1038

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IS THERE RELATIONSHIP BETWEEN MODE OF DELIVERY AND PRESENCE OF URINARY TRACT SYMPTOMS IN PRIMIPAROUS WOMEN?

Hypothesis / aims of study

The negative impact of the route of delivery on female pelvic floor muscle function is widely acknowledged by the world medical literature. Prolonged vaginal deliveries, with the use of instruments (ex: forceps, vacuum extractor and episiotomy) and large fetuses are variables directly related to an increase in stress urinary incontinence and postpartum genital prolapse. Nevertheless, the physiological and anatomical changes in pregnancy (ranging from hormonal influence on ligament laxity and muscle hypotonia to increased uterine volume with growing fetal, placental and amniotic fluid weight) alone are commonly responsible for causing or aggravating urinary tract symptoms (1). However, the extent to which the delivery pathways actually alter urinary tract symptoms that are already existent before labor and perceived during pregnancy, remains largely unknown.

In view of these facts, we hypothesized that, in addition to the effects of pregnancy, the type of delivery could influence the occurrence and/or persistence of urinary tract symptoms in primiparous women. Therefore, the aim of this study was to analyze the relationship between type of delivery (elective cesarean section, cesarean section preceded by labor and vaginal delivery with episiotomy) and presence of incontinence urinary symptoms (stress urinary incontinence - SUI and urgency urinary incontinence -UUI) in primiparous women.

Study design, materials and methods

This is a prospective cohort study approved by the Research Ethics Committee and all volunteers signed a free informed consent term.

One hundred and thirty-six (136) pregnant women were selected to participate in the study. Of these women, eight were discontinued due to missing data and follow-up, totaling 128 primigravidae. Gestational age was between 30 and 34 weeks and maternal age ranged from 18 to 35 years. Exclusion criteria were: cognitive difficulty, lower limb neuromotor deficit, previous history of pelvic surgery, presence of diabetes type I or II and performance of pelvic floor muscle exercises (n=37). Of the 91 women evaluated during pregnancy, only 73 returned for the performance of the postpartum assessment. Symptoms of urinary incontinence were investigated during anamnesis, considering the last four weeks, and were collected according to recommendations established by the International Continence Society (ICS) and International Association of Urogynecology (IUGA) (2010) (2). Postpartum evaluation was performed 60 days after labor **(**+/- 10 days) when data on the delivery was collected and participants were asked about the presence of incontinence urinary symptoms. For statistical analysis, the 73 participants were divided into three groups according to type of delivery, and the following groups were considered: 1. vaginal delivery with episiotomy (n=33), 2. elective cesarean section (n=11), 3. cesarean section preceded by labor (n=29). The chi-square tests and Fisher's Exact test were used to analyze correlations between types of delivery and urinary tract symptoms, adopting a 5% level of significance.

Results

The majority of participants were white (52.1%), were in a stable relationship (79.5%), had attended school for at least 8 years (69.8%), did not perform physical activity (82.2%) and had no knowledge of the pelvic floor (90.4%). Volunteers underwent the first evaluation at 31.9 (±1.3) weeks gestation. At the time, the mean age of participants was 24.2 years (±5.29) and mean weight was 78 (±18.3) Kg. The second evaluation was performed at an average of 63.8 (±3.8) days postpartum and the mean weight of the volunteers was 71.2 (±19) Kg. The three study groups were homogeneous relative to these characteristics ($p>0.05$).

Table 1 shows the prevalence of urinary tract symptoms during pregnancy and in the postpartum period, in different groups, as well as analyses of correlation between types of delivery and the presence of urinary tract symptoms.

Table 1 - Correlation between types of delivery and urinary tract symptoms.

	TYPE OF DELIVERY						
	1. Vaginal delivery with episiotomy (n=33)		**2. Elective cesarean section (n=11)**		**3. Cesarean section with labor (n=29)**		**p-value**
	n	%	n	%	n	%	
SUI during pregnancy	17	51.5%	7	63.6%	14	48.3%	0.6835*
Postpartum SUI	4	12.1%	0	0.0%	1	3.4%	0.3656**
SUI during pregnancy X postpartum period							0.5089**
DEVELOPED SYMPTOM	0	0.0%	0	0.0%	0	0.0%	
MAINTAINED SYMPTOM	4	12.1%	0	0.0%	1	3.4%	
DID NOT DEVELOP SYMPTOM	16	48.5%	4	36.4%	15	51.7%	
SYMPTOM DISAPPEARED	13	39.4%	7	63.6%	13	44.8%	
UUI pregnancy	7	21.2%	2	18.2%	10	34.5%	0.4013*
Pospartum UUI	4	12.1%	0	0.0%	1	3.4%	0.3651**
UUI during pregnancy X postpartum period							0.6097**
DEVELOPED SYMPTOM	3	9.1%	0	0.0%	1	3.4%	
MANTAINED SYMPTOM	1	3.0%	0	0.0%	0	0.0%	
DID NOT DEVELOP SYMPTOM	23	69.7%	9	81.8%	18	62.1%	
SYMPTOM DISAPPEARED	6	18.2%	2	18.2%	10	34.5%	

*Chi-Square Test/ **Fisher's Exact Test

Interpretation of results

Many studies have evaluated the impact of type of delivery on the pelvic floor by analyzing the status of postpartum continence (3). This may be an indirect manner of assessing possible damage, since the continence mechanism is only altered when any of its components loses anatomical, neural or functional integrity.

In the current study only 10.9% of the total number of postpartum women reported any type of urinary incontinence. Women who progressed to vaginal delivery had a higher prevalence of stress urinary incontinence (12.1%) and urgency urinary incontinence (12.1%) when compared to women undergoing cesarean section preceded by labor (3.4% and 3.4%, respectively), although this difference was not statistically significant. Nevertheless, it may be noted that women who experienced labor had higher prevalence rates of SUI, suggesting that labor has an influence on the pelvic floor, which may lead to alterations in the continence mechanism. However, it was observed that the majority of postpartum patients did not develop or even ceased to exhibit postpartum SUI, regardless of the type of delivery they had undergone. However, this relationship was not significant between groups, suggesting that pregnancy alone exerts an important effect on structures responsible for urinary continence.

Concluding message

This study did not observe any association between mode of delivery and the presence and/or persistence of stress and urgency urinary symptoms in primiparous women. Nevertheless, new studies are needed to confirm these findings.

References

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Disclosures

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