Annals of Clinical and Analytical Medicine
Original Research

Comparison of the effectiveness of transverse friction massage and thiele massage in female patients with chronic pelvic pain

Comparison different massage tecniques in chronic pelvic pain

Sena Öndeş, Aybüke Ersin
Department of Physiotherapy and Rehabilitation, Faculty of Health Sciences, Istanbul Atlas University, Istanbul, Turkey

Abstract

Aim: This study aimed to investigate and compare the effectiveness of transverse friction massage and Thiele massage applied to the pelvic floor muscles in female patients with chronic pelvic pain.

Material and Methods: Twenty patients were divided into two groups of 10 people each: the transverse friction group and the Thiele massage group. Patients received transverse friction massage or Thiele Massage 2 days a week for 4 weeks. Measured parameters were pain, quality of life, sexual functions, and lower urinary tract symptoms. Visual Analog Scale and Mcgill Melzack Pain Questionnaire, Nottingham Health Profile, Female Sexual Function Index, and Bristol Female Lower Urinary Tract Symptoms Questionnaire were used to evaluate parameters, respectively.

Results: Statistically significant improvements were observed in all parameters in the transverse friction massage group ($p<0.05$) and all parameters except sexual functions improved significantly in the Thiele group compared to pre-treatment ($p<0.05$). When the two groups were compared with each other, no statistically significant difference was found in any of the parameters between the groups ($p>0.05$).

Discussion: Transverse friction massage and Thiele massage applied to the pelvic floor muscles in patients with chronic pelvic pain are easily applicable noninvasive treatment methods that can reduce the symptoms of the disease and increase the quality of life.

Keywords

Chronic Pelvic Pain, Pelvic Floor Muscles, Transverse Friction Massage, Thiele Massage

DOI: 10.4328/ACAM.21780 Received: 2023-06-06 Accepted: 2023-07-31 Published Online: 2023-08-10 Printed: 2023-09-01 Ann Clin Anal Med 2023;14(9):797-802
Corresponding Author: Sena Öndeş, Department of Physiotherapy and Rehabilitation, Faculty of Health Sciences, Atlas University, 34408, Istanbul, Turkey.
E-mail: sena.ondes@atlas.edu.tr P: +90 538 709 45 35
Corresponding Author ORCID ID: https://orcid.org/0000-0002-9715-3083
This study was approved by the Non-Interventional Scientific Research Ethics Committee of Istanbul Atlas University (Date: 2022-06-21, No: E-22686390-050.01.04-17613)

Introduction

Chronic pelvic pain (CPP) is defined as pain in the pelvic region lasting more than six months that is not associated with pregnancy, menstrual cycle, local trauma, or pelvic surgery [1]. 60-90% of women have musculoskeletal system disorders with CPP. It has been proven that musculoskeletal dysfunctions such as spasms in the pelvic floor muscles (PFM) such as the levator ani and piriformis are frequently seen. Abnormal posture patterns, muscle shortness, and spasms create a vicious cycle and cause myofascial pelvic pain [1,2].

Myofascial pelvic pain refers to pain and tenderness in the PFM and fascia. This pain may occur without related medical pathology or may be a precursor or sequelae of urological, gynecological, and colorectal medical conditions or other musculoskeletal conditions. Increased tone, spasm, and trigger points in the PFM cause pain and tenderness in the pelvic region. It has been observed that 22% of women with CPP have tenderness in the levator ani muscle [2,3].

Patient education, which is the first step of physiotherapy, includes recommendations for pain control and relaxation techniques. It has been proven that electrotherapy applications have positive effects on pain and quality of life (QoL) in patients with CPP [4]. Manual therapy, massages, and other techniques are used in the continuation of the treatment. These are Thiele massage (TM), treatment of trigger points with ischemic compression, osteopathic manual therapy methods, transverse friction massage (TFM), classical massage, perineal massage, myofascial relaxation techniques, abdominal massage, biofeedback and exercise [5,21]. Physical exercise sessions are started with low-intensity exercises that increase the body awareness of individuals. Patients are encouraged to recognize postural adaptations that may affect pain and function, including sexual activity, and to gain awareness of changes in tone and tension, particularly in the PFM and other skeletal muscles. Breathing and relaxation exercises are also used [4,5].

Thiele massage is a transvaginal massage technique applied in cases of PFM sensitivity and spasms. It is done by stripping movements from the origin of the muscles to the insertion. In order not to traumatize the spasmatic muscles, the massage is started lightly, and the pressure is gradually increased as the sessions progress and the sensitivity decreases. Its mechanism is to provide elongation in the muscles with pressure. With this elongation, the tone of the hypertonic PFM decreases and the spasm relaxes [6,7].

Transverse friction massage is used to relieve pain and inflammation in musculoskeletal problems. The friction is applied transverse to the fiber direction of the relevant tissue. With this technique, stress is applied to the reshaped collagen of the tissue to soften the adhesion. This prevents or destroys abnormal fibrous adhesions. Also, TFM causes an increase in blood flow in the local application area through vasodilation in the tissue with a strong and deep movement. This blood support provides for the transport of endogenous opiates, resulting in pain relief [8].

When the literature was examined, there were not enough studies on TM and TFM applied to patients with CPP. Although our study is in line with the literature findings we discussed, and to the best of our knowledge, this is the first clinical study to compare the effectiveness of TFM and TM in CPP.

This study was conducted to determine and compare the effects of TFM and TM on pain, QoL, sexual functions and lower urinary system symptoms applied to CPP patients with PFM tenderness and spasm. We hypothesized that TM and TFM have an effect and superiority over each other on pain, QoL sexual dysfunctions, and lower urinary tract symptoms in CPP patients.

Material and Methods

Design and randomization

A blinded statistician generated a randomization list using a computer-based allocation program (www.randomizer.org). Twenty participants were randomized into two intervention groups after initial assessments. Group 1 was named the Thiele group (TG) and Group 2 was the transverse friction group (TFG). Individuals participating in the groups did not know which group they belonged to, and no information was given about the difference between the two interventions.

Ethical approval was obtained for this study from the Non-Interventional Scientific Research Ethics Committee dated 21.06.2022 with the decision number E-22686390-050.01.04-17613. The study was prospectively registered at www.ClinicalTrials.gov website (NCT05788653). All individuals participating in the study were informed about the study and signed informed consent was obtained from all individuals.

Participants

Twenty-six CPP patients with PFM tenderness and spasms were directed to a physiotherapist by a urologist. Inclusion criteria were age from 20 to 60 years, the presence of pelvic pain for 6 months or more. The exclusion criteria were the presence of neurological pathology, having urogynecological surgery in the last 6 months, having advanced pelvic prolapse, pelvic malignancy, and radiotherapy.

Outcome Measurements

The physiotherapist evaluated the tenderness and spasms in the levator ani, coccygeus, obturator internus, and piriformis muscles with digital palpation. During palpation, an imaginary clock is used for localizing the PFM, with the symphysis pubis at 12 and the anus at 6 o'clock. In the deep layer, the pubococcygeus at 1,5,7, and 11, the iliococcygeus at 4 and 8, and the coccygeus at the deeper level of 5 and 7 o'clock are palpable. In addition, the obturator internus and piriformis can also be palpated transvaginally [5].

The researcher recorded personal information, urological and gynecological clinical conditions, previous surgeries, and current medications with a socio-demographic information form specially prepared for the participants. All assessments were performed by the same physiotherapist twice, at the beginning and the end of the intervention.

Visual Analog Scale (VAS) developed by Hayes and Patterson in 1921, is used to determine the severity of pain. At the beginning of a 10 cm long line, the words "no pain" and "severe intolerable pain" are placed at the end. The patient is asked to put a mark on the scale according to the severity of the pain. Pain intensity is determined by measuring the distance from the expression "no pain" to the area where the patient puts a sign [9].

McGill Pain Questionnaire (MPQ) was developed by Melzack and

Targerson in 1971. It consists of four parts. In the first part, the patient marks the painful place on the human body diagram and states that it is deep and/or superficial. In the second part, the characteristics of pain are questioned. The third part consists of questions evaluating the time-dependent change of pain. In the fourth part, the severity of pain is measured comparatively. The total score ranges from 0 to 112. A high score indicates a worsening of pain and related parameters [10].

Nottingham Health Profile is a valid and reliable scale that measures general health status in musculoskeletal disorders and chronic diseases. It was developed in 1981 by Hunt et al. Individuals' physical, emotional, and social well-being is questioned. It consists of 38 questions and six sub-parameters: pain, emotional reactions, sleep, social isolation, physical abilities, and energy level. The score is calculated between 0-600 points, with a maximum of 100 points for each sub-parameter. A high score indicates low QoL [11].

The Female Sexual Functioning Index (FSFI), developed by Rosen et al. in 2000, is a 5-point Likert-type scale consisting of 19 questions and 6 sub-parameters that evaluate female sexual functions. It evaluates many parameters such as frequency and level of sexual desire, level of arousal, frequency, and difficulty of lubrication and orgasm, emotional intimacy during sexual intercourse, sexual life satisfaction, and pain during sexual intercourse. The first two questions are calculated between 1-5 points, while the other questions are calculated between 0-5 points. As the score increases, sexual functions improve [12].

Bristol Female Lower Urinary Tract Symptom Questionnaire (BFLUTS) was developed by Jackson et al. in 1996 to evaluate female lower urinary tract symptoms, their severity, and the effects of these symptoms on QoL and sexual functions. It consists of 34 Likert-type questions. The score ranges from 0 to 71. A high score indicates worsening of lower urinary tract symptoms [13].

Intervention

TM was applied to the TG in the lithotomy position for 30 minutes, 2 days a week for 4 weeks. For each muscle group, 15-20 repetitions were used.

TFM was applied to the TFG by the same physiotherapist with the same frequency in the lithotomy position. It was applied for 3-5 minutes on each tense muscle group and trigger points, crossing the direction of the muscle fibers. It was started uni-digitally and continued bi-digitally according to the patient's tolerance.

Statıstical Analysis

The statistical analysis program of "Statistical Package for Social Sciences" (SPSS) Version 28.0 was used for statistical analysis. The statistical significance level was determined as $p<0.05$ for all data. The Shapiro-Wilk test was used to determine whether the data were normally distributed. Paired Sample T-test was used for intra-group comparison to normally distributed data, while Independent Samples T-test was used for inter-group comparison. The Wilcoxon test was used for inter-group comparisons, which did not show normal distribution and ordinal data, and the Mann-Whitney U test was used for comparisons between groups.

Ethical Approval

Ethics Committee approval for the study was obtained.

Table 1. Comparison of sociodemographic and clinical characteristics of the two groups. TM: Thiele Massage, TFM: Transverse Friction Massage, X: Mean, SD: Standard Deviation.

		TM Group (n=10) X ± SD	TFM Group (n=10) X ± SD	p
Age (years)		48.10±6.70	46.50±11.73	0.714
Height (m)		158.20±4.18	162±6.46	0.139
Weight (kg)		74.30±12.76	72.6±11.28	0.756
BMI (kg/m²)		29.83±6.17	27.79±5.11	0.326
Marital Status	Married	9 (%90)	9 (%90)	0.368
	Single	1 (%10)	-	
	Divorced	-	1 (%10)	
Smoking	Yes	3 (%30)	1 (%10)	0.264
	No	7 (%70)	9 (%90)	
Alcohol Use	Yes	-	-	1
	No	10(%100)	10 (%100)	
Chronic Disease	Yes	10 (%100)	7(%70)	0.060
	No	-	3(%30)	
Interstitial Cystitis	Yes	4 (%40)	4 (%40)	1
	No	6 (%60)	6 (%60)	
Pariety		2.60±1.35	1.70±1.05	0.115
Cesarean Birth		0.90±1.19	0.60±0.843	0.666
Normal Birth		1.80±1.751	1.10±1.370	0.344

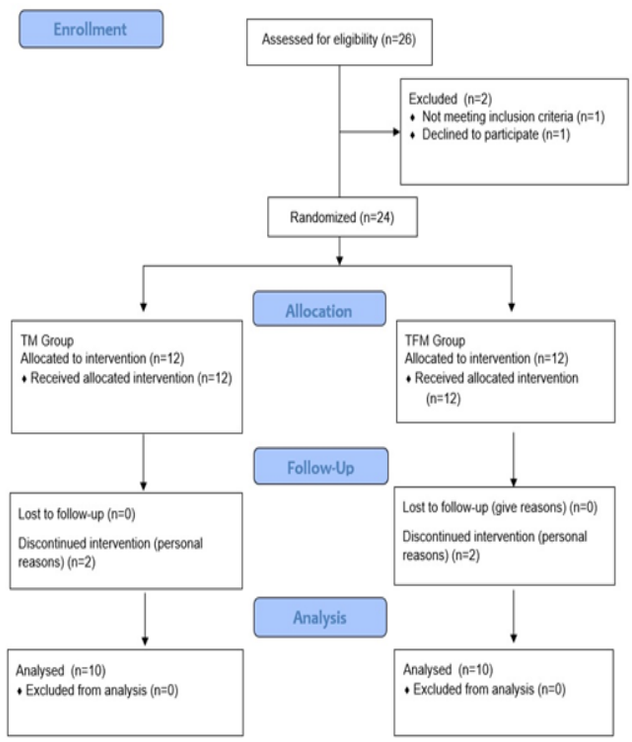

Figure 1. CONSORT (Consolidated Standards of Reporting Trials) flow chart of the patients. ***Abbreviations***: TM Group: Thiele massage group, TFM Group: Transverse Friction Massage Group.

Table 2. Comparison of the VAS, MPQ, NHP, FSFI, and BFLUTS scores before and after treatment between the groups.

	Groups TM Group (n=10) TFM Group (n=10)	Before Intervention X ± SD	After Intervention X ± SD	P
VAS	TM Group	7.40 ±1.50	4.6±1.83	<0.001
	TFM Group	7.20±1.61	3±1.82	<0.001
MPQ	TM Group	58.80±14.39	40.50±11.26	0.001
	TFM Group	53.10±20.06	29.70±12.58	<0.001
NHP Total Score	TM Group	302.71 ±144.36	198.11±131.87	0.006
	TFM Group	288.91±103.07	143.62±80.99	<0.001
FSFI Total Score	TM Group	11.02±9.95	15.62±11.82	0.062
	TFM Group	12.59±7.75	20.02±9.11	0.001
BFLUTS Total Score	TM Group	30.80±11.42	18.20±6.90	0.001
	TFM Group	22.70±13.06	13±8.48	<0.001

TM: Thiele Massage, TFM: Transverse Friction Massage, VAS: Visual Analog Scale, MPQ: Mcgill-Melzack Pain Questionnaire, NHP: Nottingham Health Profile, FSFI: Female Sexual Function Index, BFLUTS: Bristol Female Lower Urinary Tract Symptoms, X: Mean, SD: Standard Deviation.

Table 3. Intergroup comparison of total scores for all parameters after the intervention.

	TM Group (n=10)	TFM Group (n=10)	P
Δ VAS	-2.80±0.919	-4.20±1.98	0.117
Δ MPQ	-18.30±12.42	-23.40±10.45	0.256
Δ NHP	-104.59±91.85	-145.28±85.46	0.199
Δ FSFI	4.60±6.82	7.43±4.88	0.128
Δ BFLUTS	-12.60±8.20	-9.70±5.18	0.677

TM: Thiele Massage, TFM: Transverse Friction Massage, VAS: Visual Analog Scale, MPQ: Mcgill-Melzack Pain Questionnaire, NHP: Nottingham Health Profile, FSFI: Female Sexual Function Index, BFLUTS: Bristol Female Lower Urinary Tract Symptoms Questionnaire.

Results

At the end of the study, 20 of the 26 participants completed the study. The participation status of the individuals is given in Figure 1.

The socio-demographic and clinical characteristics of the patients in the two groups participating in the study are given in Table 1. No statistically significant difference was found between the groups (p>0.05).

The comparison of VAS, MPQ, NHP, FSFI, and BFLUTS total scores of the two groups before and after treatment is given in Table 2. A statistically significant difference was found in post-treatment VAS, MPQ, NHP, and BFLUTS scores compared to pre-treatment for both groups (p<0.05). In the TFG, there was a statistically significant difference in all FSFI scores (p<0.05). Yet, no statistically significant difference was found regarding FSFI sexual desire, arousal, pain sub-parameters, and the total score in the TG (p > 0.05). In addition, a statistically significant difference was found in all BFLUTS scores in TG except for urinary incontinence and sexual functions sub-parameters (p<0.05).

The intergroup comparison of VAS, MPQ, NHP, FSFI, and BFLUTS total scores after treatment are shown in Table 3. No significant difference was found in any of the parameters.

Discussion

We found that in the treatment of CPP, TFM and TM have a positive effect on pain, QoL, and lower urinary tract symptoms. In addition, TFM has been found to improve sexual functions. However, TFM and TM were not found to be superior to each other.

The majority of studies in the literature suggest that TM performed in female patients with CPP who have PFM spasms, trigger points, and tenderness reduces pelvic pain [7,14]. In addition, decreased muscle tone in PFM has been reported [15,16]. Similar to the studies in the literature, it was found in this study that TM provided improvements in both pain parameters evaluated.

El-Hefnawy et al. recently investigate the effects of self-administered TM in patients with PFM tenderness and spasms. The researchers found that the severity of pain worsened [17]. Considering other studies in which the treatment was applied by physiotherapists [14-16], it is thought that the results are worsened because the TM is not applied by experts.

It has been stated in many studies that myofascial physical therapy applied to muscles with trigger points and spasm reduces pain [18,19]. In a study conducted with CPP patients, myofascial physical therapy applied to the PFM and surrounding areas (abdominal wall, waist, legs, and gluteal region) statistically significantly reduced the pain parameter [18,20]. In this study, TFM massage was found to provide statistically significant improvements in pain parameters, such as myofascial release. The pain relief mechanism of TFM has similarities to the mechanism of myofascial release. These can be summarized as restoring the proper alignment of the connective tissue fibers by moving the muscle fibers, equalizing the length of the sarcomeres with the application of local pressure, providing pain control with activation of the spinal reflex mechanism and muscle relaxation, and relieving pain by providing the transport of endogenous opiates with vasodilation in the region [19].

Ersin et al. investigated the effects of TFM in patients with CPP. Statistically significant improvements were observed in the pain parameter compared to pre-treatment. Also, it has been reported that transvaginal TFM statistically significantly improved QoL scores [21].

Quality of life is one of the important parameters affecting patients with CPP. Studies in the literature indicate that psychological symptoms, especially anxious and depressive states are risk factors for pain, urinary symptoms, and QoL in CPP patients [22].

In a study conducted with patients with CPP, it was determined that myofascial treatment approaches applied to the PFM and surrounding areas increased the QoL [18]. Similarly, in this study, it was determined that TFM provided significant improvements in QoL after treatment compared to pretreatment.

The literature has reported that TM applied to patients with CPP who have tenderness and tension in the PFM reduces depression, increases psychological well-being, and positively affects the QoL [14,15]. In this study, significant changes in QoL in the TG and improvements in the emotional state sub-parameter of the QoL scale suggest that TM can be used to improve anxiety and depression and increase psychological well-being.

CPP can cause pelvic floor dysfunctions and deterioration in sexual functions in patients. Tone changes of PFM encountered in CPP are one of the important causes of dyspareunia in women. PFM has been reported to be active in female genital stimulation and orgasm, and tone changes in PFM may adversely affect these phases [23]. Studies have shown that TM applied to PFM reduced dyspareunia in CPP patients but had no effect on sexual functions [7,14]. In this study, after TM, there was a significant improvement in the FSFI pain subparameter, while no significant improvement was found in the FSFI total score and lubrication subparameter.

Studies in the literature have found that myofascial physical therapy applied to the PFM and surrounding areas significantly improved pain and sexual functions [18,24]. In this study, it was determined that TFM reduces pain during sexual intercourse. In addition, statistically significant improvements were seen in FSFI total score.

In this study, TFM and TM were found to be effective in dyspareunia, but TM was not found to be effective in sexual functions. Considering the effect of peripheral and central sensitization on dyspareunia [25], both massage techniques acted as desensitization, and in addition, provided improvements in dyspareunia by reducing muscle tone. However, it may be that the rubbing and stripping technique of the TG may cause decreases in lubrication, therefore there is no significant difference in sexual functions.

Lower urinary system dysfunctions such as urgent and frequent urination and nocturia are frequently seen in CPP [26]. Studies in the literature show that TM reduces symptoms such as urgency-frequent urination and bladder pain in women with CPP [18,20]. It has been observed that myofascial release and trigger point treatment applied to the pelvic floor and its surroundings in patients with CPP positively affect lower urinary systems symptoms such as voiding frequency and duration [18]. Similarly, in this study, statistically significant improvements in lower urinary tract symptoms were observed in both groups after the treatment, but no significant difference was found between the groups.

Limitations

Our present study has a limitation. Although we conducted our study with two experimental groups, our sample size was limited. Therefore, CPP rehabilitation is not common in our country. Our further studies will be planned to increase the sample size.

Conclusion

In conclusion, TFM and TM are inexpensive, easily applicable, and accessible methods that can be used to reduce pain and lower urinary tract symptoms, improve QoL and sexual dysfunctions in female patients with CPP.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Funding: *None*

Conflict of interest

The authors declare no conflict of interest.

References

1. Wang M, Xia R, Shi J, Yang C, Zhang Y, Xu Z, et al. Effect of high-frequency repetitive transcranial magnetic stimulation under different intensities upon rehabilitation of chronic pelvic pain syndrome: protocol for a randomized controlled trial. Trials. 2023;24(1):40.

2. Tettambel MA. An Osteopathic Approach to Treating Women with Chronic Pelvic Pain. Journal of Osteopathic Medicine. 2005; 105(4): 20-2.

3. Vincent K. Chronic pelvic pain in women. Postgrad Med J. 2009;85(999):24-9.

4. Fuentes-Márquez P, Cabrera-Martos I, Valenza MC. Physiotherapy interventions for patients with chronic pelvic pain: a systematic review of the literature. Physiother Theory Pract. 2019;35(12):1131-8.

5. Sağır K, Mutlu EK. Kronik Pelvik Ağrı: Pelvik Tabana Özgü Değerlendirme ve Manuel Yaklaşımlar (Chronic Pelvic Pain: Pelvic Floor Specific Evaluation and Manual Approaches). Sağlık Profesyonelleri Araştırma Dergisi/ Health Professionals Research Journal. 2021;3(2):103-13.

6. Thiele GH. Coccygodynia: cause and treatment. Dis Colon Rectum. 1963;6(5):422-36.

7. De Souza Montenegro MLL, Mateus-Vasconcelos EC, Candido dos Reis FJ, Rosa e Silva JC, Nogueira AA, Poli Neto OB. Thiele massage is a therapeutic option for women with chronic pelvic pain caused by the tenderness of pelvic floor muscles. J Eval Clin Pract. 2010;16(5):981-2.

8. Loew LM, Brosseau L, Tugwell P, Wells GA, Welch V, Shea B, et al. Deep transverse friction massage for treating lateral elbow or lateral knee tendinitis. Cochrane Database Syst Rev. 2014;(11).

9. Hayes MHS, Patterson DG. Experimental development of the graphic rating method. Psychol Bull. 1921;18:98-9.

10. Melzack R, Torgerson WS. On the language of pain. Anesthesiology. 1971;34(1):50-9.

11. Hunt SM, McKenna SP, McEwen J, Williams J, Papp E. The Nottingham Health Profile: subjective health status and medical consultations. Soc Sci Med. 1981;15(3):221-9.

12. Rosen C, Brown J, Heiman S, Leiblum C, Meston R, Shabsigh D, Ferguson R, D'Agostino R. The Female Sexual Function Index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. J Sex Marital Ther. 2000;26(2):191-208.

13. Jackson S, Donovan J, Brookes S, Eckford S, Swithinbank L, Abrams P. The Bristol female lower urinary tract symptoms questionnaire: development and psychometric testing. Br J Urol. 1996;77(6):805-12.

14. Da Silva APM, Montenegro ML, Gurian MBF, De Souza Mitidieri AM, Da Silva Lara LA, Poli-Neto OB, E Silva JCR. Perineal massage improves the dyspareunia caused by The tenderness of the pelvic floor muscles. Rev Bras Ginecol e Obstet. 2017;39(1):26-30.

15. Oyama IA, Rejba A, Lukban JC, Fletcher E, Kellogg-Spadt S, Holzberg AS, Whitmore KE. Modified Thiele massage as a therapeutic intervention for female patients with interstitial cystitis and high-tone pelvic floor dysfunction. Urology. 2004;64(5):862-5.

16. Holzberg A, Kellog-Spadt S, Lukban J, Whitmore K. Evaluation of transvaginal Thiele massage as a therapeutic intervention for women with interstitial cystitis. Urology. 2001;57(6):122-5.

17. El-Hefnawy AS, Soliman HMM, Abd-Elbary SOM, Shereif WI. Long-standing nonulcerative bladder pain syndrome: Impact of Thiele massage on the bladder and sexual domains. Low Uriny Tract Symptoms. 2020;12(2):123-7.

18. FitzGerald MP, Anderson RU, Potts J, Payne CK, Peters KM, Clemens JQ, et al.; Urological Pelvic Pain Collaborative Research Network. Randomized multicenter feasibility trial of myofascial physical therapy for the treatment of urological chronic pelvic pain syndromes. J Urol. 2009;182(2):570-80.

19. Doley M, Warikoo D, Arunmozhi R. Effect of positional release therapy and deep transverse friction massage on gluteus medius trigger point- a Comparative Study. J Exerc Sci Physiother. 2013;9(1):40-5.
20. Doggweiler-Wiygul R, Wiygul PJ. Interstitial cystitis, pelvic pain, and the relationship to myofascial pain and dysfunction: A report on four patients. World J Urol. 2002;20(5):310-14.
21. Ersin A, Tarhan F, Başol G, Şakul BU, Algun ZC. The effect of transverse friction massage on pain and quality of life in women with chronic pelvic pain: a quasi-experimental study. International Journal of Therapy And Rehabilitation. 2023;30(6):1-8.
22. Dybowski C, Loewe B, Bruenahl C. Predictors of pain, urinary symptoms and quality of life in patients with chronic pelvic pain syndrome (CPPS): A prospective 12-month follow-up study. J Psychosom Res. 2018;112:99-106.
23. Bortolami A, Vanti C, Banchelli F, Guccione AA, Pillastrini P. Relationship between female pelvic floor dysfunction and sexual dysfunction: An observational study. J Sex Med. 2015;12(5):1233-41.
24. Schvartzman R, Schvartzman L, Francisco Ferreira C, Vettorazzi J, Bertotto A, Celeste Osório Wender M. Physical therapy intervention for women with dyspareunia: A randomized clinical trial. J Sex Marital Ther. 2019;1-31.
25. Shigeta M, Sekiguchi Y, Nakamura R. 037 Effects of Physical Therapy on Female Dyspareunia in Japan. J Sex Med. 2016;13(6):S255.
26. Marszalek M, Wehrberger C, Temml C, Ponholzer A, Berger I, Madersbacher S. Chronic pelvic pain and lower urinary tract symptoms in both sexes: Analysis of 2749 participants of an urban health screening project. Eur Urol. 2009;55(2):499-508.

How to cite this article:
Sena Öndeş, Aybüke Ersin. *Comparison of the effectiveness of transverse friction massage and thiele massage in female patients with chronic pelvic pain. Ann Clin Anal Med 2023;14(9):797-802*

This study was approved by the Non-Interventional Scientific Research Ethics Committee of Istanbul Atlas University (Date: 2022-06-21, No: E-22686390-050.01.04-17613)