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INTRA- AND INTER-OBSERVER REPEATABILITY OF PELVIC FLOOR BIOMETRY OBTAINED BY 3D/4D TRANSLABIAL ULTRASOUND IN WOMEN WITH PELVIC ORGAN PROLAPSE.

Hypothesis / aims of study
The aim of this study was to evaluate the intra- and inter-observer repeatability of pelvic floor biometry obtained by 3D or 4D translabial ultrasound in women with pelvic organ prolapse.

Study design, materials and methods
Women presented to an urogynaecology unit for pelvic organ prolapse were recruited and written consent was obtained. Three- or four-dimensional translabial ultrasound scan was performed for them at rest and at valsalva maneuver (VM). Analyses were conducted offline by two observers. Bladder neck position and cystocele from symphysis pubis at mid-sagittal plane were measured at rest and at maximum VM. Hiatal dimensions were measured at the plane of minimal hiatal dimension also at rest and at maximum VM. The measurements were made twice by operator I for two times with one week apart; and another time by operator II for once. Ethics approval was obtained from the institute. Intraclass correlation coefficients were calculated with value above 0.7 regarded as high correlation.

Results
Forty women completed the study. Their mean age was 61.4 ± 11.5 years old and their mean parity was 3.6 ± 3.0. In all, 32 (80%) and 8 (20%) of them had stage I/II or stage III/IV pelvic organ prolapse respectively. The mean (standard deviation) of each pelvic floor biometry measured by the two operators was listed in table 1. The intra-observer intra-class correlation coefficient of each pelvic floor biometry ranged from 0.71 to 0.97. And the intra-class correlation coefficient between two observers were 0.64 to 0.92.(Table 1)

Interpretation of results
There were high intra-observer repeatability and high inter-observer repeatability of pelvic floor biometry obtained by 3D or 4D translabial ultrasound scan for women with pelvic organ prolapse.

Concluding message
Translabial ultrasound is a reliable method for studying pelvic floor biometries in women with pelvic organ prolapse.

Table 1. Measurement of the pelvic floor biometry by two operators and the intra-class correlation coefficient.

	1st Measurement by Observer I Mean(SD)	2nd Measurement by Observer I Mean(SD)	Measurement by Observer II Mean(SD)	[a]Intra-observer Repeatibility ICC(95%CI)	[b]Inter-observer Repeatibility ICC(95%CI)
Rest					
Bladder neck position (cm)	-2.33 (0.72)	-2.25 (0.81)	-2.37 (0.75)	0.96 (.92-.98)	0.81 (.65-.90)
Cystocele (cm)	-2.22 (0.93)	-1.44 (0.92)	-2.28 0(.84)	0.92 (.84-.96)	0.92 (.55-.99)
Hiatal transverse diameter (cm)	4.56 (0.61)	4.54 (0.42)	4.56 (0.59)	0.91 (.81-.95)	0.64 (.38-.81)
Hiatal AP diameter (cm)	5.74 (0.62)	5.63 (0.55)	5.75 (0.57)	0.88 (.77-.94)	0.70 (.46-.84)
Hiatal area (cm^2)	18.82 (4.29)	19.4 (3.04)	18.85 (3.97)	0.94 (.88-.97)	0.68 (.44-.83)
Hiatal circumference (cm)	16.14 (1.81)	16.4 (1.29)	16.23 (1.69)	0.94 (.87-.97)	0.69 (.45-.84)
Valsalva maneuver (VM)					
Bladder neck position (cm)	-0.06 (1.14)	-0.07 (1.50)	-0.08 (1.20)	0.82 (.66-.90)	0.84 (.69-.92)
Cystocele (cm)	0.27 (1.36)	0.41 (1.60)	0.24 (1.45)	0.71 (.49-.84)	0.83 (.67-.92)
Hiatal transverse diameter (cm)	5.48 (0.84)	5.41 (0.83)	5.51 (0.77)	0.90 (.80-.95)	0.88 (.76-.94)
Hiatal AP diameter (cm)	6.47 (0.89)	6.3 (0.77)	6.51 (1.01)	0.93 (.86-.96)	0.82 (.66-.91)
Hiatal area (cm^2)	27.02 (7.26)	26.11 (6.87)	27.22 (7.48)	0.97 (.94-.99)	0.84 (.69-.92)
Hiatal circumference (cm)	19.09 (2.59)	18.78 (2.34)	19.06 (2.64)	0.96 (.93-.98)	0.85 (.72-.92)

[a] Intra-observer repeatability is calculated by the intra-class correlation coefficient (95% confident interval) between 1st and 2nd measurement done by Observer I. [b] Inter-observer repeatability is calculated by the intra-class correlation coefficient (95% confident interval) between 1st measurement of Observer I and the measurement of Observer II.

Disclosures
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