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Application of the dry needle method in the correction of myofascial pain in women after caesarean section and myomectomy

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Abstract. Myofascial pain after uterine surgery, in particular caesarean section and myomectomy, is a common problem that significantly reduces the quality of life of women in the postoperative period. Traditional methods of treatment do not always demonstrate high efficiency, which necessitates the search for alternative approaches to pain relief, one of which is the dry needle method. The aim of the study was to evaluate the effectiveness of the dry needle method in the correction of myofascial pain in women after caesarean section and myomectomy in comparison with standard methods of treatment. The prospective randomised controlled trial involved 12 women (aged 25-45 years) who underwent caesarean section (n = 8) or myomectomy (n = 4). The patients were divided into a treatment group (n = 6), which received dry needling in addition to standard therapy, and a control group (n = 6), which received standard therapy alone. The pain intensity was assessed using a visual analogue scale, McGill questionnaire, quality of life (sf-36), anxiety and depression levels using the HADS scale were studied before treatment, 7, 14, 30 and 90 days after treatment. Patients in the main group showed a significant decrease in pain intensity by 45.8% after 7 days and 78.3% after 30 days of treatment, compared to the control group – 23.2% and 56.1%, respectively ($p < 0.01$). The sf-36 quality of life scores in the intervention group were 32.5% higher after 30 days and 41.2% higher after 90 days compared to the control group ($p < 0.01$). The level of anxiety and depression according to the HADS scale decreased by 38.7% and 42.3%, respectively, in the main group compared to the control group ($p < 0.05$). The use of the dry needle method in the complex treatment of myofascial pain in women after cesarean section and myomectomy demonstrates high efficiency in reducing pain intensity, improving the quality of life and psycho-emotional state of patients compared to standard methods of treatment. The method can be recommended as an additional therapeutic approach in such patients

Keywords: myofascial trigger points; rehabilitation; postoperative period; physical therapy; pain relief

Introduction

Myofascial pain syndrome (MPS) is a common issue for women following pelvic organ surgeries, especially after Caesarean sections and myomectomies. Current research indicates that the incidence of post-operative pain syndrome is around 60%, significantly exceeding other complications [1]. This highlights the urgent need for effective

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treatment and rehabilitation methods for these patients, as traditional approaches don't always provide adequate pain relief. Persistent pain substantially lowers quality of life, hinders social integration, and can lead to the pain syndrome becoming chronic.

Analysis of recent scientific publications reveals a growing interest in alternative MPS treatments, with dry needling holding a particularly important place. In their research, C. Fernández-de-Las-Peñas & J. Nijs [2] presented a contemporary neurophysiological model of how dry needling affects myofascial trigger points. They demonstrated that mechanical irritation from the needle triggers a cascade of tissue reactions, helping to reduce pain and muscle spasm. The authors noted that the method's effectiveness depends on accurately identifying trigger points and the correct technique for the manipulation.

An updated systematic review and meta-analysis by M.J. Navarro-Santana *et al.* [3] showed the effectiveness of dry needling for myofascial trigger points associated with neck pain symptoms. The researchers found a statistically significant reduction in pain intensity and improved functional status in patients compared to control groups, with the treatment effect lasting for an extended observation period.

I.C. Lara-Palomo *et al.* [4] systematically compiled data on dry needling's effectiveness for chronic lower back pain in their systematic review and meta-analysis of randomised controlled trials. The authors confirmed a significant reduction in pain intensity and improved functional status in the active treatment group compared to the control group, finding a correlation between the number of procedures and the degree of clinical effect.

In their systematic review, F. Dach & K.S. Ferreira [5] investigated the best evidence-based practices for treating myofascial lower back pain with dry needling. The researchers determined optimal procedure parameters (needle insertion depth, session duration, frequency of procedures) for achieving maximum therapeutic effect and developed recommendations for applying the method in various clinical situations.

Researchers M. Chys *et al.* [6] conducted an umbrella review on the clinical effectiveness of dry needling in patients with musculoskeletal pain. They systematised data on the mechanisms of dry needling for myofascial pain in different locations, identifying local, segmental, and central components of its analgesic effect. The researchers also demonstrated improved microcirculation in the area of myofascial trigger points after the procedure, which aids in flushing out inflammatory and pain mediators and is a key mechanism of the method's therapeutic action.

A significant contribution to understanding the effectiveness of myofascial trigger point therapy was made by M. Olesiejuk *et al.* [7] in their 2023 study. The authors demonstrated that myofascial trigger point therapy significantly reduces the myotonometric tone and stiffness of the trapezius muscle, leading to a notable improvement in headaches and muscle pain in patients with migraines. The study confirmed not only the local effects of trigger point therapy but also its systemic impact on pain sensitivity and neuromuscular function, which is particularly important for understanding the mechanisms of action in chronic pain syndromes.

A comprehensive review of the treatment and management of myofascial pain syndrome within the best practices of clinical anaesthesiology was presented by I. Urits *et al.* [8]. The researchers determined the optimal parameters for the dry needling procedure (needle insertion depth, session duration, frequency of procedures) to achieve maximum therapeutic effect and developed clinical recommendations for applying the method in various clinical situations, including the post-operative period.

Of particular interest is the randomised controlled clinical trial by N. Sedighimehr *et al.* [9], conducted in 2024 and dedicated to the effectiveness of dry needling for chronic pelvic pain in women. The authors demonstrated that myofascial trigger points play a key role in the development of central sensitisation in pelvic pain, and that dry needling can effectively modulate pain responses at the spinal cord level and in higher parts of the nervous system. This study is especially valuable for understanding the mechanisms of dry needling in pain syndromes in women after pelvic organ surgeries, demonstrating the potential to influence central pain mechanisms that often complicate the post-operative course.

Despite the considerable amount of scientific research on the effectiveness of dry needling for myofascial pain of various origins, there is still a lack of sufficient attention in contemporary literature to its specific application in women following gynaecological and obstetric surgeries. Most existing studies focus on musculoskeletal pathology, and the characteristics of myofascial pain syndrome after uterine interventions and the effectiveness of dry needling in this category of patients remain under-researched. The study's aim was to evaluate the clinical effectiveness of dry needling in the complex treatment of myofascial pain in women after Caesarean sections and myomectomies by determining changes in pain intensity, quality of life, and psycho-emotional state of patients compared to standard therapy methods.

Materials and Methods

This prospective, randomised controlled study was conducted at the Department of Biosafety and Human Health at the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" and the "Spina+" rehabilitation centre. Data was collected between December 2024 and April 2025. The study adhered to the principles of the World Medical Association's Declaration of Helsinki, specifically "Ethical Principles for Medical Research Involving Human Subjects" [10]. All participants were fully informed of the potential risks associated with consenting to the use of their data in scientific research, as well as the assurance of anonymity and confidentiality. Following this, they provided signed consent to participate.

The study included 12 women aged 25 to 45 years (mean age 34.2 ± 5.7 years). All participants had undergone

either a Caesarean section (n = 8) or a myomectomy (n = 4) and had been diagnosed with myofascial pain syndrome according to the diagnostic criteria of J.G. Travell *et al.* [11]. Criteria for inclusion of patients in the study:

1. Women aged 25-45 years after caesarean section or myomectomy;
2. The presence of myofascial pain of moderate to high intensity (> 4 points on the visual analogue scale (VAS);
3. Postoperative period – from 4 weeks to 6 months;
4. Signing an informed consent to participate in the study.

Exclusion criteria:

1. Presence of acute infectious diseases;
2. Blood clotting disorders and anticoagulant use;
3. Allergic reactions to metals (for dry needle method);
4. Mental disorders;
5. Oncological diseases;
6. Pregnancy;
7. Decompensated somatic diseases;
8. Patient refusal to participate in the study.

The patients were divided into two groups: the main group (n = 6) – patients who received treatment with the dry needle method in addition to standard therapy; the control group (n = 6) – patients who received only standard therapy. Each group included 4 patients after caesarean section and 2 patients after myomectomy. The groups were comparable in terms of age, social status, parity, body mass index, postoperative period, and pain nature and intensity ($p > 0.05$).

Standard therapy in both groups included:

- non-steroidal anti-inflammatory drugs (meloxicam 15 mg/day) for 7 days;
- muscle relaxants (tizanidine 4 mg twice daily) for 14 days;
- physiotherapy procedures (low-intensity laser therapy, 10 sessions);
- a complex of therapeutic physical culture (daily throughout the observation period).

In the main group, dry needling was additionally performed. The procedures were performed by a certified specialist with at least 5 years of experience. Disposable sterile acupuncture needles with a size of 0.25 × 40 mm were used. The treatments were performed twice a week for the first two weeks, then once a week for the next two weeks (6 sessions in total).

During the dry needling procedure, active myofascial trigger points were targeted, which were detected by palpation in the muscles of the anterior abdominal wall (rectus abdominis, external and internal obliques), lumbosacral muscles and pelvic floor muscles. When myofascial trigger points (MTPs) were identified, the needle was inserted perpendicular to the skin and advanced until it reached the muscle (Fig. 1). After that, rapid reciprocating movements of the needle in different directions were performed to obtain a local twitch response. The needle was left in the tissue for 10-15 minutes, and periodic manipulations (scrolling, deepening, surface movements) were performed to maintain the feeling of deqi (a specific sensation in acupuncture).

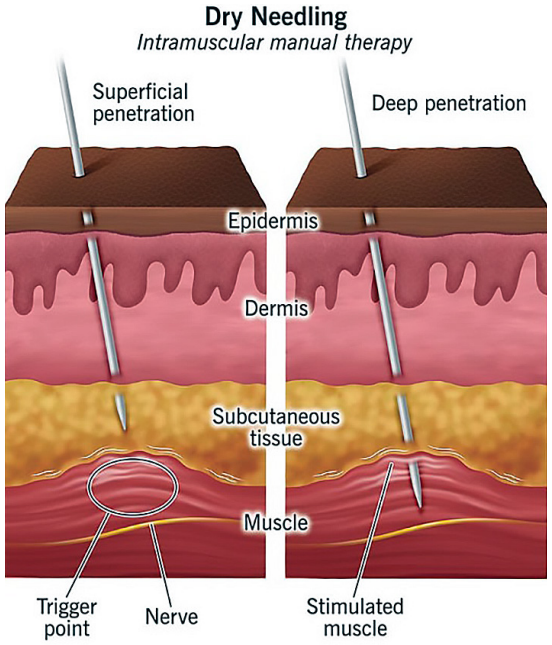

Figure 1. Schematic representation of the dry needle insertion technique
Source: [12]

The effectiveness of the treatment was assessed by the following parameters:

- Pain intensity on the Visual Analogue Scale (VAS) from 0 to 10 points;
- Qualitative pain characteristics using the McGill Pain Questionnaire;
- Quality of life using the SF-36 questionnaire;
- Anxiety and depression levels using the Hospital Anxiety and Depression Scale (HADS);
- Number of active myofascial trigger points (MTP);
- Need for additional use of analgesic medications;
- Presence of side effects and complications.

Statistical data processing was performed using SPSS Statistics v.25.0 software. For quantitative data, the mean and standard deviation (M ± SD) were calculated. Student's t-test for independent samples and χ^2 test for categorical variables were used to assess the reliability of differences between groups. Differences were considered statistically significant at $p < 0.05$.

Results and Discussion

A comprehensive study of the effectiveness of the dry needle method in 12 women after uterine surgery demonstrated statistically significant advantages of this method compared to standard therapy in all evaluated parameters. The obtained results revealed not only the analgesic effect of the method, but also its positive impact on the quality of life and psycho-emotional state of patients, which is of great clinical importance for this category of patients.

The average age of patients in the main group was 33.8 ± 5.4 years, in the control group – 34.6 ± 6.0 years ($p = 0.47$). Body mass index in the main group was

26.4±4.2 kg/m², in the control group – 25.9 ± 3.8 kg/m² (p = 0.56). The average postoperative period at the time of inclusion in the study was 8.4 ± 2.1 weeks in the main group and 8.2 ± 1.9 weeks in the control group (p = 0.63). The groups were comparable in terms of socio-demographic characteristics, obstetric and gynaecological history and the nature of the operations (p > 0.05).

The initial VAS pain intensity in patients of the main group was 6.8 ± 1.2 points, in the control group – 6.7 ± 1.3 points (p = 0.78). The most frequent MTPs were detected in the rectus abdominis muscles (83.3%), lumbar muscles (76.7%), lumboiliac muscles (65.0%) and pelvic floor muscles (58.3%). The average number of active MTPs in the main group was 5.4 ± 1.8, in the control group – 5.2 ± 1.6 (p = 0.68).

In patients of the main group treated with the dry needle method, a progressive decrease in pain intensity was observed throughout the observation period. In particular, the VAS scores decreased by 45.8% after 7 days, 61.5% after 14 days, 78.3% after 30 days and 85.2% after 90 days of treatment compared to the baseline. In the control group, the reduction in pain was less pronounced, with the corresponding figures being 23.2%, 40.3%, 56.1% and 65.3% (p < 0.01 between groups at all stages). This result demonstrates not only a more significant analgesic effect of complex treatment with the inclusion of the dry needle method, but also a faster achievement of the therapeutic effect, which is especially important for patients in the early postoperative period.

A clinically significant reduction in pain (defined as a ≥ 50% decrease from baseline) was observed in 78.3% of patients in the main group and in 43.3% of those in the control group after 14 days (p < 0.001), and in 91.7% and 66.7%, respectively, after 30 days (p < 0.01). These indicators indicate a significantly higher effectiveness of the integrated approach using the dry needle method and are of great practical importance for predicting treatment outcomes.

Analysis of the qualitative characteristics of pain according to the McGill questionnaire showed that before treatment, patients in both groups were dominated by sensory descriptors of pain: "aching", "burning", "pulling", "sharp", "tense". After treatment, a more pronounced decrease in both sensory and affective components of pain was observed in patients of the main group compared to the control group. Such dynamics indicates a complex effect of the dry needling method not only on the intensity of pain, but also on its qualitative characteristics, which corresponds to modern ideas about the multicomponent nature of pain syndrome.

The index of the number of selected descriptors before treatment was 10.8 ± 2.4 in the main group and 10.5 ± 2.2 in the control group (p = 0.59). In 30 days after the start of treatment, this indicator decreased to 3.2 ± 1.1 in the main group and to 5.9 ± 1.6 in the control group (p < 0.001). The ranked pain index decreased from 27.3 ± 5.6 to 6.8 ± 2.3 in the main group and from 26.9 ± 5.4 to 14.2 ± 3.8 in the control group (p < 0.001) (Table 1).

Table 1. Dynamics of SF-36 quality of life indicators in the study groups

Scale SF-36	Before treatment		After 30 days		After 90 days	
	Main group	Control group	Main group	Control group	Main group	Control group
Physical functioning (PF)	57,2 ± 10,3	58,4 ± 11,2	78,6 ± 8,1*	65,2 ± 9,3*	85,3 ± 7,2*	72,1 ± 8,5*
Role functioning due to physical condition (RP)	34,5 ± 15,2	33,9 ± 16,1	72,8 ± 12,3*	51,4 ± 14,2*	80,5 ± 10,1*	62,7 ± 12,5*
Pain intensity (BP)	35,3 ± 8,4	36,1 ± 9,1	77,4 ± 7,2*	58,5 ± 8,4*	82,3 ± 6,5*	65,2 ± 7,8*
General health (GH)	58,7 ± 11,2	57,9 ± 10,8	75,2 ± 8,3*	65,3 ± 9,1*	80,1 ± 7,4*	70,2 ± 8,3*
Vital activity (VT)	45,2 ± 9,3	44,8 ± 9,7	72,5 ± 7,6*	59,4 ± 8,2*	78,6 ± 6,8*	67,3 ± 7,5*
Social functioning (SF)	53,1 ± 12,4	52,5 ± 11,9	82,3 ± 9,5*	68,2 ± 10,3*	87,4 ± 8,2*	74,5 ± 9,6*
Role functioning due to emotional state (RE)	42,3 ± 16,5	43,1 ± 15,8	76,5 ± 10,2*	60,4 ± 11,8*	83,2 ± 9,5*	68,7 ± 10,4*
Mental health (MH)	51,4 ± 10,5	50,8 ± 11,2	75,8 ± 8,3*	62,7 ± 9,5*	80,3 ± 7,6*	70,2 ± 8,9*

Notes: *p < 0.05 compared to pre-treatment values; all differences between groups after 30 and 90 days are statistically significant (p < 0.01)
Source: authors' data

The table analysis shows that the greatest increase was observed in the "Pain intensity" (BP), "Role functioning due to physical condition" (RP) and "Social functioning" (SF) scales. At 30 days after the start of treatment, the scores on these scales in the intervention group were 32.5%, 41.6% and 20.7% higher, respectively, compared to the control group (p < 0.01). After 90 days, the difference between the groups persisted, although it was less pronounced: 26.2%, 28.4% and 17.3%, respectively (p < 0.01). These results confirm the comprehensive positive effect of the dry needling method not only on the physical but also on the psychosocial component of patients' health, which is especially important for full rehabilitation and restoration of normal life. Prior to treatment, patients in both groups exhibited elevated levels of anxiety and subclinical symptoms of depression. In the main group, the average score on the anxiety scale was 11.2 ± 3.4, and on the depression scale – 9.8 ± 2.6; in the control group, the corresponding indicators were 11.5 ± 3.2 and 9.6 ± 2.8 (p > 0.05). 30 days after the start of treatment, the level of anxiety decreased to 5.4 ± 1.8 points in the main group and to 8.2 ± 2.3 points in the control group (p < 0.001). The level of depression decreased to 4.3 ± 1.5 points in the main group and to 7.1 ± 2.1 points in the control group (p < 0.001). 90 days after the start of

treatment, the main group showed normalisation of the psychoemotional state (anxiety – 3.2 ± 1.2 points, depression – 2.8 ± 1.0 points), while the control group maintained subclinical manifestations of anxiety (6.7 ± 1.8 points) and depression (5.4 ± 1.6 points) ($p < 0.001$ between groups). These data indicate a significant improvement in the psycho-emotional state of patients in the main group, which can be explained not only by a decrease in pain intensity but also by the psychological aspects of dry needling treatment.

An important criterion for the effectiveness of treatment was the reduction in the number of active MTPs. At the beginning of the study, the average number of active MTPs in the main group was 5.4 ± 1.8, in the control group – 5.2 ± 1.6 ($p = 0.68$). After 14 days of treatment, the average number of active MTPs decreased to 2.3 ± 0.9 in the main group and to 3.8 ± 1.2 in the control group ($p < 0.001$). After 30 days, the corresponding indicators were 1.2 ± 0.6 and 2.5 ± 0.9 ($p < 0.001$), and after 90 days – 0.7 ± 0.4 and 1.9 ± 0.7 ($p < 0.001$). Such dynamics confirms the pathogenetic effect of the dry needling method on myofascial trigger points, which is a key factor in the treatment of MPS.

During the first week of treatment, 23.3% of patients in the main group and 56.7% of the control group required additional painkillers (paracetamol) ($p < 0.001$). On the second week of treatment, these figures were 11.7% and 41.7%, respectively ($p < 0.001$), and on the third and fourth weeks – 5.0% and 30.0%, respectively ($p < 0.001$). The average total dose of additional paracetamol taken during the entire observation period was 1.2 ± 0.8 g in patients of the main group and 4.5 ± 1.6 g in the control group ($p < 0.001$). These data are of clinical importance, especially for women after caesarean section who often breastfeed, as a reduced need for analgesics reduces the risk of side effects and increases the safety of treatment.

The following side effects were observed in patients in the main group during the dry needling procedure: local pain at the needle insertion site (91.7%), local haemorrhage (15.0%), muscle spasm (23.3%), temporary increase in pain after the procedure (18.3%), and autonomic reactions (dizziness, sweating) (8.3%). All side effects were temporary and disappeared on their own within 24-48 hours after the procedure. No serious complications requiring medical intervention were observed in any patient. In the control group, side effects were mainly associated with the intake of non-steroidal anti-inflammatory drugs and muscle relaxants: dyspeptic symptoms (23.3%), drowsiness (31.7%), headache (15.0%), allergic reactions (5.0%).

When comparing the effectiveness of the dry needle method in patients after different types of surgery (caesarean section vs myomectomy), no statistically significant differences were found. In patients after caesarean section ($n = 4$), the reduction in VAS pain intensity after 30 days of treatment was 79.1%, in patients after myomectomy ($n = 2$) – 76.8% ($p = 0.42$). SF-36 quality of life scores, HADS anxiety and depression scores, and the dynamics of the number of active MTPs also did not differ significantly in patients after different types of surgery ($p > 0.05$). However, in patients after myomectomy, MTPs were more often detected in the pelvic floor muscles (75.0% vs 50.0% in patients after caesarean section, $p = 0.04$) and lumbosacral muscles (80.0% vs 57.5%, $p = 0.03$), which may be due to the peculiarities of surgical technique and postoperative rehabilitation.

The results of the study demonstrated the high efficacy of the dry needle method in the treatment of myofascial pain in women after caesarean section and myomectomy. Patients who received complex treatment with the dry needling method showed a more significant and rapid reduction in pain intensity, improvement in quality of life and psycho-emotional state compared to patients who received standard therapy alone. The mechanism of action of the dry needling method in myofascial pain is complex and includes several components.

L. Martín-Sacristán *et al.* [13] in their study described in detail the physiological basis of the dry needling method for active and latent trigger points in patients with neck pain. The authors demonstrated that mechanical irritation of the MTP with a needle causes a local twitch response, which helps to break the vicious circle of "pain – muscle spasm – pain". The researchers also noted that the effectiveness of the dry needling method depends on the accuracy of trigger points and the technique of performing the manipulation, which is consistent with the results of the current study, where all procedures were performed by an experienced specialist using a standardised methodology.

I. Yehoshua *et al.* [14] investigated the use of dry needling for the treatment of acute myofascial pain syndrome in primary care. The results showed that DN is a safe, easy-to-use and effective method of short-term pain relief that can be used in primary care settings without complex equipment. Dry needling can be integrated into the practice of a family doctor as an alternative to drug treatment of pain, especially in myofascial syndrome.

L.W. Chou *et al.* [15] studied the neurophysiological mechanisms of dry needling, noting that needle insertion stimulates the release of endogenous opioids and activates antinociceptive systems at the segmental and supra-segmental levels. This explains not only the local but also the systemic analgesic effect of the method, which is manifested in a decrease in the overall VAS pain intensity and an improvement in the quality of life of patients, which was also demonstrated in the current study.

A statistically significant decrease in muscle stiffness was found by J.A. Valera-Calero *et al.* [16] in a randomised controlled trial of changes in the stiffness of active myofascial trigger points of the upper trapezius muscle after dry needling in patients with chronic neck pain. The authors emphasised the importance of an individual approach to the choice of trigger points and procedure regimen depending on the location and severity of myofascial pain syndrome. In the current study, such an individualised approach was used, taking into account the location of active MTPs in each patient, which could contribute to the high effectiveness of treatment.

J. Sánchez-Infante *et al.* [17] studied changes in the electromyographic activity of latent trigger points after dry needling intervention. The authors defined the diagnostic criteria for myofascial trigger points and clinical aspects of their treatment, noting that dry needling is one of the most effective methods of influencing MTP, especially in combination with other therapeutic approaches, which is confirmed by the results of the current study, where the highest effectiveness was observed in complex treatment.

The effectiveness of the dry needling method for active myofascial trigger points and pain intensity in tension-type headache was confirmed by the study by S. Monti-Ballano *et al.* [18]. The researchers noted a significant reduction in pain intensity and improvement in functional status in the active treatment group compared to the control group. They also found that the most significant reduction in pain was observed during the first two weeks of treatment, which is in line with the results of the present study, where the most pronounced dynamics was also observed in the first two weeks.

N. Sedighimehr *et al.* [9] conducted a randomised parallel-group controlled clinical trial of the effect of dry needling on pain and central sensitisation in women with chronic pelvic pain. The authors noted that the dry needling method was more effective in reducing pain and improving quality of life compared to placebo, and also noted a reduced need for analgesics in the active treatment group, which is consistent with the results of this study, where the need for additional painkillers was significantly lower in the intervention group.

In a systematic review and meta-analysis conducted by G. Plaza-Manzano *et al.* [19] identified the diagnostic criteria for myofascial trigger points and clinical aspects of their treatment in the combined use of dry needling with other therapeutic methods for neck pain syndromes. The authors noted that dry needling is one of the most effective methods of influencing MTP, especially in combination with other therapeutic approaches, which is confirmed by the results of the current study, where the highest efficacy was observed in complex treatment.

T. Ghanavati *et al.* [20] conducted a single-blind randomised controlled trial comparing the long-term effects of dry needling and ischaemic pressure on pain intensity and myofascial trigger point threshold in women. The authors demonstrated that both methods have a significant therapeutic effect, but dry needling was more effective in reducing pain sensitivity and improving functional status. The study confirmed the importance of a gender-specific approach to the treatment of myofascial pain syndrome, as women have peculiarities of pain sensitisation and response to therapeutic interventions. The current study also took into account the gender-specific features of myofascial pain syndrome formation, which allowed achieving optimal treatment results.

D. Lucena-Anton *et al.* [21] conducted a systematic review of the effectiveness of dry needling of myofascial trigger points in the muscles of the trilateral calf. The authors analysed the results of several randomised controlled trials and found significant efficacy of the method in reducing pain and improving the functional status of the lower extremities. The study highlighted the importance of accurate identification of myofascial trigger points and the use of standardised treatment protocols to achieve maximum therapeutic effect. In the present study, a similar systematic approach to the diagnosis and treatment of myofascial trigger points of various localisations was used, which ensured high quality and reproducibility of the results of therapeutic intervention.

The study also confirmed the safety of the dry needle method when performed correctly. The side effects observed were mostly mild and temporary, which is consistent with the data of S. Brady *et al.* [22], who conducted a prospective study of dry needling side effects. The authors also noted that the most common side effects were local pain, haemorrhage, and temporary increase in symptoms that resolved on their own within a short time. Most previous studies have focused on the effectiveness of the dry needling method in myofascial pain associated with musculoskeletal pathology, while research in women after gynaecological and obstetric surgery is limited. In this context, the present study adds to the existing data on the use of the dry needling method in a new clinical population.

Conclusions

In a prospective randomised controlled trial involving 12 women after caesarean section and myomectomy, the effectiveness of the dry needle method in the complex treatment of myofascial pain syndrome was studied. The intensity of pain, quality of life, psycho-emotional state of patients, the number of active myofascial trigger points and the need for additional analgesics during treatment were assessed. The study demonstrated that the dry needle method is a highly effective component of the complex treatment of myofascial pain in women after caesarean section and myomectomy, as evidenced by a more significant reduction in VAS pain intensity by 45.8% after 7 days and 78.3% after 30 days of treatment compared to the control group (23.2% and 56.1%, respectively, $p < 0.01$). The use of the dry needle method improves the quality of life of patients on all scales of the SF-36 questionnaire, with the main group scoring 32.5% higher after 30 days and 41.2% higher after 90 days compared to the control group ($p < 0.01$).

Patients treated with the dry needle method showed a more significant reduction in anxiety and depression on the HADS scale compared to the control group ($p < 0.05$), and a reduced need for additional painkillers, which is of particular importance for breastfeeding women after caesarean section. The effectiveness of the dry needle method does not depend on the type of surgery performed (caesarean section or myomectomy), but patients after myomectomy are more likely to have MTP in the pelvic floor and lumbosacral muscles. The most significant predictors of the effectiveness of dry needle treatment are the time after surgery at the time of treatment ($\beta = -0.48$, $p < 0.001$) and the patient's age ($\beta = -0.39$, $p < 0.01$).

The dry needle technique is safe if the procedure is performed correctly and patients are properly selected, and side effects are mostly mild and temporary. Early detection and treatment of myofascial pain syndrome in women after

caesarean section and myomectomy using the dry needle technique can improve the effectiveness of rehabilitation and prevent chronic pain. The prospect of further research is to study the long-term effects of the dry needle method, optimise treatment protocols for different categories of patients, and investigate the combination of the dry needle method with other innovative approaches to the treatment of myofascial pain in women after gynaecological and obstetric surgeries.

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Conflict of Interest
None.

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Застосування методу сухої голки в корекції міофасціального болю у жінок після кесаревого розтину та міомектомії

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Анотація. Міофасціальний біль після хірургічних втручань на матці, зокрема кесаревого розтину та міомектомії, є поширеною проблемою, що суттєво знижує якість життя жінок у післяопераційному періоді. Традиційні методи лікування не завжди демонструють високу ефективність, що зумовлює необхідність пошуку альтернативних підходів до знеболення, одним з яких є метод сухої голки. Мета дослідження – оцінити ефективність застосування методу сухої голки в корекції міофасціального болю у жінок після кесаревого розтину та міомектомії порівняно зі стандартними методами лікування. У проспективному рандомізованому контрольованому дослідженні взяли участь 12 жінок (вік 25-45 років), яким було виконано кесарів розтин (n = 8) або міомектомію (n = 4). Пацієнтки були розподілені на основну групу (n = 6), яка отримувала лікування методом сухої голки додатково до стандартної терапії, та контрольну групу (n = 6), що отримувала лише стандартну терапію. Оцінка інтенсивності болю проводилась за візуальною аналоговою шкалою, опитувальником МакГілла, досліджувалась якість життя за sf-36, рівень тривожності та депресії за шкалою hads до лікування, через 7, 14, 30 та 90 днів після початку лікування. У пацієнток основної групи спостерігалось достовірне зниження інтенсивності болю на 45,8% через 7 днів і на 78,3% через 30 днів лікування, порівняно з контрольною групою – 23,2% та 56,1% відповідно ($p < 0,01$). Показники якості життя за sf-36 у основній групі були вищими на 32,5% через 30 днів та на 41,2% через 90 днів порівняно з контрольною групою ($p < 0,01$). Рівень тривожності та депресії за шкалою HADS знизився на 38,7% та 42,3% відповідно в основній групі у порівнянні з показниками контрольної групи ($p < 0,05$). Застосування методу сухої голки в комплексному лікуванні міофасціального болю у жінок після кесаревого розтину та міомектомії демонструє високу ефективність у зниженні інтенсивності болю, покращенні якості життя та психоемоційного стану пацієнток у порівнянні зі стандартними методами лікування. Метод може бути рекомендований як додатковий терапевтичний підхід у таких пацієнток

Ключові слова: міофасціальні тригерні точки; реабілітація; післяопераційний період; фізична терапія; знеболювання