Original article

Urinary and anal incontinence after childbirth in primiparous women: A multicentric study

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Abstract: Aims of the study: to estimate the prevalence of urinary and anal incontinence and their impact on women's quality of life, and to identify the constitutional and obstetric factors significantly related to urinary and anal incontinence. Materials and methods: Data were collected from a cohort of 960 nulliparae (full term delivery 37-42 weeks). Each woman was evaluated both at 2-3 days post-partum and at three months follow-up with: the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) and Wexner's CGS continent grading system. Results: 161 women revealed persistent urinary incontinence, 121 women persistent anal incontinence and 43 women both conditions together. Concerning constitutional risk factors, positive family history of incontinence and incontinence before and during pregnancy were significantly related to urinary and anal incontinence 3 months post-partum. For obstetric factors the vaginal delivery is a strong risk factors for UI. Conclusions: Many constitutional variables were found to be significantly related to both faecal and urinary incontinence. The vaginal delivery is undoubtedly the more important and recognized obstetrical risk factor for urinary incontinence, while the caesarean delivery did not assume any protective role in the development of anal incontinence

Key words: Urinary stress incontinence; Postpartum; Risk factors.

INTRODUCTION

Perineal dysfunctions, including urinary and anal incontinence and pelvic organ prolapse, are one of the most important problems affecting public health because of their high prevalence and costs[1] and the impact on women's social and psychological life. The literature of last twenty years[2-5] suggests a strong relation between childbirth and the development of perineal dysfunctions at both short and long term. However controversial data exist[6-15] due to the difficulties underlying the retrospective studies and/or to the cohort of subject often being not homogeneous or too small. Thus, to date, these data do not allow to clearly correlate the obstetric events with perineal dysfunctions. Our study aims to a) estimate the prevalence and severity of urinary and anal incontinence and their impact on women's quality of life, b) identify the constitutional and obstetric factors significantly related to urinary and anal incontinence.

MATERIALS AND METHODS

The present observational prospective study, involving six public hospitals in various geographical areas of Italy, was conducted in the period between April 2005 and November 2006 and approved by the relevant Ethical Committees of each participant centre. Data were collected from a cohort of 960 nulliparae (full term delivery 37-42 weeks). Each woman was evaluated both at 2-3 days post-partum and at a 3 months follow-up with the following tools:

- a structured questionnaire investigating age, occupation, smoking habits, presence of chronic cough, constipation, weight before pregnancy, family history of urinary or anal incontinence, weight increase during pregnancy, management of labour, way of delivery and newborn's weight;
- the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF)[16] to assess the urinary incontinence and its impact on women's quality of life. Urinary incontinence was defined with a score of at least 3 at the ICIQ-SF;
- the Wexner's CGS continent grading system[17] to assess anal incontinence, defined with a score ≥ 1;

Association between individual risks factors and incontinence (urinary and anal) at 3 month was evaluated by chi-square test. Results were expressed as "*Odds ratio*" (OR: is used to assess the risk of a particular outcome if a certain factor is present) for each variable with confidence limits set at 95% (CL 95%).

RESULTS

For this study we considered a cohort of 960 nulliparae (947 singleton and 13 twin pregnancies) with a mean age of 29.8 years (SD ± 5.6 years) and a mean body mass index (BMI) of 23.9 (SD ±4.5).

Obstetric characteristic and management of the 960 women (Table 1) included 592 women with vaginal delivery, and 368 caesarean section. At the analysis of the data obtained during the immediate post-partum evaluation, urinary and anal incontinence were observed in 327/960 (34.1%) and in 255/960 (26.6%) women respectively. At the 3 months follow-up, 216 patients did not turn-up for their scheduled visit and therefore 744 (70.9%) women were included for final analysis. One hundred sixty-one women revealed persistent urinary incontinence, 121 women persistent anal incontinence and 43 women both conditions together. Urinary incontinence occurred in pregnancy for the first time in 85 (52.8%) out of the 161 women, anal incontinence in 30 (25%) out of 121 women. Stress urinary incontinence was found to be the most common type of urinary incontinence in women, both post-partum (65%) and

TABLE 1. – Obstetric characteristics and management of the 960 women.

Gestational Age (mean ± SD)		39.5±1.5
Physiologic labour (%)		253 (26%)
Induced labour (%)		222 (23%)
	Prostaglandins	124 (13%)
	Oxytocine	41 (4%)
	Amniorrhexis	57 (6%)
Labour active treatment		306 (32%)
	Oxytocine	141 (14.6)
	Amniorrhexis	136 (14%)
	Oxytocine + Amniorrhexis	29 (3%)
First stage of labour		
	min (95%CL)	243 (229-258)
2nd stage of labour		min
<30		323
30-60		197
61-120		56
>120		11
Vaginal Deliveries		592 (62%)
	Spontaneous	541 (56%)
	Vacuum	47 (5%)
	Forceps	1 (0.1%)
	Shoulder dystocia	3 (0.3%)
Caesarean section		368 (38%)
elective		179 (18.7%)
during labour		189 (19.7%)
	Dystocia of labour	68 (7%)
	Faetal causes	121 (12.7%)
Position during delivery		
	gynaecologic	504 (88.7%)
	in water	2 (0.3%)
	free	17 (2%)
	missing	51 (9%)
Episiotomy	Medial	36 (8%)
	Mediolateral	404 (92%)
Birthweight (mean±SD)		3265±460

at 3 months. In terms of severity of urinary incontinence this was mild with a modest impact on quality of life, the median value of ICIQ-SF in incontinent women was 6 (range 3-18) at the 3 months follow-up In addition in 113/121women (84%) at follow-up the median value of Wexner's score was 2 (range 1-9). Table 2 shows the correlation between urinary or anal incontinence in relation to different constitutional and obstetric variables expressed as p values, odds ratios and 95% confidence intervals at univariate analysis. Age > 35 years, constipation, chronic cough, smoking, family history of urinary incontinence, and develop of incontinence before and during pregnancy were significantly related to urinary incontinence 3 months postpartum. Among obstetric factors the vaginal delivery is the strong risk factors for UI. Family history of anal incontinence, incontinence before and during pregnancy, episiotomy resulted significantly related to anal incontinence. An intact perineum resulted to be protective for both urinary and anal incontinence. When univariate analysis on the 3 months data was performed only in women who delivered vaginally showed that physiologic labour played a protective role in the development of urinary incontinence, whereas episiotomy resulted as a risk factor for the development of anal incontinence, as shown in Table 3.

Multiple logistic regression was finally performed to identify those variables that resulted as indipendent predictors of UI and AI in the post partum. Incontinence during pregnancy was confirmed an independent risk factors for UI (OR 3.0 (95% CI 2.4-6.1) and AI (OR 2.2 (95 CI 1.1-4.4). Obesity, (OR 2.68; (95% CI 1.14- 6.32), family history of incontinence (OR 2.41; 95% CI 1.26- 4.59), vaginal delivery (OR 5.85; 95% CI2.10- 16.29) were all confirmed as independent risk factor for UI three months after childbirth.

DISCUSSION

The present observational prospective study is, to date, the most relevant Italian study in terms of size of the cohort of women involved. At the 3 months follow-up urinary incontinence was still evident in 21% of women, the prevalence of anal incontinence was 16% (12% reported flatal incontinence, 3.2% liquid incontinence and only 1.1% solid incontinence). The entity of symptom was mild with a modest impact on quality of life. Many constitutional variables and especially the family history of incontinence were found to be significantly related to both anal and urinary incontinence. The presence of incontinence during pregnancy is highly predictive of postpartum persistent urinary and anal incontinence. The physiologic labour has a protective role while the induction of labour seem to be a risk factor for the development of urinary incontinence. The vaginal delivery was undoubtedly the more important and recognized obstetrical risk factor for urinary incontinence, while the caesarean section did not assume any protective role in the development of anal incontinence. An intact perineum represents a crucial protection factor for the development of anal incontinence. The most interesting and original finding of our study was that 58% of women with urinary incontinence and 33% of women with anal incontinence three months after delivery develop the symptoms during pregnancy. These findings provide a further confirmation that pregnancy is a crucial moment for developing pelvic floor dysfunctions.[2-6] In conclusion, also in agreement with previous papers[11,19] the detection of symptoms of incontinence already in the early post-partum period could be predictive of their persistency and worsening in the near future. The identification of constitutional and obstetric risk factors for pelvic floor should be considered in the routine clinical activity in order to improve our practice and implement a primary and secondary preventive counseling. Efforts in preventing and early treating these conditions are therefore mandatory to improve the overall patient's quality of life.

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TABLE 2. – Risk of urinary or anal incontinence in relation to different constitutional and obstetric variables 3 months after delivery (univariate analysis, chi squared test).

	Urinary incontinence			Anal incontinence		
	OR	**95%C.I.**	**P**	**OR**	**95%C.I.**	**P**
Age >35	1.60	(1.04-2.57)	**0.03**	1.29	(0.75-2.24)	n.s.
Pre-pregnancy BMI	0.99	(0.65-1.37)	n.s.	1.42	(0.95-2.13)	n.s.
Familiarity	2.56	(1.61-4.00)	**<0.001**	2.38	(1.41-4.00)	**0.001**
Constipation	1.70	(1.01-2.86)	**0.047**	1.11	(0.59-2.09)	n.s.
Chronic cough	3.03	(1.43-6.25)	**0.002**	1.09	(0.41-2.94)	n.s.
Smoking	1.75	(1.14-2.78)	**0.010**	1.11	(0.64.1.95)	n.s.
Hard job	0.89	(0.45-1.77)	n.s.	0.76	(0.34-1.73	n.s.
Incontinence before pregnancy	8.1	(3.7-17.4)	**<0.001**	4.3	(2.2- 8.2)	**<0.001**
Incontinence during pregnancy	4.6	(3.1-6.8)	**<0.001**	3.6	(2.2-6.1)	**<0.001**
Weight increase (>12 kg)	1.17	(0.80-1.70)	n.s.	1.10	(0.72-1.70)	n.s.
Labour						
Physiologic	0.97	(0.63-1.50)	n.s.	1.37	(0.86-2.18)	n.s.
Induced	0.99	(0.63-1.57)	n.s.	1.18	(0.70-2.00)	n.s.
With active treatment	1.50	(0.97-2.53)	n.s.	0.69	(0.40-1.18)	n.s.
Pelvic phase (duration in min)*	–	–	n.s.	–	–	n.s.
Mode of delivery Vaginal/Caesarean	3.28	(2.04-5.26)	**<0.001**	1.18	(0.75-1.82)	n.s.
Perineum						
Intact	0.51	(0.32-0.84)	**0.007**	0.41	(0.22-0.78)	**0.005**
Laceration (1st - 2nd degree)			n.s.			n.s.
Episiotomy	1.59	(1.04-2.43)	**0.03**	2.91	(1.60-5.30)	**<0.001**
Birth weight (> 3800 grams)	1.41	(0.72-2.75)	n.s.	0.88	(0.45-1.70)	n.s.
Head circumference (> 35 cm)	1.48	(0.77-2.82)	n.s.	1.02	(0.46-2.26)	n.s.

* evaluated as a 3x2 table, OR not applicable

TABLE 3. – Obstetric risk factors at univariate analysis for urinary and anal incontinence at 3 months after delivery in women who delivered vaginally.

	Urinary incontinence			Anal incontinence		
	OR	**95%C.I.**	**P**	**OR**	**95%C.I.**	**P**
Labour						
Physiologic	0.58	(0.37-0.92)	**0.02**	1.34	(0.79-2.26)	n.s.
Induced	1.04	(0.64-1.70)	n.s.	1.06	(0.59-1.88)	n.s.
With active treatment	1.56	(0.98-2.46)	n.s.	0.69	(0.439-1.21)	n.s.
Pelvic phase (duration in min)*			n.s.			n.s.
Perineum						
Intact	1.43	(0.63-3.25)	n.s.	0.20	(0.02-1.53)	n.s.
Laceration (1st - 2nd degree)	1.02	(0.59-1.76)	n.s.	1.29	(0.61-2.73)	n.s.
Episiotomy	0.70	(0.40-1.23)	n.s.	4.70	(1.44-15.60)	**0.005**

* evaluated as a 3x2 table, OR not applicable

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