

ORIGINAL ARTICLE

Prognosis of women with pelvic pain during pregnancy: a long-term follow-up study

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Abstract

Study design. A follow-up study of women with pelvic pain during pregnancy. *Objectives.* To evaluate prognostic factors for pelvic pain. *Methods.* Out of a cohort of 870 pelvic pain patients, 598 women, who delivered less than 42 months prior to the follow-up measurement, were selected for follow-up. *Results.* Data of 430 women were available for analysis with a mean follow-up duration of 18 months postpartum. Forty-three women still experienced moderate or severe pain and were seriously hindered in more than one activity. At intake symptomatic women experienced a higher overall severity of complaints, more walking deficiencies, and mentioned prepregnancy back pain more often and reported labor lasting longer than 18 h 2.5 times more often than asymptomatic women. Explained variance of these factors is small. *Conclusions.* Mean 18 months postpartum a small group had moderate or severe pain. Prepregnancy back pain, severity of complaints, and number of walking deficiencies at primary referral as well as duration of labor showed a significant relation with symptoms.

Key words: *Pelvic pain, pregnancy, back pain, prognostic factors*

Many pregnant women experience sacral, symphyseal, or lateral pelvic pain in activities of daily living, such as walking, sitting, or standing (1–5). It is hypothesized that peripartum pelvic pain is caused by strain of ligaments in the pelvis and lower spine resulting from a combination of damage to the ligaments, hormonal effects, muscle weakness, and the weight of the fetus (4). Resolution of pain postpartum may be slow and incomplete in 9–21% of the patients; 7% has serious problems postpartum (6–9). Pain may persist for a mean of 6 years and can worsen with subsequent pregnancies (1,10).

Over the last decade a number of follow-up studies have been published (3,8,11). Postpartum pain seems to be related to pain severity during pregnancy (12–14), to the inability to reduce weight to the prepregnant level, and to an early onset of pelvic pain in pregnancy (6,12). Non- or short-term users of combined oral contraceptives seem to have an increased risk of persistent pain after delivery compared to long-

term users (13). No relation is found between the degree of symphyseal distension (11) or the amount of laxity of the sacroiliac joints during pregnancy (12) and the severity of postpartum pain. A higher incidence of hip dysplasia was found in children of patients (1). No study was found about pain experience at birth or duration of labor as prognostic factors.

In the present study we followed women who received standardized treatment during pregnancy. We aim to evaluate whether differences in findings at primary referral are prognostic factors for the continuance of pain and serious hindrances in daily life. Furthermore we evaluate details of pregnancies and labor in relation to continuance of pain.

Methods and patients

Design

A follow-up study.

Patients

In a previous publication we described a cohort of 870 pregnant women with pelvic pain who were referred to physiotherapy between 1997 and 2002 (5). At primary referral patients were questioned and clinically examined in a standardized manner. The mean age of the women was 31.9 years, 46% was in second pregnancy, and mean gestation was 26.3 weeks. Most women (84.9%) were employed and the main complaints were located around the sacroiliac joints (76.6%) and the pubic symphysis (57.2%).

In this follow-up study we selected women from this cohort who delivered less than 42 months before the time of follow-up measurement.

Measurement at intake

At initial intake most prognostic factors were gathered using a questionnaire evaluating prognostic factors found relevant in the literature (5). Furthermore the overall severity of complaints was assessed on a scale ranging from 0 to 15 (0 is no pain or disability; 15 is severe pain and disability), and a clinical examination took place.

Treatment

During their pregnancies all patients received information about pelvic pain syndrome, exercises and postural advice. First, an exercise was given to release tension in the pubic area and pelvic floor (see Figure 1). Second, a coordination home-

exercise was given to stabilize the pelvis while standing (see Figure 2).

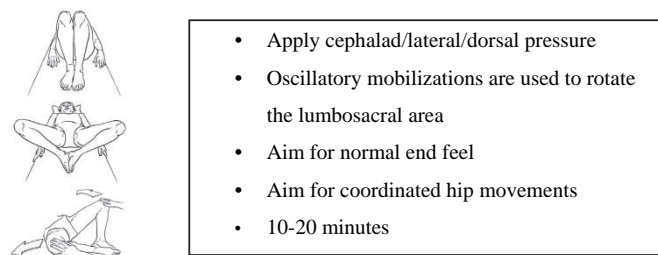
Patients were advised how to sit, stand, or lie down, avoiding adduction of the legs combined with internal rotation. Most patients required only two or three sessions to regain daily function and get control over their pain. They continued the home exercises. Some women were given weekly sessions throughout pregnancy, because they experienced severe anxieties (due to bad experiences in former pregnancies or deliveries) or continued complaints.

Follow-up questionnaire

A follow-up questionnaire, which contained 50 questions, was pre-tested on several women and sent by post. Retrospective questions were asked regarding pregnancy, delivery, the baby, and postpartum symptoms or recovery. Current status at follow-up was assessed by questions regarding the severity of pain and disabilities in daily life, walking deficiencies, and impediments in daily activities, e.g. sitting, walking distances, grocery shopping, and childcare.

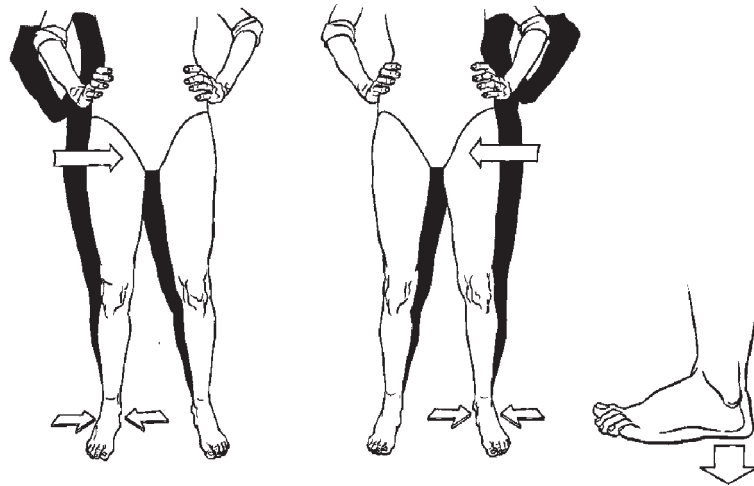
Analysis

Frequencies of intake and follow-up variables were calculated. Women reporting moderate or severe pelvic pain and more than one disability in daily life in the week before follow-up were classified as symptomatic. Next, we evaluated differences between symptomatic and asymptomatic women. In a



The patient lies in the supine position; hips and knees flexed, feet on the floor. The therapist assists the patient in moving the knees to a maximally abducted and externally rotated position with the feet staying in the middle. The position as well as the total movement is performed repeatedly until it is painless and smooth. The women were told to lie in this position for 10 – 20 minutes daily. Before getting up repeated contractions of stabilizing muscles were performed.
 From: 'Bekkenpijn tijdens en na de zwangerschap' (Elsevier Gezondheidszorg Maarssen, 1998)

Figure 1. Regaining symmetry in the pelvic girdle. The patient lies in the supine position; hips and knees flexed, feet on the floor. The therapist assists the patient in moving the knees to a maximally abducted and externally rotated position with the feet staying in the middle. The position as well as the total movement is performed repeatedly until it is painless and smooth. The women were told to lie in this position for 10–20 min daily. Before getting up repeated contractions of stabilizing muscles were performed.
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Figure 2. Stability in standing.

From: 'Bekkenpijn tijdens en na de zwangerschap' (Elsevier Gezondheidszorg Maarssen, 1998).

subgroup analysis we excluded women who delivered another baby ($n = 34$) or were pregnant at follow-up ($n = 44$), because this might influence the results. As no major differences were found in the results compared to the analysis of the total group of women, we decided to present the results of the total group.

We used SPSS to perform logistic regression analysis in order to evaluate the influence of prognostic factors on continuance of symptoms. After a univariate analysis, significant factors ($p < 0.1$) were entered into a multivariate model. Finally, to determine whether relationships exist between the number of children, birth weight, duration of pregnancy, type of delivery, and pain severity at follow-up, we divided the patients into four groups: no pain, mild, moderate, and severe pelvic pain at follow-up.

Results

In total, 598 women were sent a follow-up questionnaire; 72% ($n = 430$) of the forms were returned. Data of all 430 women were available for analysis with a mean follow-up of 18 months postpartum. Non-respondents did not differ in age, general health, level of complaints, number of pregnancies, or gestation period at intake. In Figure 3 we present a flow chart concerning patient inclusion and dropout rate.

Pain and function after delivery

Twenty-one percent of the women were symptom-free since childbirth. Another 5% had symptoms for a maximum of two months postpartum, and 15% had symptoms up to 18 months postpartum. Nine patients used a wheelchair postpartum, and 24 a pelvic belt.

At follow-up, 39.1% experienced mild pelvic pain, 11.3% had moderate pain, and 1.6% had serious pain. Many women returned to their jobs 2–6 months after giving birth (61.4%), one woman was still on maternity leave, and 10 were on sick leave because of back or pelvic pain (in the Netherlands women normally return to work 10 weeks postpartum).

Main differences between the symptomatic and asymptomatic women

At intake. Ten percent ($n = 43$) of the women were classified as symptomatic, most of which had sacral pelvic pain. The main differences in intake findings between symptomatic and asymptomatic women are shown in Table I. Eight intake findings appeared to be univariately related (see Table I) to continuance of symptoms and were included in a multivariate analysis. In the multivariate analysis three factors appeared to be significantly related ($p < 0.05$) to continuance of symptoms: prepregnancy back pain, overall severity of complaints, and number of walking deficiencies at intake. Explained variance of these factors is 9.7%.

At follow-up. The main findings at follow-up between the symptomatic and asymptomatic women are shown in Table II. No differences between the symptomatic and asymptomatic women were found in neonatal weights. Slightly more medical deliveries were performed in the asymptomatic group. Labor that lasted over 18 h, counted from the first subjective sign of delivery, occurred 2.5 times more often in the symptomatic women. Asymptomatic women delivered more often within 6 h. An extremely painful delivery was mentioned 2.8 times

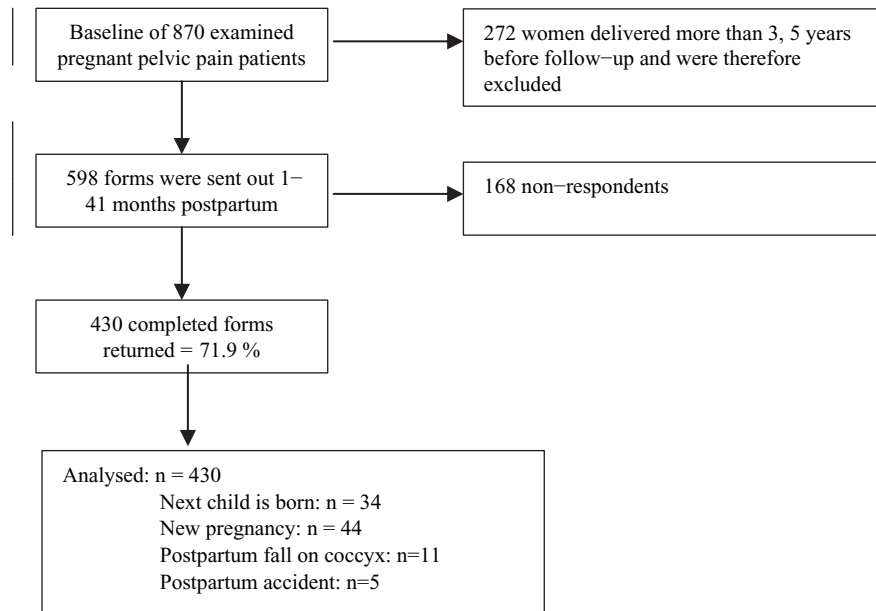


Figure 3. Flow chart.

more often by symptomatic women. No babies with signs of hip dysplasia or twins were born in the symptomatic group.

Four follow-up findings appeared to be univariately related to the symptoms at follow-up (see Table III) and were included in a multivariate analysis. In

Table I. Differences symptomatic versus asymptomatic, intake findings during pregnancy

Variables	Symptomatic (n=43)	Asymptomatic (n=387)
Age*	31.4 (range 24–38)	Mean 32.3 (range 22–44)
Number of pregnancy (mean)	2.1 (range 1–5)	2.1 (range 1–8)
History of back pain, before pregnancies* (%)	74**	59**
History of hip pain, before pregnancies* (%)	26	14
Pelvic or back pain other pregnancies* (%)	46.5	42.6
History of medical deliveries* (%)	9.3	15.5
History of extremely painful deliveries* (%)	16.3	11.6
Oral contraceptives > 1 year (%)	65.1	66.1
Chemically induced pregnancy (%)	4.7	3.6
Overall severity of complaints* (mean)	7.6 (range 2–15)**	6.2 (range 0–15)**
Number of pain localizations ^a (mean)	1.5 (range 1–3)	1.5 (range 0–3)
One localization (%)	53.5	54.5
Two localizations (%)	41.9	42.9
Three localizations (%)	4.7	2.6
Number of walking deficiencies ^{ab} (mean)	1.3**	0.9**
No walking deficiencies (%)	18.6	31.3
One walking deficiency (%)	44.2	48.2
More than one walking deficiencies (%)	37.2	20.1
Using orthopedic supports/aids ^c (%)	37.2	27.8
Patrick sign unilateral positive (%)	25.6	32.3
Patrick sign bilateral positive (%)	55.8	36.4
ASLR unilateral positive (%)	65.1	50.4
ASLR bilateral positive (%)	11.6	17.3
Resisted adduction (%)	60.5	56.1

*Significantly related to symptoms at follow-up according to univariate analysis, $p < 0.05$

**Significantly related to symptoms at follow-up according to multivariate analysis, $p < 0.05$

^aAnterior, lateral, or dorsal of the pelvis

^bWobbly gait, imbalanced gait, dragging a leg, using crutches

^cPelvic girdle, abdomen support girdle, wheelchair

Table II. Differences symptomatic versus asymptomatic, follow-up findings

Variables	Symptomatic (<i>n</i> = 43)	Asymptomatic (<i>n</i> = 387)
Duration of pregnancy in weeks (median)	40	40
Months postpartum at follow-up* (mean)	20.2 (range 3–37)	18.3 (range 1–41)
Duration of delivery** ^a (mean)	1.9**	1.6**
< 6 h (%)	41.9	55.3
6–18 h (%)	20.9	28.7
> 18 h (%)	34.9	14.0
Delivery ^a , no assistance (%)	76.7	70.5
Ventouse or forceps (%)	6.9	9.8
Cesarean section (%)	7.0	8.3
Induced labor (%)	11.6	13.7
Extremely painful labor* (%)	37.2	13.2
Hip dysplasia baby	0	<i>n</i> = 5 (1.3%)
Multiple gestation	0	<i>n</i> = 8 (2.1%)
Birth weight baby* (mean, g)	3,200	3,400
< 2,500 g (%)	7.0	2.6
> 4,000 g (%)	23.3	24.3
Sick leave postpartum (%)	29.3 (mean 10 months)	9.8 (mean 6.5 months)

*Significantly related to symptoms at follow-up according to univariate analysis, $p < 0.05$

**Significantly related to symptoms at follow-up according to multivariate analysis, $p < 0.05$

^aIn the period 1999–2001, 40% of Dutch women delivered their baby at home, without the aid of medical instruments. In hospitals the mean percentage of ventouse/forceps extraction was 17.7% and of cesarean sections 21% (from: Stichting Perinatale Registratie, Bilthoven, the Netherlands)

the multivariate analysis only duration of the labor appeared to be significantly related to symptoms at follow-up (explained variance 4%).

Predictors of pain experience at follow-up

We divided respondents into 4 groups to investigate relationships between prognostic factors and pain severity in the pelvic area or lower back in the week

before follow-up (see Table III). No major differences between the groups are found in age, number of pregnancy, duration of pregnancy, and percentages of natural births. All five babies that weighed over 5,000 g were born in the no or mild pain groups. Women with severe pain were younger, nonsmoking during pregnancy, and had smaller and fewer children. No difference in the frequency of induction of labor was found in the four groups.

Table III. Relationship between number of children, birth weight, duration of pregnancy, course of delivery, and experience of pain at follow-up

Variables	No pelvic or back pain (<i>n</i> = 206)	Mild pelvic or back pain (<i>n</i> = 168)	Moderate pelvic or back pain (<i>n</i> = 49)	Severe pelvic or back pain (<i>n</i> = 7)
Age (mean)	32.3	32.1	32.1	30.0
Number pregnancy (mean)	2.1	2.0	2.3	1.3
Weight baby (mean, g)	3,300	3,500	3,300	2,900
> 4,000 g (%)	21.4	26.7	26.6	28.6
> 5,000 g (<i>n</i>)	3	2	0	0
Duration of pregnancy (weeks)	39.8	39.7	39.7	39.6
Multiple gestation (<i>n</i>)	3	5	0	0
Hip dysplasia baby (<i>n</i>)	2	3	0	0
No medical delivery (%)	72.3	69.0	73.5	71.4
Ventouse or forceps (%)	7.3	12.0	6.1	14.3
Cesarean section (%)	7.3	9.0	8.1	–
Induced partus (%)	13.2	10.0	12.2	14.3
Duration of partus (mean)	1.6	1.6	1.7	2.3
< 6 h (%)	58.3	51.2	49.0	28.6
6–18 h (%)	24.8	33.9	22.4	14.3
> 18 h (%)	15.5	12.5	24.5	57.1
Extreme pain during partus (%)	7.8	19.6	30.6	42.9

The longer the duration of labor, the higher the risk of pain at follow-up.

Discussion

The present study shows that 90% of the women who suffered from pelvic pain during pregnancy and received a standardized treatment during pregnancy report a good recovery postpartum. This finding is irrespective of the severity of overall complaints or the pain localization during pregnancy and irrespective of an additional pregnancy or delivery. Almost all women stated to have benefited from given treatment, but the effectiveness of therapy during pregnancy and postpartum in patients with pelvic pain still needs to be evaluated. Concerning the effectiveness of physiotherapy treatment, two controlled studies are performed, but no clear conclusion can be drawn because of the small power of these studies (17,18).

At mean 18 months postpartum 10% of the women were identified as symptomatic. This finding is comparable with another study (8). Albert et al. described a decline of symptoms 18 months postpartum, resulting in 8.5% symptomatic women at over 2 years postpartum (8). Other studies show percentages of 20–37% residual pain several years postpartum (6,7,16,19). To and Wong described that 21% of the women with pelvic pain 3 days postpartum had pain 24 months postpartum (6). In this group of women only 4% was treated with physiotherapy during pregnancy, which differs largely from the study of Albert et al. and the present study, in which all patients attended at least a few therapeutic sessions.

As the moment of examination varied between 6 and 41 weeks of gestation, due to the timing of referral, this study is hard to compare to other studies. Although the present study did not follow the symptoms throughout pregnancy, the findings are useful in general practice, where patients may turn up at any period of gestation. The present study found a positive correlation between the regression of pain postpartum and the overall severity of complaints at intake. Two studies showed a comparable correlation between the presence of high pain intensity during pregnancy and little resolution of pain after delivery (8,14).

In our study symptomatic women differed from asymptomatic women regarding some factors, but as the symptomatic group appeared to be relatively small, the results are not robust.

In the literature the Active Straight Leg Raise test appears to be useful in discriminating between healthy subjects and disabling pelvic pain postpartum

(20,21), however it showed no prognostic value when positive during pregnancy. This finding is according to the results of Damen et al. (12).

Our follow-up results agree with the results of Bjorklund et al. about oral contraceptive usage (22). We also did not find any relationship between oral contraceptives and chronic pelvic pain after delivery. Symptomatic women did not have babies with hip dysplasia, as MacLennan and MacLennan (1) found in their study, but our numbers are small and therefore our conclusions may not be strong.

In a large study of women of the Dutch Organization of Pelvic Pain Patients, 14% of the women who experienced pain in pregnancy delivered by vacuum or forceps extractions (4). The percentage of use of ventouse or forceps is 9.5% in this study and is comparable to the overall percentage in the Netherlands of 10.6%. Only 7% of the symptomatic women had their baby delivered by the use of forceps of ventouse. Based on our results and comparable to those of MacLennan and MacLennan (1), it does not appear to be likely that the use of these instruments has a negative effect on recovery from pelvic pain, nor does a cesarean section. This study indicates that attention has to be given to the prevention of extreme pain during delivery and even more to the duration of the labor: the more hours, the greater the risk of being symptomatic at 18 months follow-up.

Conclusions

About 18 months postpartum a small group of 10% still has moderate or severe pain and disability in one or more daily activities. Prepregnancy back pain, the severity of complaints, and number of walking deficiencies during pregnancy and the duration of the labor have a significant association with symptoms. Attention has to be given to the prognostic role of extreme pain and long duration of labor.

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