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Research Article

Lower Urinary Tract Symptoms One Year After Delivery: A Comparison of Vaginal Delivery Versus Caesarean Section

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Hypothesis/Aims of Study

Pregnancy and childbirth are risk factors for the development of lower urinary tract symptoms (LUTS).

LUTS after delivery have attracted substantial attention in recent years because of their high prevalence and detrimental effects on health-related quality of life.

The aims of this study were to: investigate the prevalence of LUTS one year after the first delivery, determine the potential risk factors and to compare the prevalence of LUTS for different modes of delivery, analysing the social and hygienic discomfort associated with micturition complaints.

Study Design, Materials and Method

This cross- sectional study was conducted in a Tertiary Hospital and was approved by the Research Ethics Committee if the Institution.

The eligibility criteria were primiparous women at ≥36 weeks gestation with no history of UI. Women who were not able to understand the questions or under the age of 18 were excluded from the study.

Exclusion criteria were previous urogynecological surgery, urogynecological malformations, diabetes mellitus, and neurological disorders.

International Consultation on Incontinence Questionnaire Female Lower Urinary Tract Symptoms Module (ICIQ-FLUTS) was administered consecutively 1 year after delivery.

No intervention was implemented.

The primary outcome was women's self-reported occurrence of LUTS 12 months after giving birth. The impact of LUTS experienced by women on their daily activities and psychological well-being were secondary outcomes.

Demographic data of the participants included maternal age, type of job (physical or mental), smoking, health-related problems during pregnancy, delivery mode, neonatal weight, length and Head circumference.

All statistical analyses were performed using SPSS version 27. Data was analysed by descriptive statistics, Chi-squared tests, Fisher's exact test and logistic regression.

Results

In all, 333 pregnant women were enrolled in the study and asked to complete the questionnaire one year after delivery, 119 were not eligible (11, 5% were pregnant again). While 214 completed the questionnaire 1 year after birth, corresponding to a response rate of 64.26%.

Mean maternal age was 28, 74 ± 5.46 years and 8.4% of women were smokers. As for the type of delivery, about half (43.5%) were Vaginal Delivery (VD), 19.2% vacuum assisted and 1.9% forceps assisted.

Cesarean Delivery (CD) was associated with the presence of women health problems during pregnancy (50%, p=0,004) such as hypertension, gestational diabetes and others

Storage symptoms were more common than voiding symptoms, the most commonly reported LUTS were nocturia (45.1%), followed by urgency (20.7%),9.4%em had urge urinary incontinence and 23.5% had some degree of stress urinary incontinence (11.7% mild).

Regarding perineal state after vaginal delivery, 27 women had ≥2nd degree tear, 13 of them presenting urinary incontinence.

The prevalence of LUTS according to the delivery mode a year after delivery is shown in **Figure 1 and 2**.

The incidence of nocturia and urgency, was significantly lower in the VD group than the CD (P =0.014 and P= 0,02 respectively). The incidence of nocturia and urgency, was significantly lower in the VD group than the CD (P =0.014 and P= 0,02 respectively). There were no significant differences between the groups in terms of urinary frequency.

Urgency was referred to as the most severe and impacting symptom in women with caesarean section with a frequency of 30.3% vs. 15.2% in vaginal deliveries. Despite this, the frequency of urge urinary incontinence is higher in vaginal delivery but without a statistically significant difference.

Compared women with normal vaginal delivery, women with operative vaginal delivery had a higher prevalence of UI and urgency.

The extent to which women were bothered by each symptom, no bother and minor bother were the most common responses reported

SUI, nocturia, and urgency were most frequently considered moderate or severe bother nevertheless no association was

Prevalence of LUTS according to the mode of delivery

		VD(n=93)	CD(n=76)	vacuum assisted(n=41)	forceps assisted(n=4)	Total
Nocturia	none	60	36	19	2	117
		65,2%	47,4%	46,3%	50,0%	54,9%
	one	22	13	15	2	52
		23,9%	17,1%	36,6%	50,0%	24,4%
	two	5	22	6	0	33
		5,4%	28,9%	14,6%	0,0%	15,5%
	three	4	4	1	0	9
		4,3%	5,3%	2,4%	0,0%	4,2%
	four or more	1	1	0	0	2
		1,1%	1,3%	0,0%	0,0%	0,9%

		VD(n=93)	CD(n=76)	vacuum assisted(n=41)	forceps assisted(n=4)	Total
Urgency	never	78	53	34	4	169
		84,8%	69,7%	82,9%	100,0%	79,3%
	occasionally	4	5	4	0	13
		4,3%	6,6%	9,8%	0,0%	6,1%
	sometimes	4	17	1	0	22
		4,3%	22,4%	2,4%	0,0%	10,3%
	most of the time	4	1	1	0	6
		4,3%	1,3%	2,4%	0,0%	2,8%
	all of the time	2	0	0	0	2
		2,2%	0,0%	0,0%	0,0%	0,9%

		VD(n=93)	CD(n=76)	vacuum assisted(n=41)	forceps assisted(n=4)	Total
Pain	never	91	73	39	3	206
		98,9%	96,1%	95,1%	75,0%	96,7%
	occasionally	1	2	1	1	5
		1,1%	2,6%	2,4%	25,0%	2,3%
	sometimes	0	1	1	0	2
		0,0%	1,3%	2,4%	0,0%	0,9%

		VD(n=93)	CD(n=76)	vacuum assisted(n=41)	forceps assisted(n=4)	Total
Strain	never	91	75	40	4	210
		98,9%	98,7%	97,6%	100,0%	98,6%
	sometimes	1	1	1	0	3
		1,1%	1,3%	2,4%	0,0%	1,4%

VD – vaginal delivey CD – cesarean delivery

Figure 1

found between the severity of LUTS and the degree of bother-less.

Incontinence was more frequent in the three subtypes (urgency, stress and mixed) in the VD group with significant differences only when considering stress incontinence (p=0.011) with severe incontinence in only 4.3% of cases.

In the literature, recent studies have shown the protective effect of CD on the pelvic floor. VD is an independent risk factor for damage to the pelvic floor muscles after the fetus passing through the soft birth canal can directly damage the pelvic floor muscles.

Our results are in line with the findings from a number of previous studies; low degree of perineal injury, birth weight, length and head circumference seem to be of minor importance for the incidence of UI postpartum.

As LUTS can have a negative impact on women's psychological wellbeing, it is important that they are encouraged to seek health care. It should be acknowledged that this is not an inevitable and acceptable consequence of childbirth

Asking women to recall symptoms is subject to bias, and may have led to over- or underestimation. Information on pelvic floor exercises would have been interesting, to investigate any associations with LUTS.

Conclusion

The most commonly reported LUTS were nocturia followed by urgency, which was significantly lower in the VD group than the CD.

SUI, nocturia, and urgency were most frequently considered moderate or severe bother nevertheless no association was found between the severity of LUTS and the degree of bother-less.

The prevalence of all three subtypes of UI was higher after VD compared with CD, with significant higher risk of stress incontinence in CD.

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Ethics Committee: CES- Comissão de ética para a Saúde do Centro Hospitalar Universitário do Algarve

Informed Consent: Yes

Hesitancy	never	89	74	39	4	206
		96,7%	97,4%	95,1%	100,0%	96,7%
	occasionally	1	2	0	0	3
		1,1%	2,6%	0,0%	0,0%	1,4%
	sometimes	2	0	1	0	3
		2,2%	0,0%	2,4%	0,0%	1,4%
	most of the time	0	0	1	0	1
		0,0%	0,0%	2,4%	0,0%	0,5%

		VD(n=93)	CS(n=76)	vacuum assisted(n=41)	forceps assisted(n=4)	Total
Urgency Incontinence	never	83	69	38	3	193
		90,2%	90,8%	92,7%	75,0%	90,6%
	occasionally	3	3	1	1	8
		3,3%	3,9%	2,4%	25,0%	3,8%
	sometimes	4	4	1	0	9
		4,3%	5,3%	2,4%	0,0%	4,2%
	most of the time	2	0	1	0	3
		2,2%	0,0%	2,4%	0,0%	1,4%

		VD(n=93)	CD(n=76)	vacuum assisted(n=41)	forceps assisted(n=4)	Total
Stress Incontinence	never	68	68	25	2	163
		73,9%	89,5%	61,0%	50,0%	76,5%
	occasionally	14	2	9	0	25
		15,2%	2,6%	22,0%	0,0%	11,7%
	sometimes	6	4	4	1	15
		6,5%	5,3%	9,8%	25,0%	7,0%
	most of the time	4	2	3	1	10
		4,3%	2,6%	7,3%	25,0%	4,7%

		VD(n=93)	CD(n=76)	vacuum assisted(n=41)	forceps assisted(n=4)	Total
Incontinence	never	67	62	26	1	156
		72,8%	81,6%	63,4%	25,0%	73,2%
	once or less per week	16	8	8	1	33
		17,4%	10,5%	19,5%	25,0%	15,5%
	two to three times per	7	4	5	2	18
	week	7,6%	5,3%	12,2%	50,0%	8,5%
	once per day	2	2	1	0	5
		2,2%	2,6%	2,4%	0,0%	2,3%
	several times per day	0	0	1	0	1
		0,0%	0,0%	2,4%	0,0%	0,5%

VD – vaginal delivey CD – cesarean delivery

Figure 2

References

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