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Patellar tendinopathy after arthroscopic meniscus resection, with «anterior knee pain» syndrome

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Patellar tendinopathy is a common problem in patients after arthroscopic interventions, accompanied by chronic pain and limitations in knee joint function. The purpose of the study was to analyze the dynamics of clinical and functional parameters in patients with patellar tendinopathy within 3 months after surgery and standard rehabilitation. Methods. The study involved 196 patients with diagnosed patellar tendinopathy (29.1 %) who underwent arthroscopic meniscus resection. All patients received a standard course of rehabilitation measures. Control was performed after 2 weeks, 6 weeks and 3 months, assessing the level of pain on the VAS scale, functional capacity on the KSS and AKPS scales, as well as quality of life on the SF-36 scale. Results. It was found that in patients who underwent comprehensive rehabilitation, the level of pain decreased from 6.9 ± 1.0 to (2.2 ± 0.6) points (68.12 % decrease). According to the AKPS scale, functional capabilities increased from 62 ± 4.4 to (64 ± 1.6) points (an increase of 3.2 %). The restoration of motor and psychological functions contributed to a significant improvement in the quality of life: the SF-36 score increased to (78.2 ± 4.6) points, which is 15% more than the initial score and confirms the effectiveness of integrated approaches. Conclusions. Analysis of the results shows that in patients who developed patellar tendinopathy after arthroscopic meniscus resection, even 3 months after surgery, the level of functional ability and quality of life remained lower than before surgery. Overall, physical functioning decreased by 6.7 % (from 75 to 70 points). Role limitations related to physical health decreased from 65 to 22. Psychological indicators also improved: emotional well-being rose from 50 to 75, although it remained below the preoperative level. Social functioning decreased from 88 to 78, a decrease of 11.36 %. Pain levels decreased by 27.3 % (from 55 to 70), but pain sensations remain pronounced. Thus, most indicators failed to reach preoperative levels, although significant progress in recovery and functionality has been observed.

Тендинопатія наколінка — поширена проблема в пацієнтів після артроскопічних втручань, що супроводжується хронічним болем і обмеженнями у функціональності колінного суглоба. Мета. Проаналізувати динаміку клінічних і функціональних показників у пацієнтів із тендинопатією наколінка протягом 3 міс. після хірургічного втручання та стандартної реабілітації. Методи. У дослідженні взяли участь 196 осіб із діагностованою тендинопатією наколінка (29,1 %) після артроскопічної резекції м'якоті. Усі пацієнти отримували стандартний курс реабілітаційних заходів. Контроль проводили через 2 і 6 тижнів, 3 міс., оцінюючи рівень болю за шкалою ВАШ, функціональні можливості — за шкалами KSS і AKPS, а також якість життя за SF-36. Результати. Виявлено, що в хворих після комплексної реабілітації рівень болю знизився з $(6,9 \pm 1,0)$ до $(2,2 \pm 0,6)$ бала (зменшення на 68,12 %). За шкалою AKPS функціональні можливості підвищилися з $(62 \pm 4,4)$ до $(64 \pm 1,6)$ бала (зростання на 3,2 %). Відновлення рухових і психологічних функцій сприяло значному підвищенню якості життя: SF-36 зросло до $(78,2 \pm 4,6)$ бала, що на 15 % більше початкового і підтверджує ефективність комплексних підходів. Висновки. Аналіз результатів довів, що у пацієнтів, у яких розвинулася тендинопатія наколінка після артроскопічної резекції м'якоті, навіть через 3 міс. після операції рівень функціональної здатності й якості життя залишилися нижчим ніж до втручання. Фізичне функціонування знизлося на 6,7 % (з 75 до 70 бала). Обмеження фізичного здоров'я зменшилися з 65 до 22. Психологічні показники також покращилися, а емоційне благополуччя піднялося з 50 до 75. Щодо соціального функціонування, воно зменшилося з 88 до 78, що становить зниження на 11,36 %. Стосовно болю, рівень зменшився на 27,3 % (з 55 до 70), але больові відчуття все ще залишаються вираженими. Отже, більшості показників не вдалося досягти доопераційного рівня, хоча спостерігається значний прогрес у відновленні та функціональності. Ключові слова. Тендинопатія наколінка, артроскопія колінного суглоба; реабілітація; синдром «переднього болю» колінного суглоба.

Keywords. Patellar tendinopathy, knee arthroscopy; rehabilitation; anterior knee pain syndrome

Introduction

Patellar tendinopathy is a common complication in patients with various types of knee injuries, presenting with pain, decreased function, and may lead to chronic movement disorders [1, 2]. Of particular concern is the development of tendinopathy in those who have undergone arthroscopic meniscal resection, one of the most popular surgical procedures for meniscal injuries in young and active individuals [3, 4]. Although this procedure is generally considered to be minimally invasive, several studies have reported postoperative complications, including tendinopathy and anterior pain syndrome [5].

According to J. Amestoy et al., after arthroscopic interventions, some patients report pain symptoms localized to the anterior part of the knee joint, have greater atrophy of the quadriceps femoris muscle, as well as a significant loss of electrical contractility and muscle strength 6 weeks after surgery compared with the control group, and worse postoperative functional outcomes. Postoperative anterior pain is observed in individuals who have undergone different types of knee joint interventions: anterior cruciate ligament reconstruction or total knee arthroplasty. However, the authors note that there are no studies that have analyzed postoperative anterior pain after arthroscopic partial meniscectomy [3]. Other investigators emphasize in a clinical case report that patellar tendinopathy is not common after arthroscopic knee procedures. These degenerative changes are a complex clinical problem that requires long-term treatment. Pain relief is achieved after a period of more than 8 months, and signs of knee ligament regeneration are observed after a year [5].

As of 2025, no study has been conducted to analyze the incidence of patellar tendinopathy in non-athletes who have undergone arthroscopic meniscal resection. Therefore, it is very important to determine the prevalence of anterior knee pain in patellar tendinopathy in patients after meniscal resection and to identify the impact on knee function and quality of life in this group of patients.

Purpose: To analyze the incidence of patellar tendinopathy, knee function, and the impact on quality of life in patients with anterior knee pain with existing patellar tendinopathy that developed after arthroscopic meniscal resection.

Material and methods

Study design and population

We conducted a prospective study that included the following stages: examination of patients before surgery, 14 days, 6 weeks and 3 months after surgery.

The study was performed at the clinical base of the Department of Joint Diseases in Adults of the State Institution "Institute of Traumatology and Orthopaedics of the National Academy of Medical Sciences of Ukraine" and was approved by the Bioethics Commission of this institution (rotocol No. 5 dated 09.02.2023).

The study involved 196 subjects with a meniscus resection performed using arthroscopic techniques (88 women aged (29.4 ± 6) years and 108 men (34.8 ± 6) years).

Inclusion criteria: patient age from 18 to 50 years, BMI < 30, confirmed meniscus injury (Stoller 3A-3B) on MRI, without injury to other intra-articular structures, arthroscopic intervention on the knee joint (resection of part of the meniscus), development of pain in the anterior part of the knee joint in the area of the patellar ligament, its tendinopathy according to clinical data within 14 days of surgical intervention.

Exclusion criteria: patients who had concomitant injuries of the knee joint structures (chondromalacia, damage to the anterior/posterior cruciate or collateral ligaments, loose bodies in the joint cavity) or dysplasia in the knee joint, high kneecap (patella alta), degenerative changes in the kneecap identified during MRI examination.

All patients provided written informed consent to participate in the study in accordance with the requirements of the Declaration of Helsinki (version 2013) and current legislation of Ukraine.

Research methods

Methods of subjective pain assessment used in the study included the visual analogue scale (VAS) [7], allowing the patients to independently assess the level of pain from 0 (absence) to 10 (maximum pain), the Knee Society Score (KSS), Kujala/Anterior knee pain score (AKPS) and Short Form Health Survey (SF-36).

The KSS classification consists of an assessment of knee pain and function and allocates a maximum of 100 points for the indicators of range of motion (1 point per 5°, maximum 125°), stability (medial/lateral (15 points) and anterior/posterior (10 points)) and pain (50 points) with deduction of extension lag, presence of flexion contracture and curvature (if the axis of the lower limb is < 5° or > 10° on radiographic examination). The maximum score of 100 points means a well-aligned knee joint with an amplitude of motion of 125°, almost complete absence of either anteroposterior or mediolateral instability, and pain. The functional analysis considers walking distance (50 points) and stair climbing (50 points) with the use of assistive devices. A patient who can walk with-

out limitation and has no difficulty climbing stairs receives the maximum score on the Function Score subscale, 100 points.

The Anterior Knee Pain Scale (AKPS, Kujala) is a 13-item self-report questionnaire that measures subjective responses to certain activities and symptoms known to be associated with anterior knee pain syndrome. The AKPS is scored from 0 to 100, with 100 being the highest possible score. Lower scores reflect greater pain and disability.

Anterior knee pain often leads to impairments that cause difficulty performing activities that place stress on the knee joint (running, squatting, and climbing stairs), and the AKPS assesses these activities. This index has high test-retest reliability and is a valuable tool for studying the patient's condition over time [8, 9]. The four formats of the AKPS scale were found to have acceptable standard errors of measurement (0.82 to 3.00), high internal consistency (α coef = 0.83–0.91), equivalence between the short and long forms ($r = 0.98$), and moderate to high criterion validity as determined by physician diagnosis: 0.92 (13-item form), 0.90 (long form), and 0.90 (short 6-item form). The AKPS questionnaire is an effective epidemiological screening tool with a valid and reliable assessment of anterior knee pain [10].

Another subjective method of the study was the use of the SF-36 scale [11], which assessed the quality of life of the subjects according to five main criteria: mobility, self-care, usual activities, pain/discomfort and psycho-emotional state. Patients filled out a questionnaire before treatment and during follow-up, which allowed to identify the impact of therapy on general well-being. The tool includes scales for physical and social functioning, role limitations due to physical or emotional problems, mental health, energy, pain and general perception of health. A high score corresponds to a better health status. The SF-36 questionnaire has been validated in patients with musculoskeletal conditions and is widely used in clinical practice.

A dynamic analysis was used to assess changes in pain, joint function, and quality of life over the entire follow-up period (preoperative, 14 days, 6 weeks, and 3 months postoperatively).

Clinical analysis

Clinical assessment is the most appropriate tool and standard criterion for diagnosing patellar tendinopathy.

The first clinical task is to determine whether the tendon is the source of the patient's symptoms. The most common finding on manual examination is focal tenderness [12, 13]. Although pain can occur

along the entire length of the patellar tendon, it most commonly occurs at the lower part and distal attachment to the tibial tuberosity.

Pain has been reported to be exacerbated by weight-bearing on the knee extensors.

Functional tests for patients with patellar tendinopathy include jumping and landing afterwards [14].

The main differential diagnosis of this disease is patellofemoral pain syndrome, which is defined as a form of nonspecific, nonstructural pain in the knee, around or behind the kneecap. This syndrome is characterized by crepitus or “creaking” under the kneecap during knee flexion and tenderness along the patellar facets [34].

Statistical analysis was performed using standard approaches. The average values of patient indicators were used for it. Quantitative indicators (mean (M) and its standard deviation (SD)) in the study groups were compared with each other and in the time course of observation.

The relative reduction in the severity of symptoms (% reduction in pain intensity and functional improvement) was calculated. The incidence of complications was analyzed, which was presented as a percentage of the total number of patients.

Results

The main demographic and diagnostic characteristics of the participants: the mean age was (29.4 ± 6) years in women (18 %) and (34.8 ± 6) years in men (82 %). The mean body mass index (BMI) of the examined was (28.6 ± 6.0) kg/m². The most common type of surgical intervention performed on patients was arthroscopic resection of the damaged part of the meniscus (74 %) and debridement of fibrous growths that create impingement with articular structures (26 %).

Using clinical and instrumental examination (ultrasound) on the 14th day after surgery, patients were divided into 2 groups. Group 1 comprised patients exhibiting both clinical signs of tendinopathy and sonographic alterations in the patellar ligament, whereas group 2 consisted of patients without these manifestations.

Significant differences were found in the two groups of patients according to the above signs ($p < 0.001$). Table 1 presents the clinical symptoms of patellar tendinopathy and their manifestation on the 14th day after surgery.

Table 2 presents the sonographic signs of patellar tendinopathy and their manifestation by patient groups on the 14th day after surgery.

Instrumental examination showed that patients with clinical symptoms of tendinopathy (group 1) had significant sonographic differences in the knee ligament, which were not observed in group 2 ($p < 0.001$). Patients in group 1 had changes in the smoothness of the ligament contour, a decrease in its echogenicity and increased vascularization, while group 2 patients were found to have the opposite sonographic presentation. In both groups, thickening of the patellar ligament was observed, which cannot be considered a characteristic change for tendinopathy and manifestations of pain syndrome ($p > 0.1$). Table 3 presents data on the time course of changes in the level of pain according to the pain scales and the function of patients during observation.

An examination of the results indicates that patients with patellar tendinopathy who undergo surgical intervention experience a slower-than-anticipated and incomplete recovery of knee joint function during rehabilitation.

According to the VAS scale, the pain level decreased by 68.12 %, from 6.9 to 2.2 points, but even

after 3 months the pain remained relatively moderate and did not decrease significantly. This indicates that it persists and is still a concern, which is confirmed by the high proportion of patients with unsatisfactory or moderate function.

With respect to functional indicators, the KSS scale exhibited a decline of approximately 48.65 % after two weeks. While a notable improvement was recorded at three months, with an increase of 52.70 %, overall functioning remained suboptimal, reaching only 58 out of 100 points.

The level of AKPS indicators in patients with patellar tendinopathy demonstrates significant dynamics of the condition. Before surgery, it was 68 points. During the first 2 weeks after the intervention, this indicator deteriorated significantly and decreased to 28 points, manifesting a decrease of approximately 58.82 % from the initial level. This reflects a significant decrease in functional capacity in the postoperative period.

However, 6 weeks after surgery, an improvement was observed, the AKPS level increased to 54 points,

Clinical symptoms of patellar tendinopathy and their manifestation in patients on the 14th day after surgery

Clinical symptom	Patient (n = 96)		Yates corrected Chi-square
	before surgery	14 th day after surgery	
Focal pain in the lower (distal) part of the patellar tendon (infrapatellar point)	7 (3.6 %)	52 (26.5 %)	38.35
Pain along the tendon (diffuse)	4 (2.0 %)	48 (24.5 %)	41.00
Pain during resisted knee extension	17 (8.7 %)	55 (28 %)	23.29
Pain when squatting on the operated limb (single leg squat)	21 (10.7 %)	57 (29 %)	19.61
Pain associated with exercise (strengthening after jumping)	14 (7.1 %)	54 (27.5 %)	27.06
Pain during maximum vertical jump (decreased jump height)	9 (4.6 %)	55 (28 %)	37.81

Note. Pearson's criterion in all cases was $p < 0.001$.

Sonographic signs of patellar tendinopathy and their manifestation by patient groups on the 14th day after surgery

Сонографічний параметр		Group 1 (n = 57)	Group 2 (n = 139)
Contours (evenness, clarity)	not changed	3 (5.3 %)	124 (89.2 %)
	changed	54 (94.7 %)	15 (10.8 %)
Ligament structure, thickness (compared to the opposite side)	enlarged	55 (96.4 %)	128 (92 %)
	not enlarged	2 (3.6 %)	11 (8 %)
Echogenicity	not changed	5 (8.8 %)	121 (87 %)
	changed (decreased)	52 (91.2 %)	18 (13 %)
Vascularization	not changed	5 (8.8 %)	133 (95.6 %)
	changed	52 (91.2 %)	6 (4.4 %)

Table 3

**Time course of changes in the studied parameters before and after surgical intervention
in patients of groups 1 and 2 (M ± SD)**

Parameter	VAS	Assessment by KSS		AKPS	p
		pain	function		
Group 1 (n = 57)					
Before surgery	6.9 ± 1.0	74 ± 5.2	62 ± 4.4	68 ± 4.3	p < 0.001
After surgery: 2 weeks	5.2 ± 1.2	38 ± 8.6	32 ± 7.2	28 ± 8.8	p < 0.001
6 weeks	3.8 ± 0.3	48 ± 6.5	52 ± 4.8	54 ± 5.8	p < 0.001
3 months	2.2 ± 0.6	58 ± 4.7	60 ± 3.8	64 ± 1.6	p < 0.050
Group 2 (n = 139)					
Before surgery	6.8 ± 1.1	76 ± 4.2	61 ± 4.7	89 ± 2.2	p < 0.001
After surgery: 2 weeks	3.9 ± 1.4	49 ± 7.4	46 ± 3.8	58 ± 8.5	p < 0.001
6 weeks	2.8 ± 0.2	62 ± 4.3	68 ± 6.9	77 ± 3.2	p < 0.001
3 months	1.2 ± 0.3	79 ± 4.5	82 ± 4.8	86 ± 3.6	p < 0.050

which is approximately 92.86 % more than the lowest level (28 points) and 20.59 % less than the initial 68. Despite some improvement in the dynamics of AKPS indicators, the level of residual symptoms and functional limitations were acutely felt even after 3 months, which indicates moderately satisfactory or unsatisfactory results.

This emphasizes the need to develop more effective rehabilitation and therapy methods for patients with patellar tendinopathy, since not all patients achieve full restoration of functions and reduction of pain. Fig. 1. shows the results of assessing the quality of life on the SF-36 scale in patients with clinical signs of this disease.

Analysis of the indicators shows that, despite significant recovery, in most patients who developed patellar tendinopathy, the level of quality of life after surgery remained lower compared to the preoperative state.

Physical functioning before the intervention was estimated at 75 points. In 3 months the indicator increased to 70 points, which is 13.3 % less than the initial one. Despite significant recovery, the level of physical functioning did not return to the preoperative level.

Role limitations due to physical health decreased from 65 to 22 — (67.16 %) — however, at the final stage, in the 3-month period, the level increased to 68 points. This means that patients were already able to perform role functions, but the level remained slightly lower than the initial one — only 3 %.

Role limitations due to emotional state decreased from 67 to 22 — a decrease of 67.18 %. After 3 months, this indicator increased to 65, by 38.6 %

compared to the postoperative level, which indicates a partial improvement in the psychological state, but it remained worse than before the operation.

As for the energy/fatigue level, it decreased from 50 to 32, by 36.0 %. In 3 months, this indicator increased to 80, which is 60 % higher than the initial level, but much higher than the postoperative level. This indicates the restoration of vitality and energy potential, increased motivation.

Emotional well-being decreased from 65 to 50 (by 23.08 %). In 3 months, it increased to 75, which is 50 % higher than the minimum level after the operation and 15.38 % higher than the initial level.

The level of social functioning before surgery was 88 points. In 3 months, this indicator decreased to 78 (11.36 % less than before surgery). This indicated that although there was significant progress in restoring the social functioning of patients, there was no return to the preoperative level. As for pain, it changed from 55 to 70 (27.3 %), which indicates a rapid decline in pain, but it still remained quite pronounced. Analysis of the results shows that for most indicators, patients after surgery did not reach the level of quality of life that they had before surgery. Data after 3 months remain lower than before surgery (by 3–7 %), or at the level of 12–15 %, which indicates incomplete recovery and the need for additional rehabilitation measures to achieve full balance. There was a noticeable increase in energy and well-being; however, differences in social and physical functioning compared to preoperative indicators continued to be present.

Limitations

The study has a number of limitations that should be taken into account when interpreting the results:

the age of the patients is over 50 years, the presence of obesity (BMI > 30). In particular, the analysis did not include patients with damage to the articular cartilage (chondromalacia 1–4 grades according to Outerbridge), the capsular-ligamentous apparatus of the knee joint (damage to the anterior/posterior cruciate or collateral ligaments, patellar tendons, quadriceps tendon injuries), osteoarthritis II–IV grades according to Kellgren-Lawrence, and dysplasia of the knee joints, which limits the possibility of extending the results to severe forms of the disease. Another limitation is the relatively short observation period, which did not exceed 3 months. This does not allow for an objective assessment of the long-term efficacy and safety of the studied methods of treatment and the risks of developing AKPS in the long term. Large-scale prospective studies with standardized treatment approaches, clear assessment criteria, and long-term follow-up are needed to draw definitive conclusions.

Discussion

The study was conducted using clinical scales (VAS, KSS, AKPS). The importance of early and comprehensive rehabilitation in patients with patellar tendinopathy after arthroscopic meniscus resection was confirmed. A notable reduction in pain and improvement of functional indicators is commonly observed in the short term in clinical settings; however, the presence of residual symptoms after 3 months reflects aspects of pathogenesis and regenerative processes within this cohort.

The results of our study coincide with the data of a number of authors who noted that the restoration of knee joint functionality is a slow process. Thus, A. Schwartz et al. have shown that in patients with tendinopathies of the knee joint, when using modern rehabilitation complexes (injection methods, eccentric exercises and surgical intervention), treatment with symptoms characteristic of such a nosology can last 24 months [18].

The psychological factor plays a significant role in recovery. According to B. Nwachukwu et al., psychological motivation and positive mood of patients are associated with high rates of functional recovery, and low levels of psychological support can cause prolonged recovery or chronicity of symptoms [19–21] in different groups of patients. Our results confirm this, since the increase in psychological indicators, such as emotional well-being and motivation, immediately correlated with the improvement of physical functions, which is relevant for the further application of complex approaches taking into account psychological support.

Another critical aspect is the nature of regenerative processes in tendons and muscle tissues after microtrauma. Numerous studies have demonstrated that regenerative processes in damaged knee ligaments occur slowly and are difficult to treat [22, 24–26]. In our observation, standard rehabilitation protocols were used, but residual symptoms indicate the need to integrate new technologies.

Taking into account modern experience, the use of robotic systems to restore lower limb functions has

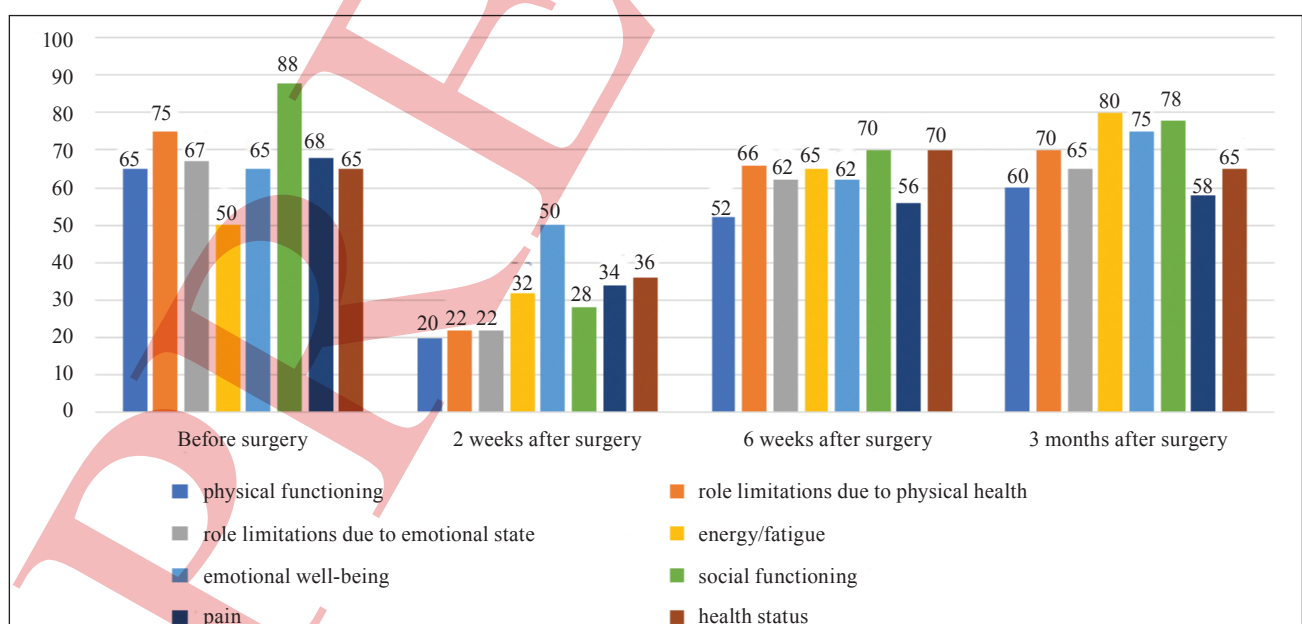


Figure. Results of the SF-36 quality of life assessment

been shown in numerous studies. Thus, R. Riener et al. have shown the effectiveness of such systems in accelerating rehabilitation processes and reducing pain syndrome, especially in the case of chronic lesions [27–30].

In addition, an important aspect is an individual approach and the use of combined therapy methods that combine physiotherapy, psychological support and modern technologies. Therefore, we emphasize the importance of a multidisciplinary approach to restoring functions and reducing symptoms in case of damage to the musculoskeletal system.

The study showed that patients with patellar tendinopathy after arthroscopy have significant difficulties in restoring knee joint functionality, as evidenced by insufficient pain relief and residual limitations even 3 months after surgery. This is consistent with the literature, which indicates that such chronic tendinopathies have a complex pathogenesis and require a long-term and comprehensive approach to treatment [32–34]. They develop due to microdamage in the patellar ligament due to overload, degenerative changes or impaired blood supply, which complicates rapid recovery.

Overall, our findings emphasize the importance of a comprehensive approach to the treatment and rehabilitation of patients with patellar tendinopathy after arthroscopic treatment. There is a pressing requirement for more extensive research employing advanced technologies and tailored interventions.

Conclusions

Analysis of the results indicates that patients who experienced patellar tendinopathy following arthroscopic meniscus resection exhibited reduced levels of function and quality of life for at least three months postoperatively. In particular, the level of physical functioning decreased by 6.7 % (from 75 to 70 points), which indicates the inability to fully restore physical capabilities. Role limitations due to physical health decreased from 65 to 22, by 67.16 % but by the 3-month period the level increased to 68 and remained slightly lower than the initial level (by 3 %).

Psychological indicators also improved: the level of role limitations due to emotional state decreased from 67 to 22, but after 3 months it increased to 65 (by 38.6 %) from the postoperative level and remained 2.99 % lower than the initial level. The level of energy/fatigue increased from 50 to 80 points — 60 % higher than the initial level, which indicates the restoration of vitality and motivation. Emotional well-being increased from 50 to 75, by 50 % but its

level remained 15.38 % lower than the initial level. Similarly, social functioning decreased by 11.36 % (from 88 to 78), recovering only partially.

From the point of view of pain syndrome, the level decreased by 27.3 % (from 55 to 70), which indicates a rapid improvement, but pain sensations still remained pronounced.

Thus, by most measures, patients did not achieve the level of quality of life that was before the operation, regardless of significant progress in the restoration of certain functional areas. This emphasizes the need for the implementation of additional rehabilitation measures to achieve full balance and restore functionality.

Conflict of interest. The authors declare that there is no conflict of interest.

Prospects for further research. According to the authors, future studies should pay attention to the role of rehabilitation programs and their impact on the recovery process of patients. Studies can also study the relationship between individual anatomical features of the knee joint and the risk of developing tendinopathy. In addition, it is necessary to study the long-term results of various therapeutic approaches to better understand their effectiveness in preventing and treating this condition, and to study the role of psychological factors and pain level in shaping long-term consequences and the treatment process. An important direction of research development is the creation of individualized rehabilitation protocols for patients with different degrees of damage and risk profiles, using modern instrumental methods, such as robotic orthoses. Advancing diagnostic precision through high-resolution ultrasound or MRI techniques enables a more accurate characterization of tendinopathy, while facilitating the examination of autonomic regulation in the lower limb.

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PATELLAR TENDINOPATHY AFTER ARTHROSCOPIC MENISCUS RESECTION, WITH «ANTERIOR KNEE PAIN» SYNDROME

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