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ORIGINAL ARTICLE

Late post-partum dyspareunia: Does delivery play a role?☆

Dyspareunie du post-partum tardif : l'accouchement joue-t-il un rôle ?

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KEYWORDS
Delivery;
Satisfaction;
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Summary
Objective. — To study whether post-partum dyspareunia one year after a delivery is associated with characteristics of delivery: perineal trauma, obstetric interventions and women's experience.
Methods. — A self-administered questionnaire on post-partum sexual function was mailed in May 2002 to all consecutive women who gave birth to a live-born term infant in a maternity unit, between January 2001 and June 2001. Obstetric data were abstracted from the hospital computerized medical database. Late dyspareunia was defined as pain during intercourse, one year after delivery. Multiple logistic regression modeling was used to select independent predictors of late post-partum dyspareunia.
Results. — Seventy (27.6%) of the 254 women studied experienced late dyspareunia. There was no relation between late post-partum dyspareunia and neither the mode of delivery nor state of the perineum, including perineal laceration or episiotomy. Multiple logistic regression analysis showed that late post-partum dyspareunia was associated with dyspareunia before pregnancy, low satisfaction with delivery, and employment status.

☆ Level of evidence: 3.

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Conclusions. — Late post-partum dyspareunia seemed to be linked more with the mother's experience of childbirth than with perineal trauma. This hypothesis should be investigated further.

MOTS CLÉS
Accouchement ;
Satisfaction ;
Post-partum ;
Sexualité ;
Épisiotomie ;
Dyspareunie

Résumé
Objectif. — Étudier l'existence d'une association entre la dyspareunie du post-partum à un an de l'accouchement et les caractéristiques de l'accouchement (traumatisme périnéal, interventions obstétricales et vécu de la patiente).
Méthodes. — Un autoquestionnaire concernant la sexualité du post-partum a été envoyé par courrier en mai 2002 à toutes les patientes ayant donné naissance à un nouveau-né vivant à terme, dans une maternité, entre janvier et juin 2001. Les données obstétricales ont été extraites de la base de données informatisée de l'hôpital. La dyspareunie tardive était définie par une douleur lors des rapports sexuels, un an après l'accouchement. Une modélisation par régression logistique multiple a été utilisée pour individualiser des facteurs prédictifs indépendants de dyspareunie du post-partum tardif.
Résultats. — Soixante-dix (27,6 %) des 254 patientes étudiées avaient une dyspareunie du post-partum tardif. Aucune corrélation n'a été mise en évidence entre la dyspareunie du post-partum tardif et les modalités de l'accouchement ou l'état périnéal (y compris déchirure périnéale ou épisiotomie). L'analyse en régression logistique multiple a montré que la dyspareunie du post-partum tardif était associée à une dyspareunie préexistante à la grossesse, à un faible niveau de satisfaction à l'égard de l'accouchement, et à l'existence d'une activité professionnelle.
Conclusions. — La dyspareunie du post-partum tardif semblait être plus liée au vécu maternel de l'accouchement qu'au traumatisme périnéal. Des études plus poussées sont nécessaires pour confirmer cette hypothèse.

Introduction

Dyspareunia is a local painful sensation caused by vaginal penetration of the penis during or immediately after sexual intercourse. Dyspareunia is one of the most common symptom of chronic pelvic pain among women [1] and may impair sexual function. Its frequency was found to be as high as 42% in the general population of French women [2].

The frequency of dyspareunia has been found to increase significantly after childbirth [3]. Some studies showed that post-partum dyspareunia was associated with perineal trauma at delivery, especially episiotomy, perineal tears or instrumental delivery [3—5]. It is thus likely that the fear of perineal damage is one of the reasons explaining that some patients and some obstetricians would prefer a cesarean section for delivery [6].

However, most of the studies suggesting the deleterious role of perineal trauma on dyspareunia were conducted during the early post-partum period (from 3 to 6 months), which could correspond to the time required for perineal healing and/or the resumption of sexual intercourse [3,7]. However, the longer-term consequences of parturition are questioned and controversial. Furthermore, the quality of sexual activity postpartum cannot be influenced only by genital tract trauma. The psychological dimensions, marital situation, social and cultural activities are affected by childbirth and may thus interfere with post-partum sexual functioning [8,9].

We conducted a survey whose objective was to identify determinants for late post-partum dyspareunia, in particular those related to delivery.

Patients and methods

Study population

Our study subjects were all women who gave birth to a live-born term infant in the Maternity unit of the Hertford British Hospital, Levallois-Perret, France, between January 1, 2001 and June 31, 2001. Women were identified by means of the hospital computerized medical database.

Data collection

Data concerning the mother, the delivery and the newborn included maternal age at delivery, parity, date of delivery, presentation, induction of labor, mode of delivery, infant birth weight, perineal laceration and episiotomy, and were recorded in the database at the time of delivery by the delivery attendant. To assess post-partum sexual function, a self-administered questionnaire was mailed in May 2002 to the study women. If no response was received, a second and when necessary a third mailing were sent to the women.

Dyspareunia at the time the questionnaire was filled in was known by asking the following question: ''Do you currently have pain during intercourse? (yes/no).'' [10,11]. The intensity of dyspareunia was also evaluated with an unmarked 100 mm visual analogue scale (VAS). Dyspareunia before pregnancy was established retrospectively with similar questions. These items were developed in France for the evaluation of dyspareunia in endometriosis patients and also in a general population of French women [2]. We also asked mothers whether sexual intercourses were influenced by

some characteristics of their living conditions (child health problems, fatigue...) or general feelings about sexuality (fears, dissatisfaction, loss of desire).

Women were also asked to indicate their overall satisfaction with delivery by placing a cross on an unmarked 100 mm visual analogue scale (VAS) ranging from ''very dissatisfied'' to ''very satisfied''. The questionnaire also included questions on the women's demographic and social characteristics, as well as postnatal data including the newborn's health, mother's health, perineal healing, and duration of breastfeeding.

Analysis

Women who experienced dyspareunia in the late post-partum (> 12 months following delivery) were compared to those who did not. Pearson's χ^2 test was used for nominal variables and unpaired Student t-test for continuous variables. Continuous variables (such as the visual analogue scales (VAS) used in the questionnaire) were recoded into ordinal variables. Variables associated with late post-partum dyspareunia according to bivariate analysis (at a threshold of $p < 0.15$) were then entered into a multiple logistic regression model including late post-partum dyspareunia as the dependant variable. A backward elimination procedure was used to remove variables so that the final model included only those variables independently associated with late post-partum dyspareunia at the threshold of $p < 0.05$. Two other groups of variables were incorporated and were forced to stay in the model: mode of delivery and state of the perineum on the one hand, because the impact of delivery was one of the main questions in our study, and breastfeeding duration on the other hand, because a previous study found a strong association between post-partum dyspareunia and current breastfeeding [11]. We also constructed a second logistic regression including only women with vaginal delivery.

The coefficients in the final models were estimated using the maximum likelihood method; the adjusted odds ratios and their confidence intervals (CI) were calculated from the model coefficients and their standard deviations. All analyses were performed with StatView 5.0 software (SAS Institute Inc. Cary, NC, USA).

All subjects gave informed consent. Our work complied with French statutes and regulations, which authorize epidemiological surveys without advance approval of an ethics committee. Our survey involved no intervention and was thus exempt from the French statute on biomedical research (Huriet-Serusclat law, dated December 20, 1998). We complied with all French statutes concerning data about the subjects, confidentiality, and restrictions (e.g., no religious or racial data). The study had the agreement of the French Data Protection Authority, (Commission Nationale Informatique et Libertés, CNIL).

Results

Five hundred and twenty-eight women were eligible for the study. Of these, 203 (38.4%) did not answer the questionnaire, 70 (13.3%) women had moved, and one (0.2%) woman had no sexual partner at that time. Two hundred and fifty-four women (48.1%) were thus analyzed for the study.

Baseline characteristics of the study sample and comparison between responders and non-responders are shown in Table 1. Non-responders were older and were more likely to deliver by cesarean section.

Table 1 Baseline characteristics of the study population: total, responders and non responders.

Variables	Total study population ($n = 528$) *n* (%)	Responders ($n = 254$) *n* (%)	Non-responders ($n = 274$)[a] *n* (%)	*p* value[b]
Mother's age				
≤ 30 years	97 (18.4)	73 (28.7)	24 (8.8)	
31 — 33 years	159 (30.1)	76 (29.9)	83 (30.3)	
34 — 36 years	130 (24.6)	57 (22.5)	73 (26.6)	< 0,0001
> 36 years	142 (26.9)	48 (18.9)	94 (34.3)	
Parity				
1	251 (47.6)	116 (45.7)	135 (49.3)	0.3046
2 — 3	253 (47.8)	123 (48.4)	130 (47.4)	
≥ 4	24 (4.6)	15 (5.9)	9 (3.3)	
Induction of labor				
Yes	129 (24.4)	63 (24.8)	66 (24.1)	0.8484
No	399 (75.6)	191 (75.2)	208 (75.9)	
Mode of delivery				
Spontaneous vaginal delivery	333 (63.0)	164 (64.6)	169 (61.7)	0.0003
Instrumental delivery	69 (13.1)	45 (17.7)	24 (8.8)	
Cesarean section	126 (23.9)	45 (17.7)	81 (29.6)	
Infant birth weight (g ± 1SD)	3379.9 ± 483.2	3399.3 ± 446.8	3374.0 ± 478.8	0.3198[c]

[a] Student t-test.
[b] Pearson's χ^2 test.
[c] Including one woman without a sexual partner.

The women completed the questionnaire at a median time of 14 months (range 11 to 17) after childbirth. At the time the questionnaire was filled in, 70 women (27.6%) experienced dyspareunia (hereafter termed late post-partum dyspareunia) and 55 of them (21.7%) reported some disturbance of their sexual relationship because of this dyspareunia. For 45 of these 70 women, dyspareunia had begun after childbirth while 25 experienced dyspareunia before the pregnancy. The mean VAS score for dyspareunia was 34 ± 23 mm among women declaring late post-partum dyspareunia, and 4 ± 9 mm among women who did not report late post-partum dyspareunia (Student's t-test = −15,067; $p < 0.0001$).

Factors perceived to affect sexual intercourse in women with and without late post-partum dyspareunia are given in Table 2. Child health problems, lack of intimacy, mother's fatigue, lack of time or dispute with the partner were not reported more frequently in women with late post partum dyspareunia than in the other women. However mother's or father's fears of sexual intercourse, dissatisfaction with intercourses, pain and loss of sexual desire were more frequent among women with late post-partum dyspareunia (Table 1).

Characteristics of mothers, deliveries and newborns were compared between women who experienced late post-partum dyspareunia and women who did not (Table 3). There was no difference for mother's age, parity, epidural analgesia, newborn birth weight, duration of perineal healing process, maternal health problems after childbirth or newborn health problems.

Results of the multivariable analysis are shown in Table 4. Variables introduced in the first logistic regression model, which considered the entire population of women having delivery, were mode of delivery, breastfeeding duration, mother working at the time of the questionnaire, dyspareunia before the pregnancy, and overall satisfaction with delivery (the latter recoded in two classes: above or below the median). The risk of late post-partum dyspareunia was

Table 2 Factors perceived to affect sexual intercourses* reported by women with and without late post-partum dyspareunia.

	Women with late post-partum dyspareunia $n = 70$ n (%)	Women without late post-partum dyspareunia $n = 184$ n (%)	p value
Child health problems			
No	40 (57.1)	101 (54.9)	
Yes	30 (42.9)	83 (45.1)	0.747
Lack of intimacy			
No	34 (48.6)	96 (52.2)	
Yes	36 (51.4)	88 (47.8)	0.6078
Fatigue[a,b]			
No	5 (7.1)	6 (3.3)	
Yes	65 (92.9)	177 (96.2)	0.3322
Lack of time			
No	14 (20)	42 (22.8)	
Yes	56 (80)	142 (77.2)	0.6274
Dispute with partner			
No	48 (68.6)	127 (69)	
Yes	22 (31.4)	57 (31)	0.9448
Mother's fears of sexual intercourse			
No	41 (58.6)	153 (83.2)	
Yes	29 (41.4)	31 (16.8)	< 0.0001
Father's fears of sexual intercourse			
No	59 (84.3)	174 (94.6)	
Yes	11 (15.7)	10 (5.4)	0.0079
Dissatisfaction with intercourse			
No	38 (54.3)	148 (80.4)	
Yes	32 (45.7)	36 (19.6)	< 0.0001
Pain			
No	29 (41.4)	162 (88)	
Yes	41 (58.6)	22 (12)	< 0.0001
Loss of sexual desire			
No	15 (21.4)	83 (45.1)	
Yes	55 (78.6)	101 (54.9)	0.0005

[a] The question was: Currently, what factors most influence your sexuality?
[b] One women did not answer.

Table 3 Women, pregnancy, delivery and post-partum characteristics in relation to late post-partum dyspareunia.

Variable	Women with late post-partum dyspareunia $n = 70$ (27.6%)	Women without late post-partum dyspareunia $n = 184$ (72.4%)	p value
Mother's age (year)			
≤ 30y	17 (24.3)	56 (30.4)	0.3364
31 — 33y	19 (27.1)	57 (31.0)	
34 — 36y	21 (30.0)	36 (19.6)	
> 36y	13 (18.6)	35 (19.0)	
Parity			
1	30 (42.9)	86 (46.7)	0.8381
2—3	36 (51.4)	87 (47.3)	
≥ 4	4 (5.7)	11 (6.0)	
Working status of the mother			
Housewife or unemployed	2 (2.9)	22 (12.1)	0.1279
Professional	35 (50.0)	91 (50.0)	
Intermediate	29 (41.4)	62 (34.1)	
Office worker or shop assistant	4 (5.7)	7 (3.8)	
Dyspareunia before pregnancy			
Yes	25 (35.7)	24 (13.0)	< 0.0001
No	45 (64.3)	160 (87.0)	
Mode of delivery			
Spontaneous vaginal delivery	43 (61.4)	121 (65.8)	0.6323
Instrumental delivery	15 (21.4)	30 (16.3)	
Caesarean section	12 (17.1)	33 (17.9)	
Epidural analgesia			
Yes	4 (5.7)	13 (7.1)	0.9172
No	66 (94.3)	171 (92.9)	
Infant birth weight, g			
≤ 3120	19 (27.1)	44 (23.9)	0.8871
3130 — 3410	19 (27.1)	46 (25.0)	
3420 — 3660	16 (22.9)	49 (26.6)	
> 3660	16 (22.9)	45 (24.5)	
VAS for overall satisfaction with delivery[a]*, mm*			
≤ 63	20 (29.9)	44 (24.1)	0.0845
64 — 86	23 (34.3)	43 (23.5)	
87 — 96	15 (22.4)	48 (26.2)	
> 96	9 (13.4)	48 (26.2)	
State of the perineum[b]			
Intact perineum	10 (17.2)	25 (16.6)	
Perineal tears	44 (75.9)	104 (68.9)	0.3192
Episiotomy	4 (6.9)	22 (14.6)	
Any mother's health problems after delivery			
Yes	13 (18.6)	41 (22.4)	0.5056
No	57 (81.4)	142 (77.6)	
Any perineal healing complications			
Yes	8 (11.4)	26 (14.2)	0.5621
No	62 (88.6)	157 (85.8)	
Any newborn's health problems			
Yes	14 (20.0)	27 (14.7)	0.3026
No	56 (80.0)	157 (85.3)	
Breastfeeding[a]			
No	15 (22.1)	51 (28.7)	0.4297
< 6 months	45 (66.2)	113 (63.5)	
6 months	8 (11.8)	14 (7.9)	

VAS: visual analogue scale.
[a] Among the 209 women who had vaginal delivery.
[b] Because of missing data, the total may differ from that of the entire population.

Table 4 Determinants of late post-partum dyspareunia using multiple logistic regression.

	All women $n = 254$			Vaginal delivery only $n = 209$		
	Adj. OR	95% CI	p-value[a]	Adj. OR	95% CI	p-value[a]
Mode of delivery						
Spontaneous vaginal delivery	1	Ref.		1	Ref.	0.5183
Instrumental delivery	1.4	0.7 — 3.1	0.6712	1.3	0.6 — 3.0	
Cesarean section	1.1	0.5 — 2.4				
State of perineum[b]						
Intact perineum		—		1	Ref.	
pisiotomy		—	—	0.8	0.3— 1.9	0.2102
Perineal lacerations		—		0.3	0.1 — 1.3	
Breastfeeding ≥ 6 months						
No	1	Ref.	0.4565	1	Ref.	0.8289
Yes	1.7	0.6 — 4.8		1.4	0.4 — 4.6	
Working mother						
No	1	Ref.	0.0233	1	Ref.	0.0426
Yes	5.4	1.2 — 25		4.3	0.9 — 21.3	
Satisfaction with delivery[c]						
High	1	Ref.	0.0096	1	Ref.	0.0202
Low	2.0	1.1 — 3.8		2.3	1.2 — 4.6	
Dyspareunia before pregnancy						
No	1	Ref.	< 0.0001	1	Ref.	< 0.0001
Yes	4.5	2.2 — 9.1		5.8	2.6 — 12.8	

Adj. OR: adjusted odds ratio; CI: confidence interval; Ref.: reference group.
[a] Likelihood ratio test.
[b] Not included in the first model (all women).
[c] Visual analog scale for overall satisfaction with delivery less than 85 (under the median).

higher if women suffered from dyspareunia before pregnancy, reported low satisfaction with delivery, and were working at the time of the mail survey. Neither the mode of delivery, including caesarean section, nor breastfeeding were associated with late post-partum dyspareunia. In the second logistic regression model, which considered only women with vaginal delivery, the results remained the same (Table 4). Instrumental delivery, episiotomy or perineal tears did not increase the risk of late postpartum dyspareunia.

Discussion

We did not observe any influence of mode of delivery, state of the perineum including episiotomy, or breastfeeding on late post-partum dyspareunia. Conversely, the strongest determinants of late post-partum dyspareunia were: dyspareunia before pregnancy, overall satisfaction with delivery and working status. These findings suggest that the obstetric interventions and perinatal trauma do not influence late post-partum dyspareunia.

One strength of our study lies in the assessment of post-partum dyspareunia. We chose to evaluate dyspareunia, in the late post-partum, that is one year after delivery, because in the three to six months following vaginal delivery, the healing of perineal injury is a normal process, which may puzzle the relationship between dyspareunia and mode of delivery. It is an obvious fact that in the early post-partum period the consequence of perineal trauma will greatly affect sexual function including dyspareunia and/or delay resumption of sexual intercourse [12]. The pain that occurs in the vaginal area as a result of a physiological problem (episiotomy, perineal laceration etc.) is likely to have a benign evolution. Inversely, the dyspareunia that persists on the long-term, as an effect of childbirth, is to be considered as a chronic pelvic pain symptom [13] which may impair quality of life and may require medical care [14]. Another strength of our study was that the assessment of dyspareunia was included in a broader topic on sexuality. We found that women reporting late post-partum dyspareunia had sexual intercourses mostly influenced by the pain experienced (fears, dissatisfaction, pain and loss of desire); on the other hand the characteristic of their living conditions (child health problems, lack of intimacy, mother's fatigue, lack of time or dispute with the partner) which are well-known factors affecting women's sexuality [9] were not mentioned more frequently in the group of women with late dyspareunia.

The study had nonetheless several limitations. First, it achieved a 55.5% response rate among the women who received the questionnaire. One reason might be the sensitive aspect of the subject of this study. Our response rate was comparable to those shown in similar studies [7,15,16]. It is difficult to say to what extent this low response rate may have weakened our results. Nevertheless, age and mode of delivery, which were associated with the fact of responding, were not found to be related to dyspareunia in our study.

The second limitation was the retrospective nature of the study concerning some of the variables studied, in particular dyspareunia before pregnancy and the satisfaction

with delivery. Some women might have reported dyspareunia before pregnancy more frequently when they had this symptom at the time of the mail survey. Regarding satisfaction with childbirth, it is interesting to note that women *satisfaction with delivery* experience was by itself a memory which will gradually build as time passes [17] and there would be no sense in trying to collect this variable just after the delivery.

Unlike our study, many observational studies have found a clear-cut relationship between obstetric factors and an increased rate of post-partum dyspareunia. These factors included: spontaneous vaginal delivery versus cesarean section [18,19], assisted vaginal delivery versus cesarean section [5], assisted vaginal delivery versus spontaneous delivery [16], perineal trauma including episiotomy or laceration [3,16]. A systematic review of the literature suggested an association between assisted vaginal delivery and some degree of sexual dysfunction, including dyspareunia [4]. However, all these studies observed dyspareunia only in the early post-partum period, up to 6 months. Our results suggest that this cannot, however, be extended to the women's sexual health in the late post-partum. An evolution with time could explain this difference, including healing of perineal injury related to vaginal delivery. Indeed, post-partum dyspareunia reaches its maximum between 3 and 6 months and then decreases significantly after one year [10,15]. In a cross-sectional study of 796 primiparous women [19], dyspareunia at 3 months post-partum was significantly more frequent after vaginal delivery than after cesarean delivery, but at 6 months this association was no longer significant.

Another explanation could therefore be that late post-partum dyspareunia would be expressed as chronic pelvic pain that is caused by both physical and psychological mechanisms [13,20]. Pain will first occur in the vaginal area as a result of a simple organic problem (episiotomy, perineal laceration etc.) and will provoke sexual dysfunction including dyspareunia. Then the dyspareunia may sometimes persist, after the initial trigger has disappeared, due to central nervous system mechanisms [13,21] that may be related to psychological or social determinants. A similar phenomenon of central sensitization was found to be an important contributor of the relation between pain symptoms and endometriosis [21].

Studies performed one year after childbirth found results similar to ours. In a prospective observational study, satisfaction with the sexual relationship was not found to be related to pregnancy- and parturition-factors [22]. In the study by Clarkson et al., the prevalence of dyspareunia at 9 — 14 month did not vary according to mode of delivery [15]. In a randomized controlled trial comparing cesarean section versus planned vaginal birth for breech presentation at term no difference in the rate of dyspareunia was found between the two groups of mothers at 2 years post-partum [23]. Similar results were found four years after delivery, in a quasi-experimental study comparing two policies: restrictive versus liberal use of episiotomy [24].

Interestingly, our results suggest that late post-partum dyspareunia relates more to psychological or social determinants than to obstetrical determinants. We found that the risk of having late post-partum dyspareunia was greater for working mothers. The relationship between employment and dyspareunia can be explained by the very peculiar social composition of the studied population: 95% of the working mothers had a highly qualified job (professional/managerial or intermediate). One may put this into relation to the effect of chronic stress, which is known to provoke superficial dyspareunia [25]. Our result must nonetheless also be considered alongside one about psychological determinants of the sexuality of post-partum women [9]. This author hypothesized that difficulties in the social role (work role and mother role) due to the transition to parenthood may impair women's sexual functioning in the post-partum period [9].

To the best of our knowledge, our study is the first to report a relationship between the mother's dissatisfaction with delivery and late post-partum dyspareunia. Perceived satisfaction is a question commonly used in surveys of users, including women giving birth, and is thought to relate to insurance quality [26]. One may nonetheless interpret satisfaction with delivery as a more complex experience [17]. It is likely that it is connected with the mother's overall personal feelings and thoughts concerning the delivery. Indeed, a cross-cultural study based on structured interviews conducted at three months post-partum [8], showed that women expressed a wide range of feelings about delivery: 50% of them reported the birth experience as positive (excitement, joy), while 20.4% reported unpleasant emotions (disappointment, scare and shame).

One may question why negative experience of delivery may influence sexual function in the late post-partum period, especially dyspareunia. Dyspareunia is a well-documented sequel of sexual abuse and rape [27] regardless of the actual perineal trauma sustained. A similar phenomenon might occur after childbirth, albeit with less intensity. Indeed childbirth can sometimes be perceived as a psychologically traumatic event. Indeed, post-traumatic stress disorder occurring after childbirth was reported in about 1.5% of women between 6 months and one year post-partum [28,29]. In a longitudinal study of Italian women who delivered babies, incomplete forms of post-traumatic stress disorder were found in one third of the women and did not relate to intrapartum obstetrical variables [30]. Non-medical aspects of birth could make it traumatic including negative feelings and thoughts [31]. In the longer term, these women report some disturbance on their relationship with their partner, including sexual dysfunction [32,33].

The relationship between the mother's personal negative experience of childbirth or working status and late post-partum dyspareunia needs to be clarified and confirmed in further large cohort studies. One may hypothesize that these factors may contribute to some degree of central sensitization. It is also important to identify which women are liable to have negative experience of childbirth and what the consequences of these reactions may be on their health and quality of life. A better understanding of this phenomenon may help to define and propose preventive psychological strategies around childbirth, even after a normal pregnancy and a normal delivery.

Conclusion

The obstetric interventions including the mode of delivery or episiotomy, and related perinatal trauma did not

directly influenced late post-partum dyspareunia. Late post-partum dyspareunia was linked with non-gynecologic factors (mother's experience of childbirth or current working status). This suggests that some mechanisms underlying late post-partum dyspareunia may be related to central sensitization that is modulated by social or psychological factor.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.purol.2012.01.008.

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