

RELATIONSHIP OF THE DIMENSIONS OF LEVATOR HIATUS AT 12 WEEKS OF PREGNANCY WITH THE MODE OF DELIVERY. ANALYSIS OF DATA FROM A PROSPECTIVE STUDY USING 3D TRANSPERINEAL ULTRASOUND.

Hypothesis / aims of study

To compare anatomic and functional dimensions of levator hiatus in women at the beginning of their pregnancy with the mode of delivery. To demonstrate that women who have levator hiatus with smaller dimensions are more likely to delivery with cesarean section.

Study design, materials and methods

Prospective cohort study. Tertiary referral center. Transperineal 3D ultrasound of levator hiatus (LH) measuring anteroposterior diameter, lateral diameter, the perimeter (cm) and the surface (cm²) of the hiatus, at rest, maximum levator Kegel contraction, and maximum Valsalva effort. Inclusion criteria were: first pregnancy, no previous uterine procedures, no medical history necessitating vaginal delivery. Each subject filled in the incontinence, prolapsed and quality of life questionnaires. The intervention took place at 12 week of pregnancy. Obstetric history of labor, mode of delivery, neonatal data, were collected postdelivery with structured questionnaire. Microsoft EXCEL and MedCalc were used for data process and statistics.

Results

A total of 45 primipara women fulfilled the inclusion criteria, and delivery data were available for 41. Initial 3DUS assessment of LH (at 12 weeks of gestation) in this group of women indicated that the mean LH surface was 13.51cm² (±2.92 cm²); median and dichotomous value was 13.16 cm². There were 24 women whose LH was measured less, and 17 women whose LH was measured more than the median. In the first group, there were 10 women who delivered with caesarean section (41.6%); in the second group there were 7 women who delivered with caesarean section (41.2%). Demographic, imaging, and neonatal data of the two groups are shown in Table 1.

Table 1. Descriptive statistics of the measurements of Levator Hiatus dimensions between women with smaller and larger LH.

	Small LH	Large LH	p
n	24	17	
Age (years)	29.37 ± 3.99	31.82 ± 5.80	<0.0001*
Weight (Kgr)	61.54 ± 6.82	69.70 ± 17.97	<0.0001*
Height (cm)	163.9 ± 4.9	165.5 ± 5.2	0.32
Male / Female	14/10	10/7	
Pregnancy Duration (weeks)	39.41 ± 2.28	38.70 ± 1.64	0.28
Birth Weight (gr)	3197.5 ± 373.7	3119.4 ± 405.8	0.59
Cesarean Section rate	41.6%	41.2%	0.7671
At rest			
LH surface (cm ²)	11.23 ± 1.50	15.78 ± 2.08	< 0.0001*
At max contraction			
LH surface (cm ²)	9.44 ± 2.12	12.31 ± 2.09	<0.0001*
At max Valsalva			
LH surface (cm ²)	11.64 ± 2.08	18.42 ± 4.22	< 0.0001*

* Non significant

Interpretation of results

Imaging of the anatomical structures that support the pelvic floor is currently contained with the aide of tree-dimensional ultrasound (3DUS) and magnetic resonance imaging (MRI). 3DUS is performed transperineally and the main objective of this approach has been combusted in the dimensions and the integrity of the levator ani muscles. The pre-conceptual dimensions of the levator hiatus (LH), in relation to the mode of delivery appear to have some significance. The mode of delivery is apparently multifactorial. Completely independent factors play pivotal role in the final outcome of labor: uterus, fetus, pelvic anatomy, are the main parameters but not necessarily the only ones. Nevertheless, a more systematic approach could give an implication of the role of each one of these factors and their participation in the result of the mode of delivery. The pelvic floor musculature seems to be the functional part of the pelvis that permit (or not) with its functional or its anatomical size a labor to be concluded vaginally. We hypothesize that women with larger anatomical and functional levator hiatus may be more prone for vaginal delivery. The anatomic evaluation of the levator hiatus is assessed by the imaging techniques at rest. The functional evaluation of the levator hiatus is assessed at maximum Kegel contraction and maximum Valsalva effort. The concept of delivering studies where perineal musculature is related with the mode of delivery aims to develop preventive strategies against pelvic floor disorders in women after childbirth. These data derive from a larger prospective cohort study where pelvic floor ultrasound was used in order to evaluate the changes in the size of levator hiatus during pregnancy and after delivery.

Concluding message

These data suggest that levator hiatus dimensions have no significance for the delivery outcome. Studies with larger populations are needed to confirm these results.

References

1. UOG 2011; 37: 381.
2. AJOG 2009; 201:514.
3. UOG 2012; 39:372.

Disclosures

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