



RESEARCH ARTICLE



The Effect of Using Rebozo Technique during Labor on the Sensation of Labor Pain and Labor Duration

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Background: Labor pain is one of the most severe pain types known and it is especially more intense in primiparous women. For this reason, this experimental study was conducted on the rebozo technique applied during labor in primiparous pregnant women to determine its effect on the perception of labor pain and labor duration.

Methods: This study was conducted between 1 July 2021 and 31 January 2022 in a private institution with two groups, 30 patients got treated with rebozo, rebozo group, 30 people in the control group, with a total of 60 patients. Data collection tools included patient information form, partograph form, Visual Analog Scale (VAS). Data was analysed with SPSS. Physical characteristics were similar ($p>0.05$).

Results: Application of Rebozo technique shortened the duration of the active phase of labor, the duration of the total active phase and the duration between the active phase and delivery. VAS score was found to be significantly lower with Rebozo technique application ($p<0.05$).

Conclusion: The study suggests that the rebozo technique is a reliable and effective method for reducing labor duration and pain sensation.



Introduction

Pain is the subjective experience of an unpleasant sensation that has become a common problem since dawn of humanity (1-2). Among pain experiences; labor pain is shown to be one of the most severe kind of pain in prehistoric culture (1).

Labor pain is a physiologic pain which differs from pain which caused by trauma or a disease by

having sudden onset and continuing with intervals. It is described as severe and disturbing by women with every parity (3-4). In the first stage of labor pain is caused by ischemia due to regular contractions. In the second stage pain originates from the fetus pressuring vagina and the perineum while advancing (3-7). This pain was stated to be stronger than back pain,

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toothache, non-terminal stage cancer pain and laceration (7-8).

85% of the pregnant patients complain of pain (9). To address this several methods have been developed for patients to tolerate the pain. Controlling the pain of labor is quite important because lower pain means lower caesarean rates and easier adaptation to delivery of the baby (10). World Health Organization (WHO) recommended non pharmacological methods in pain management (11). These methods are advantageous because they are low cost with minimum equipment requirements, can be administered by the midwife independently and easily, have little to no side effects on the mother and the baby and lets the patient actively participate in the process of labor (12-13).

One of the techniques to reduce labor pain and shorten labor is the rebozo technique. Rebozo is a 100% cotton, at least 200 cm x 70 cm sized shawl that can carry up to 225 kg and is used by the people in Mexican and Spanish traditions (4,11). This shawl made with soft fabric that doesn't irritate the skin (4). Rebozo is used by the local populace in Mexico and Spain to protect the head and the shoulders from the sun, to carry equipment and newborns, to help with carrying waterpots overhead and to reduce labor pain as an accessory (14-15). The basis of the rebozo shawl technique is rhythmically moving the stomach, hips and the pelvis. This allows the relaxation of the pelvic and uterine muscles and ligaments to relax, to correct the position of the fetus so it switches to a more favorable position for labor, and to reduce the pain during labor (11,16). When rebozo technique is applied during labor, it allows to correct the fetal malpositions, eases the fetal cardinal movements, shortens the total duration of labor and increases patient satisfaction (17-19). Technique can be applied in the hand-knee position, supine position, sitting position and standing and can be applied to any region of the body (11).

There are limited studies about rebozo technique in the literature. The studies showed that the rebozo technique reduces the sensation of labor pain, shortens the duration of labor and corrects fetal malposition. In a study done by Purwanti (2020), it was reported that rebozo technique that was applied

during the active phase reduced anxiety and pain sensation score (4). Another study by Munafiah et al. (2020) reported that the rebozo technique increased the speed of fetal descent and cervical dilatation (20). The study done by Tandoğan (2021) shows that using rebozo technique decreases labor pain and increases satisfaction on the patient's hospital stay (19). Gözükar (2020) reported that the application of rebozo technique in the third trimester of pregnancy reduced back and lower back pain (21). In the study done by Turan (2023) it was reported that the intrapartum application of rebozo technique reduced pain levels and shortened the active phase of labor (22). Iversen et al. (2017) reported that application of rebozo technique their qualitative study resulted in the patients feeling physically better, was effective in reducing the pain and that it created great satisfaction when the technique was applied by midwives (18).

Application of the technique by midwives during labor, active participation by the patient to labor makes it possible that establishing the bond of trust between the patient and the midwife, makes it easier to cope with the labor pain and increases the satisfaction towards labor. By enabling the patient to use her own strength and supporting the coping mechanism the ratios of caesarean and operative normal birth can be lowered. This technique is used commonly in Latin America and Western Countries but is rarely known in Turkey. Three more studies were conducted about Rebozo technique in Turkey (19,21-22).

This experimental study was conducted on the rebozo technique applied during labor in primiparous pregnant women to determine its effect on the perception of labor pain and labor duration.

Material and Methods

The Settings of the Study

This study was performed in Turkey/Istanbul at a private institution hospital between 1 July 2021 and 31 January 2022.

Population and the Sample Size of the Research

The sample population of the study consists of every patient who is admitted to the delivery room for

first childbirth between 1 July 2021 and 31 January 2022.

Splitting the Population into Groups for Research

Statistical power analysis was performed to determine the number of participants. Power of the study was calculated with G*Power 3.1. For 95% confidence interval, an effect size of 1.126 level 18 patients per group was found to be required for a total of 36 patients ($df=34$; $t=1.1691$; $p<0.05$). In this study 30 patients per group was used to ensure high confidence in the statistical analysis.

Data Collection Tools

The data of this study was collected with Informative Guide for Pregnant Patients Labor Observation Form, Visual Analog Scale (VAS) and Partograph.

Ethical Aspects

After the decision to research this topic was made; an ethical permit was taken from Istanbul Medipol University Non Invasive Clinical Research Ethics Committee. Following the ethical permit, a permit to conduct to study was taken from the hospital which the study was done.

Following these permits, pre-application of the study technique was done with five volunteer patients and "Introductory Information Form for Pregnant Patients" was examined to determine if the points are understandable and clear. Patients who were included in the pre-application were not included in the study. A written consent was taken by the researcher from the Rebozo group and control group.

Application and Midwifery Interventions

There was no interventions or applications done to the control group outside of the standard procedure. For patients in Rebozo group Rebozo technique was applied; on sitting position at 4 cm cervical dilatation, on hand-knee position at 6-8 cm dilatation, on knee-chest position at 9-10 cm dilatation and on crouching position at in the second stage of labor. VAS evaluation was done in the rebozo group before first application and 30 minutes after the other three applications. VAS evaluation was done to the

Control group patients at times corresponding to the Rebozo group.

Evaluation of the Data

The data gathered in this study was analyzed by a statistician using SPSS (Statistical Package for Social Sciences) 22.0 for Windows. Methods to evaluate the data included definitive statistical methods such as numbers, percentage, average and standard deviation. Non-parametric methods are also used in analysis. T-test was used in quantitative analysis of continuous data between groups. Differences between the ratios of categorical variables in independent groups were analysed with Chi-square and Fisher's exact tests. Repeated measures Anova test and Supplementary Bonferroni test were used to determine the differences between more than two repeated measurements within the groups. The difference between two replicate measurements within groups was analysed with the Dependent Groups t-test.

Results

It is shown in Table 1 that the physical characteristics and gestational weeks of the pregnant women included in the study are similar ($p>0.05$).

Gestational age averages are 38.9 in both of the groups and there isn't any statistically significant difference ($p=1.000>0.05$). It is shown that there is no statistically significant difference in participants' physical characteristics and pregnancy weeks between the control and the rebozo group.

In Table 2, when the cervical dilatation findings are examined there are no statistically significant differences between groups. However the speed of the cervical dilatation is internally faster in the rebozo group compared to the control group.

Table 1: Comparison of Participants' Physical Characteristics and Pregnancy Weeks

	Rebozo	Control	t	p
	Avg ± sd	Avg ± sd		
Age (year)	26.33 ±3.54	27.57±4.41	-1.193	0.238
Height (cm)	163.60 ±6.86	162.57±4.36	0.695	0.490
Weight (kg)	75.05 ±11.96	74.95±10.85	0.034	0.973
BMI (kg/m ²)	28.11 ±4.68	28.37±4.02	-0.230	0.819
Pregnancy Weeks	38.90±1.21	38.90±1.26	0.000	1.000

Independent Groups T-Test

Table 2: Comparison of Participants' Cervical Dilatation Measurements

Groups	Rebozo (n=30)	Control (n=30)	t	p
	Avg ± sd (CD/cm)	Avg ± sd (CD/cm)		
T ₁ –Dilatation of 4 cm, before first application ¹	4.00±0.00	4.00±0.00	7.633	1.000
T ₂ –30 minutes after first application ²	5.13±0.62	4.13±0.34	0.479	0.634
T ₃ – Dilatation of 6-8 cm, before second application ³	6.50±0.50	6.43±0.56	3.814	1.000
T ₄ –30 minutes after second application ⁴	8.37±0.76	7.47±1.04	1.000	0.326
T ₅ – Dilatation of 9-10 cm, before third application ⁵	9.03±0.18	9.00±0.00	7.633	1.000
T ₆ –30 minutes after third application ⁶	10.00±0.00	10.00±0.00	7.633	1.000
F	725.468	866.176		
p	0.000	0.000		
Bonferroni	1,2<3,4,5,6; 3,4<5,6	1,2<3,4,5,6; 3,4<5,6		

When Table 3 is examined, the cervical effacement measurements of the pregnant women at T₂, T₄ and T₅ times show a significant difference according to the groups (t(58)=3.034; p=0.004<0.05; t(58)=2.275; p=0.027<0.05; t(58)=2.063; p=0.045<0.05.

respectively) The cervical effacement measurement of the rebozo group at T₂, T₄, T₅ times was higher than the measurement of the control group at the same time. It can be understood that rebozo application accelerates cervical effacement

Table 3: Comparison of Participants' Cervical Effacement Measurements

Groups	Rebozo (n=30)	Control (n=30)	t	p
	Avg ± sd (%)	Avg ± sd (%)		
T ₁ –Dilatation of 4 cm, before first application ¹	60.7±0.10	58.3±0.08	0.919	0.362
T ₂ –30 minutes after first application ²	67±0.09	60±0.08	3.034	0.004
T ₃ – Dilatation of 6-8 cm, before second application ³	73±0.07	71.3±0.09	0.761	0.450
T ₄ –30 minutes after second application ⁴	83.3±0.08	77.3±0.11	2.275	0.027
T ₅ – Dilatation of 9-10 cm, before third application ⁵	89.3±0.03	86.7±0.06	2.063	0.045
T ₆ –30 minutes after third application ⁶	100±0.00	100±0.00	0.000	1.000
F	127.041	161.817		
p	0.000	0.000		
Bonferroni	1,2<3,4,5,6; 3,4<5,6	1,2<3,4,5,6; 3,4<5,6		

Independent Groups T-Test; Repeated Measures Anova Test

Table 4: Comparison of Participants' Fetal Head Station

Groups	Rebozo (n=30)	Control (n=30)	t	p
	Avg±sd (-3,+3)	Avg±sd (-3,+3)		
T ₁ —Dilatation of 4 cm, before first application ¹	-2.20±0.71	-2.57±0.72	1.969	0.054
T ₂ —30 minutes after first application ²	-1.57±0.89	-2.23±0.77	3.081	0.003
T ₃ — Dilatation of 6-8 cm, before second application ³	-1.10±0.88	-1.20±0.88	0.437	0.664
T ₄ —30 minutes after second application ⁴	0.03±0.80	-0.57±0.93	2.658	0.010
T ₅ — Dilatation of 9-10 cm, before third application ⁵	0.30±0.70	0.17±0.98	0.603	0.549
T ₆ —30 minutes after third application ⁶	2.25±0.73	1.52±0.96	2.971	0.005
F	158.930	150.024		
p	0.000	0.000		
Bonferroni	1<2,3,4,5,6; 2,3<4,5,6; 4,5<6	1,2<3,4,5,6; 3,4<5,6		

Independent Groups T-Test; Repeated Measures Anova Test, -3.+3 Pelvic Station

When Table 4 is examined, fetal head station of the pregnant women T₂, T₄ and T₆ times show a significant difference according to the groups (t(58)=3.081; p=0.003<0.05; t(58)=2.658; p=0.010<0.05; t(47)=2.971; p=0.005<0.05. respectively) Fetal head station 30 minutes after each

rebozo application were found to be at a significantly higher value than the control group (p<0.05) With this result, it is seen that the progress in the fetal head descent of the pregnant women in the rebozo group is faster than the control group.

Table 5: Comparison of the Duration of Active Phase and Time Taken Until Placental Separation of Participants

Groups	Rebozo (n=30)	Control (n=30)	t	p
	Avg±sd (min)	Avg±sd (min)		
Time elapsed between the active phase onset and the transition phase	146.67±54.68	286.67±161.80	-4.490	0.000
Time elapsed between the transition phase and the onset of the second stage	19.67±8.40	23.57±11.44	-1.505	0.138
Time elapsed between the onset of the second stage and delivery	25.53±20.19	23.77±18.23	0.356	0.723
Time elapsed between delivery and placental separation	8.13±3.46	8.93±3.08	-0.945	0.349
Total time taken between the onset of active phase and delivery	189.10±61.44	334.00±166.22	-4.478	0.000

Independent Groups T-Test

It is shown in Table 5 that total time taken between the onset of active phase and delivery is shorter by 144.9

minutes in rebozo group than the control group (p<0.05).

Table 6: Comparison of Visual Analog Scale (VAS) Measurements between Participants

Groups	Rebozo (n=30)	Control (n=30)	t	p
	Avg±sd	Avg±sd		
T ₁ – Dilatation of 4 cm, before first application ¹	6.13±1.96	6.13±1.52	0.000	1.000
T ₂ – 30 minutes after first application ²	5.63±1.32	6.93±1.61	-3.405	0.001
T ₄ – 30 minutes after second application ³	5.47±1.25	8.60±1.32	-9.400	0.000
T ₆ – 30 minutes after third application ⁴	6.00±0.00	9.36±2.25	-7.305	0.000
F	2.062	27.277		
p	0.144	0.000		
Bonferroni	-	1,2<3,4; 3<4		

Independent Groups T-Test; Repeated Measures ANOVA test

When dilatation was detected as 4 cm mean VAS in both groups was 6.13. In the following evaluations 30 minutes after Rebozo application (T₂, T₄, T₆) the mean VAS of the rebozo group was statistically significantly lower than that of the control group (p<0.05).

Discussion

When the studies on the rebozo technique in the literature are examined; it is seen that the purpose of use of the technique is generally to correct fetal malposition, accelerate the progression of labor, to reduce waist and back pain to make coping with pain easier for patients and to increase patient satisfaction (17–23).

Cohen and Thomas (2015), in their study with a single case in order to correct fetal malposition at birth; applied the rebozo technique in the supine position, navel shaking in the hand-knee position and hip shaking in the knee-chest position for an average of 5 minutes (17). In the study by Iversen et al. (2017), the rebozo technique was applied to pregnant women in standing position, hand-knee position and supine position for at least 5 minutes (18). Damayanti and Fatimah (2021) applied hip shaking and belly shaking rebozo technique in a single case where they used rebozo technique for pain management and aiding labor (23). In the single blind randomized-controlled trial by Tandoğan (2021), the effect of Rebozo Technique used in labor on perceived labor pain and birth satisfaction was evaluated. Patients were applied Rebozo Technique on the pelvis on lying down position for five minutes followed by applying Rebozo on the

abdominal area and hips for five minutes (19). In the study done by Turan (2023) rebozo technique was applied for 6-7 minutes standing position in the latent phase, for 6-7 minutes in the hand-knee position in the active phase, for 3-4 minutes in the knee-chest position in the transitional phase (22). ACOG, on the other hand, stated in its 2019 report that various positions should be given to pregnant women frequently to ensure optimal fetal positioning, and reported that spending time in upright positions shortens the delivery time (24). Considering these studies in the literature and ACOG's recommendations on the practice of standing, walking, rocking, and hand-knee movements at birth, in this study, pregnant women in the experimental group were applied rebozo technique in supine position, hand-knee position, knee-chest position, walking and crouching position.

It has been reported that the Rebozo technique provides optimal fetal positioning by relaxing uterine muscles and ligaments, corrects fetal malpositions, and facilitates fetal descent by relaxing the pelvis (17,18,20,23). According to the cervical examination findings of the groups in our study; dilatation progression was very similar in both groups and technique had no effect on dilatation (Table 2). Although there is no statistically significant difference between the groups in dilatation findings, it should not be ignored that the dilatation is faster after the application when the rebozo group is examined within itself. It was determined that the fetal head descent was faster in the rebozo group with the technique applied to ensure the optimal fetal position and facilitate the descent of the fetal head. Especially in the evaluation 30 minutes after each rebozo technique, the statistically significant difference between the two

groups means that the technique facilitates and accelerates the descent of the fetal head (Table 4).

Our study showed that cervical effacement, which happens alongside fetal head descent, happened faster in our study group. This was especially significant after the pelvis shaking rebozo technique (First application) which is applied in sitting position (Table 3). This shows that rebozo technique accelerates the fetal head descent which results in increasing the effacement by increasing the pressure on the cervix.

Similar to our study findings, in a qualitative study examining the effects of rebozo technique on Danish women by Iversen et al. (2017) the technique is found to correct fetal malposition and accelerate fetal descent; It was stated that by correcting the malposition, it facilitates the descent of the fetal head stuck in the pelvic station, thus contributing to the birth process (18).

In a study done by Tandoğan (2021) applying Rebozo in latent phase did not yield statistically significant different results in cervical dilatation, effacement, fetal descent. Using Rebozo technique in active phase in labor only increased cervical dilatation was shown to be progressed among the same parameters (19).

In a study by Cohen and Thomas (2015) to assess rebozo technique to correct fetal malposition; belly shake in hand-knee and supine lying position, hip shaking rebozo technique in knee-chest position were applied to pregnant women at the 40th and 3-day gestational week when the cervix was 7 cm dilated and the fetal head was at -1, a 24-year-old nulliparous pregnant woman with contractions lasting 45-60 seconds and every 3-6 minutes. In the examination performed 2 hours after the application, it was reported that cervical dilatation was 10 cm, fetal head was at +1 and delivery took place (17).

Examining the birth times of the groups in our study; It is seen that the active phase duration of the rebozo group was 140 minutes shorter than the control group (Table 5). In the active phase of labor, pelvis rocking in the sitting position and belly shaking rebozo technique in the hand-knee position were applied to

the pregnant woman in the rebozo group, and the active phase of the first stage of labor was shortened. there was no statistically significant difference on the duration of transitional phase and the second stage between groups.

Similar to our own results in the study done by Turan (2023) the rebozo group had shortened active phase duration, and transitional phase and the second stage of labor had the same durations as the control group (22).

In the Tandoğan (2021) study, the length of the active phase did not change between the Rebozo and the control groups. When the transitional phase and the second stage of labor was evaluated, the duration was decreased (19).

Munafiah et al. (2020) in the study conducted with 10 patients with experimental and control groups to evaluate cervical dilatation and fetal descent, it was stated that cervical dilatation and fetal descent of the experimental group were accelerated and the active phase of labor was shortened (20).

In the case report by Damayanti and Fatimah (2021), the effect of rebozo technique on labor pain and labor process was examined; Hip shaking and belly shaking rebozo technique was applied to a nulliparous 38-week-old pregnant woman and it was reported that the first stage of labor was shortened by 3 hours (23).

When the delivery times of the pregnant women in our study were compared; It was determined that the time between the active phase and delivery was 144.9 minutes shorter in the rebozo group than in the control group (Table 5). In the study done by Tandoğan (2021) applying Rebozo technique did not affect total duration of delivery (19).

In our study, the VAS score of the rebozo group was found to be statistically significantly lower than the control group in three evaluations (VAS II, VAS III, VAS IV) ($p < 0.05$). Only The VAS I evaluation which is performed before the application at 4 cm cervical dilatation was found to be 6.13 in both groups with an equal VAS score. It was determined that the VAS scores of the control group increased over time, while the VAS

scores remained stable while the dilatation progressed (Table 6). While the VAS scores of both groups were equal at the beginning and the pain perception of the control group increased over time, the post-application pain perception was significantly lower in the rebozo group compared to the control group, indicating that the rebozo technique had a positive effect on the perception of labor pain.

In the study done by Gözükara (2020) it was reported that rebozo massage reduced third trimester waist and back pain (21). In the Tandoğan (2021) study, VAS scores were taken from the patients after Rebozo application in latent phase (4-5 cm) and active phase (6-8 cm). A third VAS score was evaluated without applying rebozo on the transitional phase (8-10 cm). VAS scores taken in latent phase and active phase were lower in the Rebozo group (19). In the Turan (2023) study, it was found that intrapartum rebozo technique reduced pain levels in latent phase, active phase and transitional phase. (22). Our VAS score assessment is similar to Tandoğan (2021) and Turan (2023) studies.

In a case report by Damayanti and Fatimah (2021) in which the effect of reboson on labor pain and labor process was examined; It has been reported that the VAS pain score of the pregnant woman during labor was between 7-10 before the application of the rebozo technique, and between 4-6 after the application (23). In our study, it was determined that the mean VAS score of the rebozo group was between 5.47-6.13, and the control group was between 6.13-9.36 (Table 6).

In a qualitative study conducted by Iversen et al. (2017) to examine the effects of the rebozo technique, it was stated that pregnant women needed less analgesia and the technique alleviated the low back pain experienced during childbirth (18). In the Tandoğan (2021) study it was indicated that the birth experiences were more positive in the rebozo group (19).

Strengths of the Study

There has been no adverse effects and no patient has reported any complaints in the rebozo group. This study was supported by the whole labor and delivery team. The researcher works in the unit

that the study was done in. The application was done by the researcher independently. The cost of this research and application is minimal.

Limitations of The Study

This study was conducted during the SARS-COV-2 pandemic and with the reduction of patients who applied to the unit it limited the capacity to collect data. The results of this study can only be generalized to the patients who were included to this study. The application was done during the active phase over labor, therefore the results cannot be generalized to the whole process of delivery. The participants were indecisive about taking part in the study as they weren't knowledgeable about Rebozo technique. Our participants were mostly consisted of multiparous participants.

Conclusion

As a result, the gestational week and physical characteristics of the pregnant women included in the study were similar in the two groups and there was no significant difference between them, the technique accelerated the descent of the fetal head and increased the cervical effacement along with it, the technique shortened the active phase of labor by 140 minutes, that it had no effect on the transitional phase the second stage and placental separation time, shortened the time between the active phase and delivery by 144.9 minutes in total, and with the application of the technique, the VAS values of the rebozo group were significantly lower than the control group.

Considering that the Rebozo technique reduces labor pain, shortens the delivery time and that pregnant women are quite satisfied with the technique, it would be beneficial to include the technique in the routine care given by midwives in delivery rooms for an effective birth management. Since the technique does not have any proven fetal and maternal side effects, it is important to encourage midwives to use the technique and to organise widespread training on the application.

Due to the limited number of studies evaluating the effects of the technique, it is absolutely

recommended to increase the experimental studies examining the effects of the rebozo technique.

Conflicts of Interest

The authors declare that they have no conflict of interest.

Availability of Data and Materials

The datasets utilised and/or analysed in the present study can be obtained from the corresponding author upon reasonable request.

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