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Original Article

Early postpartum biofeedback assisted pelvic floor muscle training in primiparous women with second degree perineal laceration: Effect on sexual function and lower urinary tract symptoms

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ABSTRACT

Objective: To evaluate the short-term effect of routine early postpartum electromyographic biofeedback assisted pelvic floor muscle training on sexual function and lower urinary tract symptoms.**Materials and methods:** From December 2016 to November 2017, primiparous women with vaginal delivery, who experienced non-extended second-degree perineal laceration were invited to participate. Seventy-five participants were assigned into a pelvic floor muscle training (PFMT) group or control group. Women in the PFMT group received supervised biofeedback-assisted pelvic floor muscle training at the 1st week and 4th week postpartum. Exercises were performed at home with the same protocol until 6 weeks postpartum. The Pelvic Organ Prolapse Urinary Incontinence Sexual Questionnaire (PISQ-12) and the Urinary Distress Inventory short form questionnaire (UDI-6) were used to evaluate sexual function and lower urinary tract symptoms respectively at immediate postpartum, 6 weeks, 3 months, and 6 months postpartum.**Results:** Forty-five women (23 in PFMT group, 22 in control group) completed all questionnaires at 6 months postpartum. For overall sexual function and the three sexual functional domains, no statistically significant difference was found in PISQ scores from baseline to 6 weeks, 3 months, and 6 months postpartum between the PFMT and control groups. For postpartum lower urinary tract symptoms, all symptoms gradually improved over time for both groups without a statistically significant difference between groups.**Conclusion:** Our study showed that supervised biofeedback-assisted pelvic floor muscle training started routinely at one week postpartum did not provide additional improvement in postpartum sexual function and lower urinary tract symptoms.© 2021 Taiwan Association of Obstetrics & Gynecology. Publishing services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Perineal trauma or lacerations are common during spontaneous vaginal delivery. Women with perineal lacerations during vaginal delivery were more likely to delay the resumption of sexual intercourse and experience deficits in postpartum sexual function [1,2]. Deeper or a higher degree of perineal laceration might negatively

affect sexual function [3]. In a cohort study of primiparous women after vaginal delivery, women with 2nd degree perineal laceration were 80% more likely to report dyspareunia 3 months postpartum compared to women with intact and 1st degree perineal laceration [4]. The same study also showed that at 6 months postpartum, about 25% of the study population still reported sexual dysfunction including decreased sexual satisfaction or orgasm. Another study

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conducted in a developing country reported that 67% of the women experienced dyspareunia 6 weeks to 6 months postpartum and 72% of the women did not seek special care [5]. This study showed that primiparous women were more likely to encounter postpartum dyspareunia.

Vaginal delivery might also be associated with other pelvic floor disorders such as fecal and urinary incontinence and the related symptoms may cause decreased quality of life in the future [6,7]. In a prognostic model that predicts a woman's 20-year risk of developing bothersome symptoms or receiving treatment for prolapse and urinary incontinence, primiparous women with vaginal delivery were associated with increased risk [6]. However, it has been found that one year after delivery, the prevalence of urinary incontinence in primiparous women was 2.5 times higher than in the nulliparous control group [8].

Pelvic floor muscle training (PFMT) is the recommended first-line conservative treatment for stress urinary incontinence and other types of pelvic floor dysfunction but the effect on sexual dysfunction is still uncertain [9,10]. Biofeedback is a method that aids in teaching pelvic floor muscle contraction and relaxation. A variety of biofeedback apparatus is used in clinical practice to measure the electrical activity of the muscle. The benefit and add-on effect of biofeedback assisted PFMT in the treatment of pelvic floor dysfunction is still conflicting among studies [11,12]. The effect of PFMT performed during pregnancy and the postpartum period on lower urinary tract symptoms and voiding function has been examined [13]. Others have examined the effect of postpartum PFMT on sexual function starting at different postpartum periods [14–16]. However, it is unclear whether early postpartum supervised PFMT is beneficial for the prevention or treatment of postpartum sexual dysfunction and lower urinary tract symptoms in women.

The aim of our study was to evaluate the effect of routine early postpartum (one week postpartum) electromyographic biofeedback (EMG-BF) assisted PFMT on sexual function and lower urinary tract symptoms (LUTS) in primiparous women who experience second degree perineal laceration.

Materials and Methods

Design

This prospective cohort study was conducted from December 2016 to November 2017. Primiparous women who had vaginal deliveries and experienced non-extending second degree perineal laceration were invited to participate in this study. The exclusion criteria for this study included women with PFM training during pregnancy, preterm labor, perinatal or postnatal fetal death, poor healing of perineal wound and women with 1st degree, 3rd degree or 4th degree perineal laceration. All the participants were assigned sequentially into a PFMT group or control group after they had signed a written informed consent. All women were given a written leaflet containing information on how to perform pelvic floor muscle exercises before being discharged. The participant's medical history before pregnancy, intrapartum and postpartum history were obtained through a review of chart records. The PFMT started at one week postpartum and one-on-one EMG-BF assisted pelvic floor muscle training was carried out by a qualified physiotherapist at the 1st week and 4th week postpartum. All the participants (PFMT + control groups) were assessed for pelvic floor muscle strength including baseline strength and maximum voluntary contraction at 6 weeks postpartum. The results were reported as the mean of three contractions. All participants were asked to fill in the questionnaires immediately postpartum, and at 6 weeks, 3 months and 6 months postpartum. The questionnaire was sent by

mail to all the participants at 3 and 6 months postpartum. The study protocol was approved by the Chung Shan Medical University Hospital Institutional Review Board (CSMUH No.CS 15016).

Training protocol

Before the PFMT protocol began, pictures and a model of the pelvic floor anatomy were shown to the participants and they were taught how to contract the pelvic floor muscles correctly through intravaginal palpation. The participants were taught to squeeze and lift the intravaginal finger and draw it into the vagina [17]. The PFMT protocol was as follows: 1) fast contractions lasting for 2 s, rest for 4 s, with 20–30 repetitions 2) rest for 5 min and then begin the sustained contractions lasting for 5 s, rest for 10 s, with 5–10 repetitions [18]. After finishing the 1st set of both contractions, rest for 10 min then repeat the 2nd set of fast and sustained contractions. The EMG-BF (Myomed134, Enraf-Nonius) assisted PFMT included two surface electrodes (Adhesive electrodes -EN-Trode Ø 2, 2 cm, 2 mm) attached at the 2 o'clock and 10 o'clock position around the anus. The women looked at the monitor screen to learn and adjust to the correct pelvic floor muscle contraction and relaxation. The participants were asked if there was any discomfort or perineal wound pain after each training session. Then the women were given written instructions to perform the same exercise protocol three times (or at least twice) a day at home until 6 weeks postpartum. During the home training period, the same physiotherapist monitored the participants' exercise adherence via a telephone interview once a week.

Outcome measurements

The Chinese version of the Pelvic Organ Prolapse Urinary Incontinence Sexual Questionnaire (PISQ-12) and Urinary Distress Inventory short form questionnaire (UDI-6) were used for evaluation [19,20]. PISQ-12 is a self-administered questionnaire containing 12 items divided into three domains: behavioral-emotional (items 1–4; sexual desire, orgasm frequency, arousal and satisfaction with sexual activities), physical (items 5–9; dyspareunia, urinary incontinence during intercourse, fear of incontinence restricting sexual intercourse, avoiding sexual activity because of bulging in vagina and negative emotions during sexual intercourse) and partner-related (items 10–12; erection problems of partner, premature ejaculation of partner and change in orgasm intensity). It uses a 5-point Likert scale ranging from 0 to 4, with 48 being the maximum score; higher scores indicate better female sexual function. UDI-6 is a scoring system that indicates overall lower urinary tract symptoms and severity [21]. It provides information on irritative symptoms (item 1; urinary frequency and item 2; urge incontinence), stress symptoms (item 3; stress urinary incontinence and item 4; small amount of urine leakage), and obstructive/discomfort symptoms (item 5; voiding difficulty and item 6; perineal discomfort or pain). Scoring for each item is as follows: 0 for “not at all”, 1 for “slightly”, 2 for “moderately” and 3 for “greatly”. We evaluated the total score and each item separately. For each symptom, we compared scores between 0 and ≥ 1 .

Statistical analysis

SPSS software version 20.0 (SPSS Inc., Chicago, IL, USA) was used for the data analysis. Student's t test (normally distributed data) and Mann–Whitney U test (non-normally distributed data) were used to evaluate the means of continuous variables between groups. Chi-square test and Fisher's exact test were used to evaluate the between-group differences for categorical variables. Linear regression analysis was used to examine the difference in score

between two groups in different time periods. A P value less than 0.05 was considered a significant difference.

Results

In total, 75 women were enrolled and allocated into a PFMT group ($n = 38$) and a control group ($n = 37$). Fig. 1 demonstrates the flow chart of participants enrolled in this study. Forty-five women (60%) were successfully followed up until 6 months postpartum and completed all the questionnaires. Fifteen women in the PFMT group did not complete follow up due to discontinuation of pelvic floor muscle training protocol at home ($n = 7$), too busy taking care of their baby and inability to leave the house ($n = 3$), did not answer the telephone ($n = 4$) and did not return the questionnaire sent by mail ($n = 1$). Fifteen women in the control group did not complete

follow up due to inability to leave the house, requested to withdraw from the study ($n = 9$) and did not answer the telephone ($n = 6$). The comparison between women who did not complete the questionnaires ($n = 30$) and the women who had completed all the questionnaires ($n = 45$) was performed. There were no significant differences in baseline demographics and clinical characteristics between the two groups.

The data of the 45 women (PFMT group; $n = 23$ vs control group; $n = 22$) were analyzed. The characteristics of the study subjects are shown in Table 1. There were no significant differences in age, BMI, gestational age at delivery, length of labor, vacuum delivery, neonatal birth weight and previous history of urinary tract infection and gynecological operation between groups. There was no difference between the PFMT and control groups at baseline muscle strength (3.2 ± 3.0 vs 3.8 ± 4.0 ; $P = 0.84$) at 6 weeks

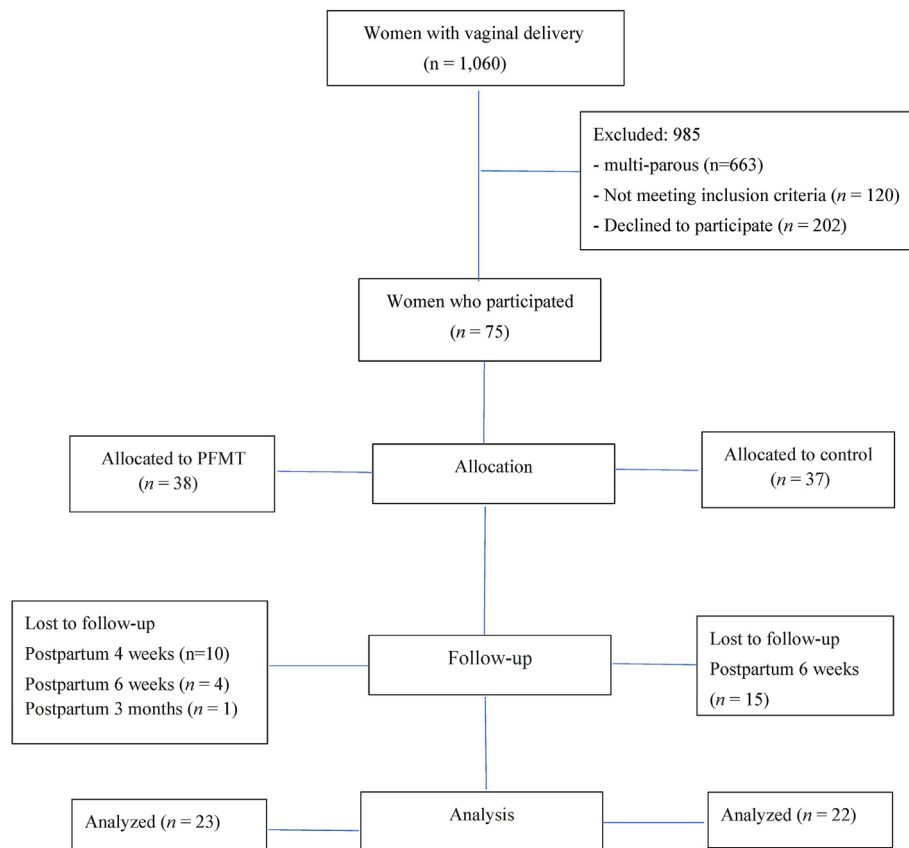


Fig. 1. Flow diagram of participants enrolled in the pelvic floor muscle training (PFMT) group and control group.

Table 1

Baseline demographics and clinical characteristics of study subjects being analyzed.

Characteristics	All subjects ($n = 45$)	Control ($n = 22$)	PFMT ($n = 23$)	p-value
Age	32.1 ± 4.9	32 ± 5.2	32.2 ± 4.7	0.76
BMI (kg/m^2)	25.1 ± 3.7	24.7 ± 2.7	25.6 ± 4.4	0.76
Stage of labor (mins)				
I	957.8 ± 750	1122.3 ± 965.3	801.5 ± 435.4	0.39
II	67 ± 90.5	75.7 ± 119.5	58.8 ± 51.9	0.84
Epidural anesthesia	27 (60)	13 (59.1)	14 (60.9)	0.90
Vacuum delivery	8 (17.8)	3 (13.6)	5 (21.7)	0.69
Birth weight (g)	2965.2 ± 328.9	2910.6 ± 282.4	3017.4 ± 366.6	0.42
History of UTI	4 (8.9)	2 (9.1)	2 (8.7)	1.0
Previous gynecological surgery	4 (8.9)	2 (9.1)	2 (8.7)	1.0

Data presented as n (%) or mean \pm standard deviation.

PFMT: pelvic floor muscle training.

UTI: Urinary Tract Infection, BMI: body mass index.

postpartum. The maximum voluntary contraction was stronger in the PFMT group (11.9 ± 6.2 vs 8.7 ± 4.4 ; $p = 0.173$) but did not reach a statistically significant difference.

The results of sexual function at immediate postpartum (baseline), 6 weeks, 3 months and 6 months postpartum are shown in Table 2. There was no statistically significant difference between the PFMT and control groups in the total PISQ-12 score at the three-consecutive periods. For the behavioral-emotional domain and physical domain, there was no statistically significant difference between groups. For the partner-related domain, the PFMT group had a higher score at 6 weeks (10.6 ± 1.2 vs 9.4 ± 2.1 , $p = 0.04$) and 3 months (11.0 ± 1.2 vs 9.7 ± 1.8 , $p = 0.01$) postpartum but there was no significant difference between groups at 6 months postpartum ($\alpha = 0.05$, post-hoc power = 0.78). However, the baseline PISQ score for the partner-related domain was statistically significant different between the two groups (PFMT group; 11 ± 1.1 vs control group; 9.1 ± 2.3 , $p = 0.005$). We further analyzed the changes in PISQ scores from the baseline to the sixth week, third month and sixth month postpartum and the results are shown in Table 3. There was no statistically significant difference between the PFMT and control groups in total score and the score for each domain at the three different postpartum periods. For the individual questions on the PISQ-12 questionnaire at 6 months postpartum, 13% of the women in the PFMT group and 22.7% in the control group ($P = 0.46$) reported dyspareunia. For emotional factors, 73.9% of the women in the PFMT group and 77.3% in the control group ($P = 0.79$) reported decreased orgasms (score ≤ 2). Moreover, 65.2% in the PFMT group and 72.7% in the control group ($P = 0.59$) reported decreased arousal at 6 months postpartum.

The results for various lower urinary tract symptoms between the PFMT and control groups are shown in Table 4. Urinary frequency (71.1%) was the most common symptom in the immediate postpartum period. There was no statistically significant difference between groups at 6 weeks, 3 months and 6 months postpartum in the proportion of women who reported irritative symptoms, stress symptoms and obstructive/discomfort symptoms. At 6 months

Table 2

Post-partum sexual function comparison between control and PFMT groups, evaluated by PISQ-12 questionnaire.

	Control (n = 22) M \pm SD	PFMT (n = 23) M \pm SD	p value
Total PISQ-12 score			
Immediate postpartum	35.2 \pm 5.1	36.7 \pm 3.6	0.178
6 weeks	35.6 \pm 5.6	36.5 \pm 4.4	0.793
3 months	35.6 \pm 4.8	35.7 \pm 3.6	0.900
6 months	36.3 \pm 5.2	34.7 \pm 8	0.900
PISQ-12 (1–4)			
Immediate postpartum	8.4 \pm 4.5	7.5 \pm 3.3	0.156
6 weeks	8.3 \pm 4.4	7.9 \pm 4.1	0.514
3 months	6.8 \pm 5.2	5.5 \pm 5.1	0.246
6 months	7.5 \pm 4.4	6.7 \pm 4.8	0.471
PISQ-12 (5–9)			
Immediate postpartum	17.6 \pm 2.6	18.3 \pm 1.9	0.533
6 weeks	17.9 \pm 2.3	18 \pm 1.9	0.889
3 months	19.1 \pm 1.2	19.3 \pm 1.2	0.624
6 months	18.9 \pm 1.6	19.5 \pm 0.7	0.284
PISQ-12 (10–12)			
Immediate postpartum	9.1 \pm 2.3	11 \pm 1.1	0.005*
6 weeks	9.4 \pm 2.1	10.6 \pm 1.2	0.048*
3 months	9.7 \pm 1.8	11 \pm 1.2	0.011*
6 months	9.9 \pm 1.8	10.7 \pm 1.1	0.116

PISQ-12: Pelvic Organ Prolapse Urinary Incontinence Sexual Questionnaire-12; higher PISQ scores indicate improved sexual function.

PISQ-12 (1–4): behavioral-emotional domain; PISQ-12 (5–9): physical domain; PISQ-12 (10–12): partner-related domain.

Statistical analysis: Mann–Whitney U test; * $p < 0.05$.

Table 3

Change in PISQ scores in sixth week, third month and sixth month; comparison between control and PFMT groups.

	Control (n = 22) M \pm SD	PFMT (n = 23) M \pm SD	p value
Total PISQ-12 score			
Δ (T6w-T0)	0.4 \pm 5.4	−0.2 \pm 2.4	0.331
Δ (T3m-T0)	0.4 \pm 6.3	−1 \pm 3.5	0.253
Δ (T6m-T0)	1.1 \pm 6.8	−2 \pm 7	0.333
PISQ-12 (1–4)			
Δ (T6w-T0)	−0.1 \pm 4.3	0.3 \pm 2.2	0.484
Δ (T3m-T0)	−1.6 \pm 6.6	−2 \pm 4.2	0.758
Δ (T6m-T0)	−0.9 \pm 6	−0.8 \pm 3.8	0.418
PISQ-12 (5–9)			
Δ (T6w-T0)	0.3 \pm 2.8	−0.2 \pm 1.7	0.459
Δ (T3m-T0)	1.5 \pm 3	1 \pm 2.4	0.756
Δ (T6m-T0)	1.3 \pm 3.1	1.2 \pm 1.8	0.635
PISQ-12 (10–12)			
Δ (T6w-T0)	0.2 \pm 2.6	−0.3 \pm 1.3	0.479
Δ (T3m-T0)	0.5 \pm 2.4	0 \pm 1.2	0.802
Δ (T6m-T0)	0.8 \pm 2.5	−0.2 \pm 1.4	0.153

T0 = PISQ score in immediate postpartum (baseline); Δ (T6w-T0) = change in PISQ scores from baseline to 6 weeks postpartum, Δ (T3m-T0) = change in PISQ scores from baseline to 3 months postpartum, Δ (T6m-T0) = change in PISQ scores from baseline to 6 months postpartum.

postpartum, voiding difficulty and perineal pain were the least reported symptoms by the women in both groups. Whereas, stress urinary incontinence (24.4%) and small amount of urine leakage (28.9%) were the most frequently reported symptoms. Fig. 2 shows that the total UDI-6 score steadily decreased in the PFMT group over time. However, the linear regression analysis did not show any significant difference between groups.

Discussion

Our study showed that there was no statistically significant difference in overall sexual function between the EMG-BF assisted PFMT group and the control group at 6 weeks, 3 months and 6 months postpartum. In a secondary analysis of a randomized trial that evaluated the effect of postpartum pelvic floor muscle training on female sexual dysfunction in primiparous women, no difference was found between training and control groups at 6 months postpartum [14]. In this study by Kolberg Tennfjord et al., the pelvic floor muscle training started at 6 weeks postpartum and then weekly training led by physical therapists for 4 months. Another prospective randomized study was conducted by Citak et al. [15], but the results were contradictory to ours. Pelvic floor muscle training started at 4 months postpartum, and the effects were evaluated at 7 months postpartum. They found that patients in the training group had higher total Female Sexual Function Index (FSFI) scores and higher scores on arousal, lubrication and orgasm. In another systematic review and meta-analysis comparing pelvic floor muscle training and watchful waiting in postpartum women, 5 RCTs used sexual function scores for evaluation of outcomes [16]. However, no significant relationship was noted between pelvic floor muscle training and sexual function scores up to 12 months postpartum. Moreover, the effect of muscle training decreased over time. The reasons for the inconsistencies in study results are: the sexual function questionnaires used in these studies were different, training protocols and the duration of training were diverse. Besides, sexual function is a highly subjective issue and perceptions might be influenced by different cultural backgrounds in different races. In our present study, PFMT started at one week postpartum and was discontinued 6 weeks postpartum. A longer training period might be necessary for improved sexual function in these women.

Table 4

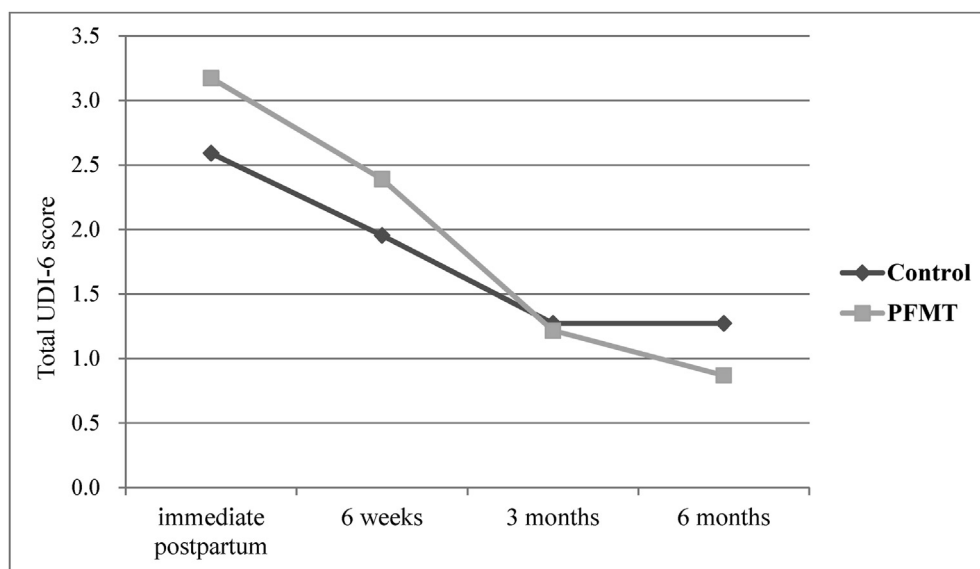
Post-partum lower urinary tract symptoms evaluated by UDI-6 questionnaire, comparison between control group and PFMT group.

	Immediate post-partum		p-value	6 weeks		p-value	3 months		p-value	6 months		p-value
	Control	PFMT		Control	PFMT		Control	PFMT		Control	PFMT	
Urinary frequency			0.67			0.67			0.72			1.0
0	7 (31.8)	6 (26.1)		12 (54.5)	14 (60.9)		17 (77.3)	19 (82.6)		18 (81.8)	19 (82.6)	
≥ 1	15 (68.2)	17 (73.9)		10 (45.5)	9 (39.1)		5 (22.7)	4 (17.4)		4 (18.2)	4 (17.4)	
Urge incontinence			0.15			0.82			0.41			0.46
0	14 (63.6)	19 (82.6)		16 (72.7)	16 (69.6)		18 (81.8)	21 (91.3)		17 (77.3)	20 (87)	
≥ 1	8 (36.4)	4 (17.4)		6 (27.3)	6 (26.1)		4 (18.2)	2 (8.7)		5 (22.7)	3 (13)	
Stress incontinence			0.17			0.07			0.09			0.67
0	15 (68.2)	11 (47.8)		17 (77.3)	12 (52.2)		19 (86.4)	15 (65.2)		16 (72.7)	18 (78.3)	
≥ 1	7 (31.8)	12 (52.2)		5 (22.7)	11 (47.8)		3 (13.6)	8 (34.8)		6 (27.3)	5 (21.7)	
Small amount of urine leakage			0.10			0.64			0.23			0.28
0	14 (63.6)	9 (39.1)		13 (59.1)	12 (52.2)		17 (77.3)	14 (60.9)		14 (63.6)	18 (78.3)	
≥ 1	8 (36.4)	14 (60.9)		9 (40.9)	11 (47.8)		5 (22.7)	9 (39.1)		8 (36.4)	5 (21.7)	
Voiding difficulty			0.81			0.07			0.09			0.35
0	16 (72.7)	16 (69.6)		15 (68.2)	21 (91.3)		17 (77.3)	22 (95.7)		19 (86.4)	22 (95.7)	
≥ 1	6 (27.3)	7 (30.4)		7 (31.8)	2 (8.7)		5 (22.7)	1 (4.3)		3 (13.6)	1 (4.3)	
Perineal pain			0.67			0.56			0.41			1.0
0	16 (72.7)	18 (78.3)		17 (77.3)	16 (69.6)		18 (81.8)	21 (91.3)		21 (95.5)	22 (95.7)	
≥ 1	6 (27.3)	5 (21.7)		5 (22.7)	7 (30.4)		4 (18.2)	2 (8.7)		1 (4.5)	1 (4.3)	
Total UDI-6 score ^a	2.6 ± 2.0	3.2 ± 2.5	0.45	2 ± 1.8	2.4 ± 2.1	0.60	1.3 ± 1.6	1.2 ± 1.3	0.97	1.3 ± 1.4	0.9 ± 1.7	0.13

Data presented as n (%) or mean ± standard deviation.

Statistical difference if $p < 0.05$.

UDI-6: urinary distress inventory questionnaire; short form.

^a Data analyzed by Mann-Whitney U test.**Fig. 2.** Comparison of the total UDI-6 score between PFMT and control groups at different postpartum periods.

In our present study, EMG-BF assisted pelvic floor muscle training was started at one week postpartum. No women in the PFMT group complained of pain or discomfort during the muscle contractions. A study was conducted to evaluate whether pelvic floor muscle contractions starting immediately after childbirth will cause perineal pain [22]. This study concluded that women experience less pain (VAS: 2.2) during pelvic floor muscle contraction compared with other activities of daily living and during micturition at 1–6 days postpartum. In women with pelvic organ prolapse or in non-postpartum period, stronger pelvic floor muscle strength was associated with better sexual function [23,24]. The maximum voluntary contraction was stronger in the PFMT group in our study but did not reach statistical significance compared with the control group. Whether this was associated with the incomplete recovery

of the muscle or nerve function in the pelvic floor during the early postpartum period needs further investigation.

In our study, we also evaluated the effect of routine early postpartum EMG-BF assisted PFMT on various lower urinary tract symptoms in primiparous women experiencing 2nd degree perineal laceration. Our results did not show any statistically significant difference between PFMT and control groups in various symptoms at 6 weeks, 3 months and 6 months postpartum. Most research articles evaluate the effect of pelvic floor muscle training on prevention and treatment of urinary incontinence in antenatal and postnatal women [25,26]. In a Cochrane database systematic review of pelvic floor muscle training begun after delivery in women with and without urinary incontinence (3 trials), the effect was uncertain at the late postnatal period [25]. In another systematic

review also including women with and without urinary incontinence, 5 studies were conducted to evaluate the effect of pelvic floor muscle training after delivery [26]. Three studies reported significant reduction in urinary incontinence in the intervention groups, but 2 studies did not show any difference. In our study, women in the PFMT group reported an improvement in stress urinary incontinence over time but did not reach a statistically significant difference when compared with the control group. Besides stress urinary incontinence, we added information on other LUTS after delivery such as urinary frequency, urge urinary incontinence, voiding difficulty and perineal pain in our present study. All symptoms gradually improved over time in both groups especially for the irritative and obstructive/discomfort symptoms. These symptoms might resolve spontaneously in the postpartum period, and PFMT did not provide any additional effect.

The strength of our study is that it was a prospective study. The PFMT was supervised by the same qualified physiotherapist which prevented a difference in teaching technique. There are limitations in our present study. The first limitation is the high lost follow-up rate (40%) and the small sample size. The Chinese population emphasizes postpartum recuperation and is discouraged from outdoor activities one to two months after delivery. However, we did a statistical analysis comparing those lost to follow up and those remaining in the study and found that there was no statistically significant difference between the two groups. The second limitation of this study is the use of a self-report questionnaire which may result in recall bias. Thirdly, the participants could have performed the exercises incorrectly at home although exercise adherence was monitored via telephone interview once a week.

There are limitations to the conclusion of this study especially due to the high lost follow-up rate. Our study showed that EMG-BF assisted PFMT started as a routine at one week postpartum in primiparous women with vaginal delivery and experiencing 2nd degree perineal laceration did not provide additional improvement in postpartum sexual function and LUTS until 6 months postpartum. EMG-BF assisted PFMT may not be feasible to perform in the early postpartum period as many patients are unable to report back regularly for various reasons. Further randomized control trials and longer evaluation periods may need to clarify the role of PFMT in the early postpartum period. A written leaflet containing information about performing pelvic floor muscle exercise is the least that can be done for women in the postpartum period.

Declaration of competing interest

None declared.

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