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INTRAVAGINAL SURFACE EMG PROBE TEST FOR PELVIC FLOOR MUSCLE ACTIVITY OF POSTPARTUM PATIENTS

Hypothesis / aims of study
Pelvic floor muscle training (PFMT) is a well-established treatment for female stress urinary incontinence (SUI). Posterpartum SUI was often occured in pregnant women or women after delivery. Intravaginal surface electromyography (EMG) sums the activity from all muscles coming into contact. The aim of this study was to compare the activity of pelvic floor muscles after vaginal delivery, caesarean section, forceps delivery, to show the differences of three groups.

Study design, materials and methods
All patients singed a consent form approved by the institutional review boards. Participants were 184 women after six weeks of delivery and 20 nulliparas. There were 107 women with vaginal delivery, 65 women were with caesarean section delivery, other 8 women were forceps dilivery. The participants were asked to do pelvic floor contractions in supine position. Femiscan (Mega Electronics Ltd, Kuopio, Finland) were used to measure the activity of pelvic floor muscles. Femiscan has intravaginal surface electromyography (EMG) probes for biofeedback exercise and measurement. EMG signals were expressed as averaged values (uV). 20 nullipara accepted the measurement of pelvic floor muscles activity also.

Results
The characteristics of the participants were given at table 1. There were differences between four groups ($P<0.05$). When analyzing the supine PFM activity values, the mean EMG signal values of PFM were showed in table 2. There was no difference between vaginal delivery and caesarean section ($P>0.05$). But the mean EMG signal value and speeds of PFM contraction in postpartum women were lower than that in nullipara ($P<0.05$). And the lowest mean EMG signal value of PFM was forceps delivery. There was significant difference between two groups of vaginal delivery and forceps delivery.

Interpretation of results
The result of this study shows that there was no significant different of the mean EMG signal value and speeds of PFM contraction between vaginal delivery and caesarean section in the early postpartum. So we conclude that it is pregnancy itself damage the PFM. But the mean EMG signal values of forceps delivery were lower than those of vaginal delivery.

Concluding message
There was no significant different of the mean EMG signal value and speeds of PFM contraction between vaginal delivery and caesarean section in the early postpartum. The selected caesarean section can not protect the PFM. But forceps delivery damage the PFM, it need to be avoided.

Table 1. Patient characteristics

characteristics	Vaginal Delivery (n=107)	Caesarean Section (n=59)	Forceps Delivery (n=8)	Nullipara (n=20)
Age (yr)	28.1±3.5	28.5±4.8	28.3±7.8	25.2±4.2
BMI (Kg/cm^2)	23.1±2.6	23.9±3.9	23.9±0.5	0.23±0.05
After delivery (d)	46.4±8.0	44.1±3.1	46.3±5.1	

Table 2. the mean EMG signal values of PFM

	Vaginal Delivery (n=107)	Caesarean Section (n=59)	Forceps Delivery (n=8)	Nullipara (n=20)
Right vaginal side	18.5±12.2	20.2±8.7	11.9±5.1	23.8±7.4
Left vaginal side	18.8±11.6	20.4±7.6	14.3±8.3	26.2±7.2
Mean values	18.8±10.1	20.3±7.3	12.6±7.3	25.0±6.6

Specify source of funding or grant	**Grant of Shanghai Municipal Public Health Bureau**
Is this a clinical trial?	**Yes**
Is this study registered in a public clinical trials registry?	**Yes**
Specify Name of Public Registry, Registration Number	**Shanghai Municipal Public Health Bureau, NO:2006057**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**The institutional review boards of the Shanghai Jiaotong University Affiliated Sixth People's Hospital**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**