significant effect of analgesic therapy, antibiotic administration, or anticoagulant therapy on pain intensity at 1 month (p>0.05), suggesting limited additional explanatory value of these variables for early postoperative pain in this dataset. However, obesity and baseline pain remained significant (β=0.415; 95% CI [0.130÷0.700]; p=0.005 and β=0.255; 95% CI [0.068÷0.441]; p=0.008, respectively).

Addition of blood glucose level did not demonstrate a significant association with pain intensity (β=–0.029; 95% CI [–0.156÷0.098]; p=0.648), suggesting that glycemic status was not a determinant factor in this cohort. Obesity and preoperative pain remained significant predictors.

When coagulation parameters were analyzed, INR was used as an integrated marker. It did not show a statistically significant association with pain (β=–0.153; 95% CI [–1.348÷1.041]; p=0.799), indicating no direct relationship between coagulation status and pain intensity in the early postoperative period. Obesity and baseline pain remained significant.

Univariate analysis of lipid profile parameters revealed that none of the components (total cholesterol, LDL, HDL, triglycerides, atherogenic index) significantly influenced pain intensity (p>0.05). Meanwhile, obesity and baseline pain remained consistently significant across all models.

Among complete blood count parameters, only leukocyte count demonstrated a statistically significant inverse association with pain intensity (β=–0.067; 95% CI [–(0.134÷0.001)]; p=0.047). However, this association was marginal and its clinical interpretation remains uncertain. Since detailed markers of inflammatory status and infectious complications were not assessed, this finding may reflect residual confounding or sample-specific variability rather than a stable biological relationship. Other hematological parameters showed no significant associations.

In the final exploratory regression model, obesity (β=0.475; 95% CI [0.205÷0.745]; p=0.001) and preoperative pain level (β=0.234; 95% CI [0.062÷0.406]; p=0.008) were the most clinically consistent factors associated with pain intensity at 1 month after arthroscopic ACL reconstruction. Male sex (β=–0.258; 95% CI [–(0.497÷0.019)]; p=0.035), elective hospitalization (β=0.272; 95% CI [0.001÷0.542]; p=0.049), length of hospital stay (β=0.043; 95% CI [0.007÷0.080]; p=0.021), and leukocyte count (β=–0.066; 95% CI [–(0.130÷0.003)]; p=0.041) also reached statistical significance. However, elective hospitalization and length of hospital stay should be interpreted cautiously, as they may reflect features of the perioperative clinical course rather than purely baseline predictors. The inverse association with leukocyte count was also marginal and requires cautious interpretation. The model explained 37.6% of the variance in pain intensity (R^2=0.376), indicating that a substantial proportion of pain variability remained unexplained.

Thus, in the early postoperative period, pain intensity was associated with a combination of metabolic and clinical factors, particularly obesity and baseline pain intensity. Associations with leukocyte count and hospitalization-related variables should be regarded

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as exploratory and interpreted with caution due to possible residual confounding and uncertainty regarding causal direction.

Discussion

Our findings indicate that patients with obesity undergoing arthroscopic ACL reconstruction had higher pain intensity at 1 month and demonstrated a small laboratory difference in aPTT compared with non-obese patients. However, the coagulation findings should be interpreted cautiously, as the absolute aPTT difference was small, both values were within the laboratory reference range, and no clinical thromboembolic outcomes were assessed. These results are consistent with contemporary international data showing that obesity adversely affects short-term outcomes after ACL reconstruction, although it does not always influence long-term revision rates.

In a propensity score–matched analysis by Fang and Liu, obesity was associated with longer hospital stay (adjusted β=0.32) and increased likelihood of discharge requiring additional care (OR=2.18; 95% CI [1.47÷3.22]) [6]. This supports the broader observation that obesity may complicate the early postoperative course. In the present study, length of hospital stay was associated with pain intensity at 1 month; however, this association should not be interpreted as necessarily causal, because hospital stay may also reflect perioperative complexity, postoperative recovery characteristics, or other unmeasured clinical factors.

Similarly, Ajjawi et al. reported that obesity was associated with higher odds of 90-day complications (OR=3.08), serious complications (OR=2.19), and readmissions (OR=6.40), including increased risks of pulmonary embolism (OR=3.97), deep vein thrombosis (OR=2.18), and surgical site infection (OR=2.03) [9]. These data indicate that obesity may be associated with a less favorable postoperative risk profile after ACL reconstruction. However, in the present study, the observed aPTT difference alone is insufficient to confirm clinically meaningful thrombotic risk, particularly in the absence of assessed thromboembolic events.

Our observation regarding the adverse impact of obesity is also consistent with findings by Alkhatatba M. et al. (2024) [10], who demonstrated that higher BMI negatively affected subjective outcomes following primary ACL reconstruction, including IKDC scores at a mean follow-up of approximately 49 months. This aligns with our results, indicating that the effect of obesity is evident even in the early postoperative period.

However, current literature suggests that the impact of BMI is not uniform. Lustig et al. found no significant association between BMI ([15÷30] kg/m²) and most patient-reported outcomes after ACL reconstruction using a bone–patellar tendon–bone graft, although some sex-specific differences were observed. This does not contradict our findings, as our study specifically evaluated obesity (BMI ≥30 kg/m²) and early outcomes [11].

Furthermore, Byun et al. demonstrated that obesity did not increase revision rates but was associated with a higher risk of subsequent procedures related to osteoarthritis and meniscal pathology, supporting the concept of an unfavorable metabolic-inflammatory phenotype affecting long-term joint health [12].

The potential clinical relevance of coagulation assessment in patients undergoing ACL reconstruction may be considered in the context of studies on Venous Thrombo-Embolism (VTE). Xiong Y. et al. (2023) [13] reported a significantly increased risk of VTE after ACL injury and reconstruction (HR=11.44; 95% CI [2.71÷48.28]) within 1 year. Joo Y.B. et al. (2022) [14] reported an 8.1% incidence of deep vein thrombosis detected by routine ultrasonography, including asymptomatic cases, highlighting the importance of evaluating thromboembolic outcomes in future studies.

Similarly, Hashimoto Y. et al. (2023) [15] identified VTE in 11.0% of patients using contrast-enhanced CT after ACL reconstruction. Although no other coagulation parameters differed significantly between groups in our study, the small difference in aPTT observed in patients with obesity may warrant further investigation in studies that include standardized thromboprophylaxis protocols and clinical thromboembolic outcomes.

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In terms of thromboprophylaxis, Yazdi H. et al. (2024) [16] demonstrated that aspirin was as effective as low-molecular-weight heparins in low-risk patients; however, patients with BMI >40 kg/m² were excluded, limiting generalizability to obese populations. This suggests that future studies should more specifically evaluate thromboprophylaxis strategies in obese patients undergoing ACL reconstruction.

Finally, Hart H.F. et al. (2024) [17] demonstrated that each 1 kg/m² increase in BMI was associated with a 17% higher risk of progression of tibiofemoral cartilage lesions over 5 years (RR=1.17; 95% CI [1.09÷1.23]), supporting the concept that obesity negatively affects joint recovery.

This study has several ***limitations***. First, the single-center design and relatively limited sample size may restrict the generalizability of the findings. Second, patients were allocated to groups according to BMI category rather than randomization, and residual confounding cannot be excluded. Third, outcome assessment was not blinded. Fourth, although analgesic, antibiotic, and anticoagulant therapy were considered in the analysis, detailed standardized data on postoperative rehabilitation adherence, physical therapy after discharge, socioeconomic status, and psychosocial factors were not available. These factors may substantially influence pain intensity after ACL reconstruction. Fifth, elective hospitalization and length of hospital stay were included as exploratory variables reflecting perioperative clinical course characteristics; however, reverse causation cannot be excluded, and their association with pain intensity should be interpreted as descriptive rather than causal. Sixth, the inverse association between leukocyte count and postoperative pain was marginal (p=0.047) and lacks a clear pathophysiological explanation; it may represent a statistical artifact or residual confounding by unmeasured factors such as smoking or subclinical inflammation, and should not be overinterpreted. Seventh, the comparison of aPTT between obese and non-obese groups was not adjusted for potential confounders including age, sex, comorbidities, or anticoagulant and analgesic use; therefore, this finding should be considered unadjusted and exploratory rather than evidence of an independent prothrombotic effect of obesity. Eighth, the observed difference in aPTT, although statistically significant, was small in absolute magnitude and remained within the laboratory reference range; therefore, it should not be interpreted as direct evidence of clinically confirmed thrombotic risk. Ninth, clinical thromboembolic events such as deep vein thrombosis or pulmonary embolism were not assessed. These considerations do not alter the primary conclusions regarding obesity and preoperative pain as the most clinically consistent predictors of pain intensity, but they underscore the need for cautious interpretation and external validation in future studies.

Conclusions

Thus, based on the assessment of clinical and laboratory characteristics of patients with isolated ACL injury and obesity prior to arthroscopic reconstruction, as well as the identification of statistically significant predictors of increased postoperative pain intensity, the following findings were established:

1. Patients with obesity demonstrated a statistically significant but small absolute reduction in aPTT prior to arthroscopic ACL reconstruction (31.00 [30.70÷32.25] s vs 31.50 [31.30÷31.70] s; p=0.014). However, both values were within the laboratory reference range, other coagulation parameters did not differ significantly, and clinical thromboembolic events were not assessed. Therefore, this finding should be interpreted cautiously as a laboratory difference rather than direct evidence of clinically confirmed thrombotic risk.

2. Obesity was independently associated with increased pain intensity at 1 month after ACL reconstruction in the final exploratory regression model (β=0.475; 95% CI [0.205÷0.745]; p=0.001).

3. Higher preoperative pain levels were associated with greater postoperative pain intensity (β=0.234; 95% CI [0.062÷0.406];

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p=0.008), supporting the importance of preoperative pain assessment.

4. Additional factors statistically associated with pain intensity included sex, elective hospitalization, longer hospital stay, and leukocyte count. However, hospitalization-related variables and leukocyte count should be interpreted cautiously because of possible residual confounding, uncertain causal direction, and limited clinical effect size.

5. The final model explained 37.6% of the variance in pain intensity (R^2=0.376), indicating that a substantial proportion of postoperative pain variability remained unexplained. Therefore, the model should be considered exploratory and requires external validation before use in routine clinical risk stratification.

Declarations

Conflict of interest is absent.

The author of the manuscript states that in the process of conducting research, preparing, and editing this manuscript, no generative AI tools or services were used to perform any of the tasks listed in the Generative AI Delegation Taxonomy (GAIDeT, 2025). All stages of work (from the development of the research concept to the final editing) were carried out without the involvement of generative artificial intelligence, exclusively by the author.

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ОЖИРІННЯ ЯК ПРЕДИКТОР ПІСЛЯОПЕРАЦІЙНОГО БОЛЮ ТА ПРОТРОМБОТИЧНИХ ЗМІН У ПАЦІЄНТІВ ПІСЛЯ АРТРОСКОПІЧНОЇ РЕКОНСТРУКЦІЇ ПЕРЕДНЬОЇ ХРЕСТОПОДІБНОЇ ЗВ'ЯЗКИ

Актуальність. Пошкодження передньої хрестоподібної зв'язки (ПХЗ) є однією з найчастіших причин нестабільності колінного суглоба.

Мета. Визначити клініко-лабораторні особливості пацієнтів із ізольованим ушкодженням передньої хрестоподібної зв'язки та ожирінням перед артроскопічною реконструкцією та встановити предиктори ризиків підвищення інтенсивності болю після оперативного втручання у таких хворих.

Матеріали та методи. Проведено одноцентрове проспективне контрольоване дослідження 90 пацієнтів із ізольованим ушкодженням ПХЗ колінного суглоба, пролікованих у 2022–2024 рр. у травматологічному відділенні КНП ХОР «Обласна клінічна лікарня». Основну групу становили 38 пацієнтів з ожирінням (індекс маси тіла (ІМТ) ≥30 кг/м²), контрольну – 52 пацієнти без ожиріння. Оцінювали рівень глюкози крові, показники коагулограми (ПТЧ, ПТІ, МНО, АЧТВ, ТЧ, фібриноген) та визначали предиктори інтенсивності болю через 1 місяць після реконструкції ПХЗ за візуально-аналоговою шкалою (ВАШ). Статистичний аналіз виконано з використанням IBM SPSS Statistics 25.0, непараметричних методів та множинної лінійної регресії. Дослідження виконано в межах дисертаційної роботи автора без зовнішнього фінансування та офіційної реєстрації клінічного випробування.

Етика. Усі пацієнти надали інформовану згоду на участь у дослідженні. Роботу виконано відповідно до положень Нюрнберзького кодексу та Гельсінської декларації. Дослідження схвалене комісією з біоетики Харківського національного медичного університету.

Результати. У пацієнтів із ожирінням виявлено статистично значуще, але незначне за абсолютною величиною зменшення АЧТВ – 31,00 [30,70÷32,25] с проти 31,50 [31,30÷31,70] с у групі без ожиріння (p=0,014). Обидва значення перебували в межах лабораторного референтного інтервалу. У фінальній експлораторній регресійній моделі ожиріння (β=0,475; 95 % ДІ [0,205÷0,745]; p=0,001) та вищий доопераційний рівень болю (β=0,234; 95 % ДІ [0,062÷0,406]; p=0,008) були найбільш клінічно послідовними факторами, асоційованими з інтенсивністю болю через 1 місяць після реконструкції ПХЗ.

Висновки. Ожиріння було незалежно асоційоване з більш вираженим больовим синдромом через 1 місяць після реконструкції. У пацієнтів з ожирінням виявлено статистично значущу, але незначну за абсолютною величиною відмінність АЧТВ, тоді як інші показники коагулограми залишалися зіставними між групами. Клінічні тромботичні ускладнення не оцінювалися.

Ключові слова: *ортопедія та травматологія, артроскопічна реконструкція, біль, ВАШ, предиктори.*

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