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Pelvic floor assessment after delivery: how should women be selected?

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ABSTRACT

Objective: Pelvic floor dysfunction after delivery is quite common. New mothers deserve to receive targeted care for pelvic floor dysfunction, but how should women who are at risk be identified and selected for treatment? This study investigated risk factors and puerperal health-seeking behaviours to develop a restrictive patient selection model for postpartum pelvic floor dysfunction assessment.
Study design: This prospective observational study involved women who were at ≥32 weeks gestational age when they delivered in a tertiary referral maternity hospital in Milan, Italy, between July and December 2014. Eligible women were scheduled for a 3-month postnatal pelvic floor clinic. The adherence rate to the pelvic floor clinic and the prevalence of pelvic floor dysfunctions at 3 months postpartum were recorded. Univariable and logistic multivariable analyses were performed to select risk factors for pelvic floor dysfunctions. Risk factors were then tested for sensitivity and specificity for 3-month postpartum pelvic floor dysfunctions.
Results: Of 1606 eligible women, 1293 (80.5%) were included in the analysis; 685 puerperal women (53.0%) adhered to the 3-month postnatal pelvic floor clinic; pelvic floor dysfunctions were detected in 238 women (34.7%). Four elements emerged as risk factors: symptoms before pregnancy (*OR* 1.72, 95% *CI* 1.15–2.56; $p = 0.008$), symptoms during pregnancy (*OR* 2.13, 95% *CI* 1.49–3.06; $p < 0.0001$), vacuum extractor use (*OR* 1.62, 95% *CI* 1.04–2.54; $p = 0.034$), and severe perineal tears (*OR* 19.45, 95% *CI* 2.42–156.15; $p = 0.005$). The combined sensitivity and specificity for the 4 risk factors were 82% and 39%, respectively.
Conclusion: Internal risk factors analysis offers the potential to efficiently restrict patient selection for follow-up.

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Introduction

Childbirth and vaginal delivery in particular are commonly considered to be the major aetiological factors for pelvic floor dysfunctions (PFDs), specifically urinary incontinence (UI), anal incontinence (AI) and pelvic organ prolapse (POP). PFDs after delivery are estimated to occur in up to 46% of puerperal women [1]. While only a small minority of women experience severe injury, the effect of PFDs on the quality of life of young, active women is disastrous and cannot be ignored by caregivers. Furthermore, the occurrence of obstetric pelvic floor trauma has to be considered in the medium to long term as an important predisposing factor for significant morbidity later in life [2]. The importance of monitoring PFDs after delivery is also reinforced by the availability of effective preventable measures as demonstrated by a recent Cochrane collaboration review on the effectiveness of physiotherapy in the treatment of UI after delivery [3].

Identifying strategies for selecting women who are at risk for PFDs after delivery is increasingly acknowledged as a critical issue [4]. Scenarios range from the adoption of an extensive to a selective approach on the basis of well-known risk factors (RFs). Therefore, health system decision-makers require precise data to develop feasible and effective programs. Unfortunately, the picture is far from clear. The literature is still controversial regarding the identification of RFs. This controversy reflects both methodological issues as well as substantial differences related to the different settings and populations included in these studies [5]. Good quality data from different countries are therefore of paramount importance. However, the health-seeking behaviours of new mothers, particularly as they relate to PFDs, has not been sufficiently investigated [6,7].

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We designed a study to test patient adherence to an offer for an extensive pelvic floor assessment 3 months after delivery in an Italian tertiary obstetric referral centre. We also aimed to investigate the prevalence of PFDs at 3 months after delivery and their related RFs to develop a customized model for hypothetical restrictive selection criteria. The identification of an efficient model to select patients for pelvic floor assessment after delivery is a critical point in daily clinical practice in an era of limited resources.

Materials and methods

This prospective observational study was approved by the Milano Area C—Ethics Review Committee (reference no. 319-052015). The study included all women who were ≥32 weeks gestational age when they delivered at Buzzi Children's Hospital, a tertiary referral maternity hospital in Milan, Italy, between July and December 2014. At admission, while obtaining a patient history, each woman was questioned about the presence of PFDs before or during her pregnancy. Before discharge from the hospital, the study was described to all of the eligible women by a dedicated staff member (I.S., F.C., S.L. and M.S.), and appointments for pelvic floor assessments at 3 and 12 months after delivery were offered. Women who agreed to participate in the study signed a dedicated consent form, were scheduled for the 3-month postnatal pelvic floor clinic (PFC) and received a written note that included all of the appointment details. According to the protocol, a reminder was also sent by mobile text message (via short message service, SMS) to every participating woman a few days before her appointment. The recruitment protocol was incidentally violated in two circumstances: (1) due to a one-day crash of the mobile text message system, 32 women (2.5%) did not receive the SMS reminder; (2) due to logistical needs, 120 women (9.3%) received a phone call to modify their appointment details in addition to the text message reminder.

The postnatal PFC examination held 3 months after delivery used the "*post partum screening card*", a consensus protocol developed under the auspices of the Italian Society of Urodynamics (SIUD) and available both in Italian language [www.siud.it] and in English [8]. Table 1 summarizes the investigated dysfunctions along with the corresponding instruments and criteria adopted to define the dysfunction in each area (PFD = at least one dysfunction).

All of the data concerning patient characteristics, history, and pregnancy/delivery parameters and the findings of the 3-month postpartum PFC assessment were included in a database specifically designed for this study. We collected these data with great accuracy, achieving a very low rate (<2%) of missing data. We registered a lower accuracy only for data related to pushing during the second stage of labour and cephalic circumference. Using PFDs at 3 months after delivery as a point of reference, univariable analysis for categorical and continuous parameters was performed with Fisher and parametric Student's t tests, respectively. A logistic multivariable analysis was then performed, which included the parameters that were found to be significant in the univariable analysis. Finally, the same elements were tested separately and in combination for sensitivity and specificity for prediction of 3-month postpartum PFDs. The length of the inclusion phase of the study was calculated to guarantee an 80% power for the sample size with a 5% significance for all of the tested comparisons. Stata 9.0 was used for all of the analyses (Stata Corporation, College Station, Texas, USA).

Results

Among the 1606 eligible women who delivered during the study period, 313 (19.5%) were not included in the analysis: 44 (14.1%) refused to participate in the study, 74 (23.6%) were not enrolled due to linguistic difficulties, 41 (13.1%) were not enrolled due to logistic and/or neonatal/maternal complications and 154 (49.2%) had missing data. A total of 1293 women signed the consent form and were scheduled for the postnatal PFC at 3 months after delivery; 685 women (53.0%) attended the 3-month postnatal PFC.

The adherence rate to the proposed 3-month postnatal PFC was not influenced (Fisher's exact test: $p = 0.105$) by the abovementioned incidental violations of the standard recruitment protocol. During the study period, we observed a 1.2% rate (15/1210 vaginal deliveries) of severe perineal tears (10 IIIA, 3 IIIB, 1 IIIC and 1 IV degree tears) [13]. Four of these women did not attend the postnatal PFC.

Table 2
Univariable analysis of 685 women assessed during the 3-month postnatal PFC.

Parameter	No PFD 447 (%)	PFD 238 (%)	*p-value*
PFD symptoms before pregnancy	71 (16.4%)	68 (28.6%)	<0.0001[b]
PFD symptoms during pregnancy	235 (53.4%)	173 (72.7%)	<0.0001[b]
Ethnicity			
Caucasian	377 (84.5%)	216 (91.1%)	0.009[b]
Others	69 (15.5%)	21 (8.9%)	
Age (mean ± SD)	33.92 ± 4.88	34.08 ± 5.10	0.348[c]
BMI (mean ± SD)	26.02 ± 3.72	25.93 ± 3.71	0.377[c]
Nulliparity no.	316 (70.7%)	171 (71.8%)	0.411[b]
Singleton pregnancy no.	439 (98.2%)	234 (98.3%)	0.591[b]
[a]Labour induction no.	136 (34.9%)	63 (29.2%)	0.089[b]
Length of induction			
<24 h	94 (74.0%)	45 (75.0%)	
≥24 h < 48 h	20(15.7%)	10 (16.7%)	0.932[b]
≥48 h	13 (10.2%)	5 (8.3%)	
Pushing second stage > 60 min	101 (29.1%)	66 (33.3%)	0.175[b]
Oxytocin augmentation no.	110 (24.6%)	71 (30.0%)	0.079[b]
Epidural analgesia no.	172 (38.5%)	102 (43.0%)	0.141[b]
Mode of delivery			
Vaginal	282 (63.1%)	153 (64.6%)	
Vacuum extractor	58 (13.0%)	45 (19.0%)	0.020[b]
Caesarean section	107 (23.9%)	39 (16.5%)	
Episiotomy no.	93 (20.8%)	61 (25.6%)	0.090[b]
Severe perineal tears no.	1 (0.2%)	10 (4.2%)	<0.0001[b]
Cephalic circ. (mean ± SD)	33.98 ± 1.18	34.12 ± 1.12	0.074[c]
Neonatal birth weight (mean ± SD)	3317 ± 467	3339 ± 433	0.724[c]

[a] Elective CS excluded.
[b] Fisher's exact test.
[c] Student's t-test.

Table 1
Selection criteria for PFDs 3 months after delivery [8].

PFD	Measurement tool	Cut off
Urinary incontinence (UI)	ICI-Q SF [9]	≥1
Anal incontinence (AI)	Wexner score [10]	≥1 solid/liquid and/or ≥2 gas
Genital prolapse	POP q staging criteria [11]	≥2
Pain/dyspareunia	Pain and/or dyspareunia VAS	>0
Pelvic floor muscle assessment	Oxford score (0–5) [12]	≤2

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