



# EFFECTS OF ELECTROMYOGRAPHIC BIOFEEDBACK ASSISTED PELVIC FLOOR MUSCLE EXERCISE ON THE POSTPARTUM SEXUAL FUNCTION AND LOWER URINARY TRACT FUNCTION

Chen GD, Ng SC

Dept. of OB/GYN, Chung Shan Medical University Hospital, Taiwan.

## Hypothesis/aims of study

Perineal trauma or lacerations are common during spontaneous vaginal delivery and are more likely to delay the resumption of sexual intercourse and experience deficits in postpartum sexual function as well as lower urinary tract symptoms. We tried to evaluate the short-term effects early postpartum electromyography biofeedback assisted pelvic floor muscle exercise (PFME) on sexual function and lower urinary tract function (LUTS).

## METHODS

A prospective randomized controlled study had been conducted from May 2016 to December 2017 which was approved by the Institutional Review Board of the University Hospital (CSMUH No.CS 15016). Eighty-two primiparous women who had a spontaneous vaginal delivery with a non-extended second-degree perineal laceration were recruited into this study and were assigned into two groups which were either underwent electromyography biofeedback assisted or verbal instructed PFME (42 vs. 40) at the first week and repeated at the fourth week postpartum. These women were asked to perform PFME at home according to the study protocol until the sixth week postpartum. The Pelvic organ Prolapse Urinary Incontinence Sexual Questionnaire (PISQ-12) and Urinary Distress Inventory short form questionnaire (UDI-6) were used for evaluating sexual function and impact of LUTS at immediate, six weeks, three months and six months postpartum. Pelvic floor muscle strength was assessed at the sixth week postpartum including baseline and maximal voluntary contraction. Only data derived from those women who completed all questionnaires at 6 months postpartum were used for analyzing.

## RESULTS

Totally, forty-five women were successfully followed up until 6 months postpartum and completed all the questionnaires. There were no significant difference between the basic characteristics of women who performed electromyography biofeedback assisted PFME (23/42) and verbal PFME (22/40) (Table 1).

There were no difference in baseline muscle strength between women who performed electromyography biofeedback assisted PFME and verbal PFME ( $3.2 \pm 3.0$  vs  $3.8 \pm 4.0$ ;  $P = 0.84$ ) at 6 weeks postpartum. The maximum

Table 1. Baseline demographics and clinical characteristics of women who performed verbal and electromyography (EMG) assisted biofeedback pelvic floor muscle exercise (PFME)

Characteristics	All (n = 45)	Verbal PFME (n=22)	EMG-PFMT (n=23)	p-value
Age	32.1±4.9	32±5.2	32.2±4.7	0.76
BMI (kg/m <sup>2</sup> )	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 <sup>†</sup>	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 <sup>†</sup>	4(8.9)	2(9.1)	2(8.7)	1.0
Previous gynecological surgery <sup>†</sup>	4(8.9)	2(9.1)	2(8.7)	1.0

Data presented as n (%) or mean ± standard deviation PFMT: pelvic floor muscle training; UTI: Urinary Tract Infection; BMI: body mass index

voluntary contraction was stronger in women who performed electromyography biofeedback assisted PFME ( $11.9 \pm 6.2$  vs.  $8.7 \pm 4.4$ ;  $p=0.173$ ).

The total PISQ-12 scores were no significant difference between two groups at 6 weeks, 3 months and 6 months postpartum (Table 2).

Table 2. Post-partum sexual function comparison between women who performed verbal and electromyography (EMG) assisted biofeedback pelvic floor muscle exercise (PFME) groups, evaluated by PISQ-12 questionnaire.

	Verbal PFME (n=22)		EMG-PFMT (n=23)		p-value
	Mean	SD	Mean	SD	
Total PISQ score					
6 weeks	35.6	5.6	36.5	4.4	0.79
3 months	35.6	4.8	35.7	3.6	0.90
6 months	36.3	5.2	34.7	8.0	0.90
PISQ-12 (1-4)					
6 weeks	8.3	4.4	7.9	4.1	0.51
3 months	6.8	5.2	5.5	5.1	0.24
6 months	7.5	4.4	6.7	4.8	0.47
PISQ-12 (5-9)					
6 weeks	17.9	2.3	18.0	1.9	0.88
3 months	19.1	1.2	19.3	1.2	0.62
6 months	18.9	1.6	19.5	0.7	0.28
PISQ-12 (10-12)					
6 weeks	9.4	2.1	10.6	1.2	0.04
3 months	9.7	1.8	11.0	1.2	0.01
6 months	9.9	1.8	10.7	1.1	0.11

SD= Standard deviation; PISQ-12: Pelvic Organ Prolapse Urinary Incontinence Sexual Questionnaire-12; higher PISQ scores indicate better sexual function PISQ-12 (1-4): behavioral-emotional domain; PISQ-12 (5-9): physical domain; PISQ-12 (10-12): partner-related domain

Women who performed electromyography biofeedback assisted PFME had a higher score at the sixth week ( $10.6 \pm 1.2$  vs  $9.4 \pm 2.1$ ,  $p=0.04$ ) and the third months ( $11.0 \pm 1.2$  vs  $9.7 \pm 1.8$ ,  $p=0.01$ ) postpartum but no significant difference between these two groups at 6 months postpartum. Furthermore, the score related to change of orgasm intensity compared between past and present was significantly higher in the women who performed electromyography biofeedback assisted PFME at the sixth week ( $3.0 \pm 1.1$  vs  $2.0 \pm 1.4$ ,  $p=0.02$ ) and third month ( $3.0 \pm 1.2$  vs  $2.0 \pm 1.5$ ,  $p=0.02$ ) postpartum after analysis of all the individual questions on the PISQ -12 questionnaire. Total UDI-6 score steadily decreased in the women who performed electromyography biofeedback assisted PFME over time. However, all postpartum LUTS gradually improved over time in both groups without a statistically significant difference.

Our results showed that there were no statistically significant differences in overall sexual function and remission of LUTS between women who performed electromyography biofeedback assisted or verbal PFME and only orgasm intensity significantly improved in women who performed electromyography biofeedback assisted PFME at 6 weeks and 3 months. These inconclusive findings might be caused by lack of enough sample size to complete the six months follow-up in both groups.

## CONCLUSIONS

Our results showed that electromyography biofeedback assisted PFME did not provided effects on postpartum sexual function and LUTS might be due to high dropout rate in both groups. The sample sizes between both groups were not enough for statistical analysis.

## REFERENCES

- Chiarelli PE. Postpartum management of pelvic floor. In: Baessler K., Schüssler B., Burgio KL., et al. Pelvic Floor re-education. 2nd ed. London: Springer, 2008: Ch 4.4, p235-241
- Su TH, Lau HH Validation of Chinese version of the short form of the pelvic organ prolapse/urinary incontinence sexual questionnaire J Sex Med 2010;7:3940-3945
- Uebersax JS, Wyman JF, Shumaker SA. Short form to assess life quality and symptom distress for urinary incontinence in women: The incontinence impact questionnaire and the urogenital distress inventory. Neurourol Urodynam 1995;14:131-139.