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CORRELATION AMONG DIGITAL PALPATION, ELECTROMYOGRAPHIC ACTIVITY AND BIOMETRIC ULTRASOUND PARAMETERS OF THE PELVIC FLOOR MUSCLES IN WOMEN WITH STRESS URINARY INCONTINENCE: PRELIMINARY STUDY.

Hypothesis / aims of study
The International Continence Society (ICS) has recommended the female pelvic floor muscles (PFM) evaluation as part of clinical routine assessment of lower urinary tract symptoms in women, which can be performed by various methods.

Digital palpation is one of the most practical and widely used method for PFM functional evaluation, due its simplicity and low cost. This method has been correlated with surface electromyography, noting that both can be used to validate data used in clinical practice and scientific research (1). Another method described as reliable for assessing PFM biometric parameters is the transperineal ultrasound (2). However, no studies have correlated these methods.

Our hypothesis is that there is a relationship among muscle strength, electrical activity and anatomical condition of the PFM. The aim of this study was to investigate whether digital palpation and PFM electromyography activity has any correlation with pubo-rectal muscle thickness during rest and genital hiatus area during PFM maximal voluntary contraction, in women with predominant stress urinary incontinence (SUI) symptoms.

Study design, materials and methods
A clinical, transversal and controlled study was carried out after approval of the Research Ethics Committee. Initially, 39 women were recruited and investigated if they fulfilled the study eligibility criteria, as well as if they had predominant SUI. SUI symptoms were checked using the International Consultation on Incontinence Questionnaire Urinary Incontinence - Short Form (ICIQ UI-SF). Eight of these women did not fulfill the inclusion criteria due to PFM strength grade 0 or 1 (n=3), presence of predominant urgency urinary incontinence (n=1), previous surgery for SUI and pelvic organ prolapse grade III or greater (n=4).

Thus, 31 women participated in the study. Participants' PFM was evaluated by digital palpation and surface electromyography; as well as they were evaluated by 3D transperineal ultrasound (*GE Voluson E8®*) to run the analysis of the pubo-rectal muscle thickness during rest and genital hiatus area during PFM maximal voluntary contraction (3).
Statistical analysis was performed using Kolmogorov-Smirnov, Pearson and Spearman's tests, adopting a significance level of 5%.

Results
Most participants were white, married and had completed college degree. Participant's mean age was 51.6 (±8.2) years old and body mass index was 24.6 (±5.5) kg/m². ICIQ-UI SF average score was 15 (±3.6).

Table 1 presents the correlation analysis among PFM evaluation methods.

Table 1. Correlation analysis among PFM evaluation methods.

		Pubo-rectal muscle thickness during rest	Genital hiatus area during PFM maximal voluntary contraction
Digital palpation[1]	**p**	0.16	0.02*
	r	0.26	-0.39
	95% CI	-0.12 – 0.57	-0.66 - -0.04
PFM electromyography activity[2]	**p**	0.009*	0.22
	r	0.45	-0.23
	95% CI	0.12 – 0.69	-0.54 – 0.14

PFM = Pelvic floor muscles; 95% CI = 95% Confidence Interval. *p<0.05. [1]*Spearman* test. [2]*Pearson* test.

Interpretation of results
Urogynecological disorders can be triggered by anatomical, biomechanical and neuromuscular disorders, so it is important to correlate the findings obtained from reliable evaluation methods once it allows understanding PFM condition in its entirety.

Thus, despite study results are still preliminary, it was already possible to notice that the greater pubo-rectal muscle thickness during rest, the greater is PFM electromyography activity. Likewise, the smaller the genital hiatus area during PFM maximal voluntary contraction, the higher is PFM strength graduation.

The small number of participants is one of the limitations of the study. Therefore, we need to continue the research in order to enhance our results and to prove that such evaluation methods are correlated and all of them can be used as complementary and valid methods for PFM assessment.

Concluding message
In conclusion, these preliminary results indicate that PFM strength and electromyography activity are correlated, respectively, to genital hiatus area and pubo-rectal muscle thickness in women with predominant SUI symptoms.

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Disclosures