Randomized trial of perineal massage during pregnancy: Perineal symptoms three months after delivery

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OBJECTIVE: The aim of this study was to evaluate the effect of perineal massage performed during pregnancy on perineal symptoms 3 months after delivery.

STUDY DESIGN: Pregnant women from 5 hospitals in the province of Quebec, Canada, participated in this single-blind, randomized, controlled trial. All participants received oral and written information on the prevention of perineal trauma. Women in the experimental group were taught the perineal massage technique and were asked to perform a 10-minute perineal massage daily from the 34th through 35th weeks of pregnancy until delivery. Participants completed a self-administered questionnaire on perineal pain, dyspareunia, sexual satisfaction, and incontinence of urine, flatus, and stool at the time of enrollment and 3 months after delivery.

RESULTS: Among participants without a previous vaginal birth there were no differences between the massage (n = 283) and the control (n = 289) groups with respect to perineal pain, dyspareunia, sexual satisfaction, and incontinence of urine, gas, or stool 3 months post partum. Among women with a previous vaginal birth more women in the massage group (n = 187) than in the control group (n = 190) were free of perineal pain (93.6% vs 85.8%; *P* = .01) but the frequencies of dyspareunia and incontinence of urine, gas, or stool were similar in the 2 groups.

CONCLUSIONS: Perineal massage during pregnancy neither impairs nor substantially protects perineal function at 3 months post partum. (Am J Obstet Gynecol 2000;182:76-80.)

Key words: Perineal function, perineal massage, randomized controlled trial

Perineal massage has been widely recommended to decrease the risk of perineal trauma at birth. We carried out a single-blind, randomized, controlled trial that demonstrated that perineal massage decreased trauma at childbirth.[1] As described in detail in our earlier report, regular perineal massage during the weeks before labor and delivery increased by 60% the likelihood of maintaining an intact perineum at childbirth among women with no previous vaginal delivery (from 15.1% to 24.3%). No significant decrease in perineal trauma was found among women who had a previous vaginal birth. On the other hand, concerns have been raised regarding whether massage would permanently stretch the introitus, increasing urinary incontinence and decreasing sexual stimulation. These concerns have not been addressed in previous studies of perineal massage. As part of our trial we evaluated the effects of perineal massage on perineal pain, sexual function, and urinary and fecal incontinence 3 months after delivery.

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Methods

The study population consisted of pregnant women with or without a previous vaginal birth who were delivered in 5 hospitals in the province of Quebec, Canada. The study procedures have been described in detail in a previous report.[1] Briefly, pregnant women were enrolled between 30 and 35 weeks' gestation and randomly assigned either to carry out perineal massage for 5 to 10 minutes a day from 34 to 35 weeks' gestation until delivery or to a control group. Randomization was stratified by parity and study center. Women randomly assigned to the perineal massage group were asked to record daily whether and for how long massage had been done. The woman's attending physician and the medical team at the delivery were blinded to group assignment. The assessment of the effect of perineal massage on postpartum perineal function began in March 1995 because funding was obtained after the perineal massage trial had begun in September 1994.

At the time of enrollment a research nurse collected sociodemographic and obstetric information about the

Table I. Baseline characteristics of 949 participants according to study group

	No previous vaginal delivery		*Previous vaginal delivery*	
Baseline characteristics	*Massage (n = 283)*	*Control (n = 289)*	*Massage (n = 187)*	*Control (n = 190)*
Age (y, mean ± SD)	28.7 ± 4.5	28.7 ± 4.5	31.5 ± 3.8	31.4 ± 4.4
Height (cm, mean ± SD)	163.2 ± 6.5	163.6 ± 6.5	163.9 ± 6.0	164.5 ± 5.6
Prepregnancy body mass index (kg/m^2, mean ± SD)	22.5 ± 3.5	23.1 ± 4.3	23.1 ± 4.4	23.4 ± 3.8
Weight gain (kg, mean ± SD)	15.0 ± 5.2	14.7 ± 5.8	13.3 ± 5.3	13.4 ± 4.7
Education level (y, mean ± SD)	16.0 ± 3.0	15.8 ± 3.0	15.5 ± 2.6	15.6 ± 3.0
Previous cesarean delivery (%)	6.0	5.2	4.3	3.2
Previous vaginal deliveries (%)				
1	NA	NA	76.5	73.7
2	NA	NA	20.3	22.6
≥3	NA	NA	3.2	3.7
Delay between delivery and postpartum questionnaire (wk, mean ± SD)	14.7 ± 2.4	14.7 ± 2.8	14.9 ± 2.6	14.8 ± 2.9

NA, Not applicable.

participants. In addition, women filled out a self-administered questionnaire about current perineal symptoms. They were asked whether during the preceding month they had ever lost urine involuntarily (accidentally), for example when coughing, sneezing, laughing, or running (response choices were never, less than once per week, 1 to 6 times a week, once a day, and more than once a day); they were also asked whether during the preceding month they had experienced perineal pain when walking or sitting or pain during sexual intercourse (response choices were never, sometimes, often, and always). The women were also asked to rate the severity of perineal pain and pain during sexual intercourse (choices were none, mild, discomforting, distressing, horrible, and excruciating) and their level of sexual satisfaction and their perception of their partner's sexual satisfaction (choices were very satisfied, satisfied, somewhat dissatisfied, very dissatisfied).

Immediately after the birth the attending physician completed a standardized form about the state of the perineum, including episiotomy and spontaneous perineal laceration. A perineum with no laceration or with a first-degree tear that was not sutured was considered to be intact. Other information about the delivery was collected from the medical record. Three months after delivery a questionnaire was mailed to each participant asking the same questions as in the baseline perineal function questionnaire and also asking about time until resumption of sexual intercourse and incontinence of gas or stool during the preceding month.

All analyses were by intent to treat. Scores for perineal pain when sitting or walking and for dyspareunia were created by multiplying the frequency of pain (possible range, 1-4) by its severity (possible range, 1-6). Scores were categorized a priori as follows: *none,* 1; *mild,* 2 to 6; *moderate to severe,* 7 to 24. Responses to questions about perineal function were analyzed by both the Kruskal-Wallis test on the uncategorized original scores (possible range, 1-24) and by χ^2 test combining categories with small numbers. Only the χ^2 tests on the combined categories are presented because results with both tests were similar. Stratified analysis with the Mantel-Haenszel χ^2 test was used to examine the associations between perineal massage and the postpartum perineal function variables, adjusting 1 by 1 for the variables unevenly distributed between the groups at baseline. Otherwise, the χ^2 test or the Student *t* test was used. All significance tests were 2-sided.

Results

The enrollment questionnaire on perineal symptoms was answered by all 1198 women randomly assigned between March 1995 and February 1996. Overall, postpartum questionnaires were returned by 949 participants (79%). The response rates were similar in massage and control groups among women with and without previous vaginal birth. Women with no previous vaginal delivery who returned the follow-up questionnaire were slightly older, better educated, and less likely to have been delivered by the cesarean route than were the nonresponders. These differences between responders and nonresponders were observed in both massage and control groups. Baseline perineal symptoms among responders and nonresponders were similar in massage and control groups. Among women with a previous vaginal birth responders from the control group were slightly older, were better educated, had smaller babies, and on average had fewer baseline perineal symptoms than did the nonresponders. However, these differences between responders and nonresponders were not present in the massage group.

Sociodemographic and obstetric history characteristics of the 949 women were similar between the study groups (Table I). Table II shows the data on baseline perineal function during the month before random assignment. Among women with no previous vaginal birth those in the massage group had more dyspareunia and urinary in-

Table II. Baseline third-trimester perineal function according to study group

	No previous vaginal birth		*Previous vaginal birth*	
Perineal symptoms	*Massage (%)*	*Control (%)*	*Massage (%)*	*Control (%)*
Perineal pain	n = 275	n = 286	n = 184	n = 187
None	65.5	66.4	56.5	58.3
Mild	26.9	26.2	31.5	33.7
Moderate to severe	7.6	7.3	12.0	8.0
Dyspareunia	n = 274	n = 286	n = 183	n = 186
None	43.1	46.5	44.8	51.6
Mild	32.1	34.3	36.1	31.7
Moderate to severe	17.5	9.4	8.2	9.1
No sex	7.3	9.8	10.9	7.5
Sexual satisfaction	n = 257	n = 256	n = 166	n = 170
Very satisfied	27.2	22.7	26.5	27.7
Satisfied	52.9	60.2	57.2	62.4
Somewhat or very dissatisfied	19.9	17.2	16.3	10.0
Partner's sexual satisfaction	n = 279	n = 256	n = 166	n = 170
Very satisfied	25.9	29.3	30.1	31.2
Satisfied	57.9	62.1	56.6	58.2
Somewhat or very dissatisfied	16.2	8.6	13.3	10.6
Urinary incontinence	n = 278	n = 288	n = 187	n = 190
Never	37.1	46.2	22.5	26.8
Less than once a day	55.0	47.9	58.8	61.1
Once a day or more	7.9	5.9	18.7	12.1

The total number of women for each variable varies because of missing data.

Table III. Delivery characteristics of 949 participants according to study group

	No previous vaginal birth		*Previous vaginal birth*	
Delivery characteristics	*Massage (n = 283)*	*Control (n = 289)*	*Massage (n = 187)*	*Control (n = 190)*
Gestational age (wk, mean ± SD)	39.2 ± 1.5	39.1 ± 1.5	39.0 ± 1.4	39.3 ± 1.3
Birth weight (g, mean ± SD)	3398 ± 498	3347 ± 449	3492 ± 484	3415 ± 491
Birth weight ≥4000 g (%)	12.1	7.6	16.6	13.2
Type of delivery (%)				
Spontaneous	59.7	59.5	88.8	92.1
Vacuum extraction	10.3	10.7	5.4	4.7
Forceps	11.0	12.5	2.7	1.1
Cesarean delivery	19.1	17.4	3.2	2.1
Length of second stage (h, mean ± SD)*	1.6 ± 1.1	1.5 ± 1.1	0.5 ± 0.6	0.4 ± 0.5
Length of second stage (%)*				
<30 min	14.9	10.9	66.9	73.1
30-59 min	18.3	25.9	19.9	18.8
≥1 h	66.8	63.2	13.3	8.1
Perineal outcomes (%)*				
Intact perineum	24.5†	15.1	34.8	31.7
First-degree tear (sutured)	14.0	18.4	23.8	22.6
Second-degree tear	27.5	25.9	26.5	28.5
Episiotomy (no extension)‡	25.3	28.0	14.9	16.7
Third- or fourth-degree tear	8.7	12.6	0	0.5

*Calculated for vaginal births only: women without previous vaginal birth, 229 in massage group and 239 in control group; women with previous vaginal birth, 181 in massage group and 186 in control group.

†$\chi^2_1 = 6.5$, $P = .01$, for intact perineum versus other perineal outcomes. Results of Student *t* tests or χ^2 tests comparing the study groups for other variables shown in this table were all nonsignificant ($P > .05$).

‡All median episiotomies except for 2 mediolateral episiotomies.

continence. More of them perceived their sexual partner as being dissatisfied. Among women with a previous vaginal birth those in the massage group were less sexually satisfied and had more urinary incontinence.

Compliance in the massage group was defined as massaging ≥4 times per week for ≥3 weeks. Compliance rates among women without and with previous vaginal birth were 67.1% (190/283) and 59.4% (111/187), respectively. In the control groups 3.1% (9/289) and 1.6% (3/190) of the women without and with previous vaginal birth, respectively, practiced massage this often.

Women without previous vaginal birth who were ran-

Table IV. Perineal function at 3 months post partum according to study group

	No previous vaginal birth		*Previous vaginal birth*	
Perineal symptoms	*Massage (%)*	*Control (%)*	*Massage (%)*	*Control (%)*
Perineal pain*	n = 274	n = 281	n = 186	n = 190
None	83.2	78.3	93.6	85.8
Mild	15.0	19.6	5.9	12.6
Moderate to severe	1.8	2.1	0.5	1.6
Sexual relations resumed	n = 249	n = 256	n = 170	n = 176
Yes	88.0	88.9	90.9	92.6
Dyspareunia	n = 240	n = 253	n = 166	n = 172
None	37.9	36.0	67.5	64.5
Mild	32.9	34.8	23.5	27.3
Moderate to severe	29.2	29.3	9.0	8.1
Sexual satisfaction	n = 273	n = 279	n = 184	n = 185
Very satisfied	26.0	23.7	32.6	34.6
Satisfied	48.4	48.8	52.7	49.2
Somewhat dissatisfied	20.5	21.9	12.5	14.1
Very dissatisfied	5.1	5.7	2.2	2.2
Partner's sexual satisfaction	n = 270	n = 278	n = 184	n = 184
Very satisfied	29.6	25.5	34.8	38.0
Satisfied	46.3	51.1	48.4	50.0
Somewhat dissatisfied	19.6	16.6	13.6	10.9
Very dissatisfied	4.4	6.8	3.3	1.1
Urinary incontinence	n = 283	n = 289	n = 187	n = 190
Never	73.5	71.3	66.3	61.1
Less than once a day	24.0	26.3	30.0	35.8
Once a day or more	2.5	2.4	3.7	3.2
Incontinence of gas	n = 282	n = 289	n = 187	n = 190
Never	73.4	76.5	73.3	74.2
Less than once a day	23.1	20.8	24.1	24.7
Once a day or more	3.6	2.8	2.7	1.1
Incontinence of stool	n = 274	n = 280	n = 184	n = 181
Never	96.8	96.9	98.4	95.8
Less than once a day	2.8	2.4	1.6	4.2
Once a day or more	0.4	0.7		

The total number of women for each variable varies because of missing data.
*$\chi^2_1 = 6.09$, $P = .01$, for no pain versus any pain in women with a previous vaginal birth. Results of χ^2 tests comparing the study groups for other variables shown in this table were all nonsignificant ($P > .05$).

domly assigned to carry out perineal massage were more likely to be delivered with an intact perineum. This outcome was considered to be a consequence of the perineal massage.[1] No other statistically significant differences were found between the massage and control groups (Table III).

The perineal function outcomes at 3 months post partum are presented in Table IV. Among women without previous vaginal birth the trend toward decreased perineal pain in the massage group was not statistically significant. Perineal massage did not influence time (mean ± SD) until resumption of intercourse: 6.5 ± 2.7 weeks in the massage group versus 6.3 ± 2.9 weeks in the control group ($P = .44$). Dyspareunia, women's sexual satisfaction, and women's perception of the partner's sexual satisfaction were similar in the 2 study groups. Nor was massage associated with urinary incontinence or incontinence of gas or stool. Adjustment for baseline perineal function characteristics unevenly distributed between the groups (dyspareunia, perception of partner's sexual satisfaction, and urinary incontinence) did not change the results.

Among women with a previous vaginal birth perineal pain was significantly decreased in the massage group (Table IV). The times (mean ± SD) until resumption of sexual relations were 5.9 ± 2.7 weeks in the massage group and 5.9 ± 2.5 weeks in the control group ($P = .93$). There were no other significant differences in perineal function between the groups. Adjustment for baseline sexual satisfaction and urinary incontinence did not change the results.

Comment

Our study is the first to address the effect of perineal massage during the third trimester on postpartum perineal function. Our results suggest that perineal massage may help to decrease postpartum perineal pain among women with previous vaginal delivery. The effect of perineal massage on perineal pain does not seem to be mediated by the increased chance with massage of being delivered with an intact perineum, because massage had no effect on perineal trauma in women with a previous vaginal birth. One possible explanation could be the de-

creased perineal sensitivity occurring after 2 to 3 weeks of regular perineal massage.[2-4] Had this been the case, massage should also have reduced perineal pain among women undergoing a first vaginal birth and dyspareunia among all women regardless of parity. Because we did not observe such differences between the study groups, the finding of reduced pain may have been due to chance and needs to be confirmed in further studies.

Concerns have been raised by patients and medical staff that massage might decrease perineal strength and permanently enlarge the vaginal entrance. This could lead to increased urinary incontinence[5] and decreased sexual stimulation during intercourse for the woman or for the male partner. The proposed mechanism for this would be stretching of the perineal musculature and skin. Studies on muscular stretching suggest that massage would be more likely to increase elasticity than to cause permanent lengthening of perineal and pelvic floor muscles.[6, 7] We found no differences between the groups in the frequency of urinary or anal incontinence or in the level of sexual satisfaction of the woman or the male partner.

Twenty-one percent of eligible women did not return the postpartum questionnaire, raising the possibility of bias.[8] Although response rates in the massage and control groups were similar, some baseline and delivery characteristics differed among women with a previous vaginal delivery. Because responders in the control group but not in the massage group on average had better baseline perineal function than did nonresponders, differences in postpartum perineal symptoms between massage and control groups could have been underestimated. On the other hand, in the control group but again not in the massage group the mean birth weight was higher among the responders than among the nonresponders. This could have led to a bias in the other direction. Although a few baseline perineal functions were imbalanced between the study groups, adjustment for these characteristics unevenly distributed at enrollment did not modify the results.

The questionnaires on perineal function were designed specifically for this study. However, our findings on the frequency of postpartum perineal problems are comparable to other published data. Reports on frequency of postpartum perineal pain at 3 months show a wide variation, from 10%[9] to 56%.[10] In our study perineal discomfort was present in 6% of women with previous vaginal birth and 22% of those without previous vaginal birth. The reported frequency of urinary incontinence during pregnancy ranges between 30% and 50% among nulliparous women and may be as great as 84% among multiparous women.[11-13] We obtained similar results, with approximately 40% of participants without previous vaginal delivery and 80% of those with a previous vaginal delivery reporting any urinary incontinence during pregnancy. In our study the frequency of postpartum urinary incontinence was 25% to 30% among women without previous vaginal delivery and 60% to 65% among women with a previous vaginal delivery; the proportion of those with daily incontinence ranged from 2% to 4%. This is comparable to other reports of postpartum urinary incontinence rates, which vary between 25% in primiparous women and 40% in multiparous women, with daily urinary incontinence in 3% of women.[9, 14, 15] At 3 months post partum about 90% of our participants had resumed sexual relations, similar to the proportion in the study of Klein et al.[10] Fecal incontinence at 3 months post partum was reported by approximately 3% of our participants, a somewhat lower proportion than the 4% to 6% reported by MacArthur et al.[16]

The benefits of prenatal perineal massage in preserving the integrity of the perineum at birth do not translate into better perineal function at 3 months post partum. Nevertheless, the concerns that perineal massage might impair sexual function and increase the likelihood of urinary incontinence can be safely laid to rest.

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