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THE RELATIONSHIP OF PELVIC FLOOR BIOMETRY AND PELVIC FLOOR SYMPTOMS IN WOMEN 3 YEARS AFTER FIRST DELIVERY

Hypothesis / aims of study
Women's pelvic floor biometry changes after pregnancy and delivery. Women also suffer from pelvic floor disorders after delivery. This study aims at exploring the relationship between symptoms of pelvic floor disorders and pelvic floor biometry.

Study design, materials and methods
This was a follow-up of two cohorts of women. Chinese nulliparous women, who had no symptom of pelvic floor disorders before pregnancy, and at the first trimester of their singleton pregnancy, were recruited for the first study. Primiparous women who had an instrumental delivery were recruited on day 1-3 after their first delivery in the second study. They were invited for a follow-up. They filled in Pelvic Floor Distress Inventory (PFDI) and Pelvic Floor Impact Questionnaire (PFIQ) to explore their symptoms of pelvic floor disorders. 3D translabial ultrasound was performed at rest, during maximum Valsalva (VM) and pelvic floor muscle contraction (PFMC). Offline analysis was performed to measure the pelvic organ positions with reference to the inferoposterior border of pubic symphysis and the hiatal area. Pelvic organs' position above the inferoposterior border of pubic symphysis was negative.

Results
399 women, mean age of 35.1±3.7 years-old, mean BMI 22.2±3.9 kg/m^2, and mean duration from first delivery 42.3±7.5 (range 36-65) months, completed the study. In all, 153 (38.3%), 59 (14.8%), 27 (6.8%) and 45 (11.3%) reported symptoms of stress urinary incontinence (SUI), urge urinary incontinence (UUI), faecal incontinence (FI) to solid or liquid stool, and pelvic organ prolapse (POP) respectively.
A lower bladder neck and a larger hiatal area at rest, during VM and PFMC were associated with SUI (table 1). Logistic regression analysis found that only a lower bladder neck during VM was an independent factor for SUI (adjusted OR 1.7, P = 0.006). A lower bladder neck at rest and PFMC were also associated with UUI (SUI vs no SUI, -2.7 (1.0) vs -2.9 (0.4) cm, P = 0.005 and P = 0.019 respectively). A lower anorectal junction and a larger hiatal area was associated with symptoms of FI, but this only reached statistical significant at rest (anorectal junction -1.9 (0.5) vs -2.2 (0.8) cm, P = 0.013; 14.5 (3.9) vs 13.2 (3.0) cm^2, P = 0.028). A larger hiatal area was associated with symptoms of POP, but this only reach statistical significant at rest (POP vs no POP14.2 (3.8) vs 13.1 (2.9) cm^2, P = 0.03).

Interpretation of results
A lower bladder neck and a larger hiatal area were associated with SUI. A lower bladder neck at rest and PFMC were also associated with UUI. A lower anorectal junction and a larger hiatal area at rest were associated with symptoms of FI. A larger hiatal area at rest was associated with symptoms of POP. Logistic regression analysis found that a lower bladder neck during VM was an independent factor for SUI (adjusted OR 1.7, P = 0.006). We failed to find that other pelvic floor biometry being factor for the pelvic floor disorder symptoms in women 3 years after their first delivery.

Concluding message
A lower bladder neck during VM was an independent factor for SUI (adjusted OR 1.7, P = 0.006).

	SUI		P-value
	Yes (n= 149)	No (n=237)	
Bladder neck at rest	-2.8 (0.6)	-3.0 (0.4)	<0.005
Cervix at rest	-3.9 (1.0)	-4.1 (1.0)	0.04
Anorectal junction at rest	-2.1 (0.9)	-2.2 (0.8)	0.34
Hiatal area at rest	13.8 (3.2)	12.9 (2.9)	0.005
Bladder neck at VM	-1.8 (0.8)	-2.1 (0.8)	<0.005
Cervix at VM	-3.0 (1.3)	-3.2 (1.3)	0.09
Anorectal junction at VM	-1.0 (1.2)	-1.0 (1.0)	0.80
Hiatal area at VM	16.7 (5.1)	15.3 (4.8)	0.007
Bladder neck at PFMC	-2.8 (0.5)	-3.0 (0.4)	<0.005
Cervix at PFMC	-4.1 (1.1)	-4.3 (1.1)	0.10
Anorectal junction at PFMC	-2.2 (0.8)	-2.2 (0.8)	0.67
Hiatal area at PFMC	11.4 (3.5)	10.6 (2.6)	0.010

Table 1. The relationship of pelvic floor biometry and symptoms of stress urinary incontinence.

Disclosures
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