

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20201215>

Original Research Article

Will women's choice of position in first stage of labor affect labor process?

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Received: 08 February 2020

Accepted: 02 March 2020

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ABSTRACT

Background: Controlling the process of childbirth has disabled the parturient to embrace the most spontaneous position of delivery but constricting her to assume a recumbent position. Objective of this study was to study if alternating comfortable maternal positioning i.e., recumbent and alternative position have any influence in the process of labor, type of delivery, neonatal well-being.

Methods: Study conducted an observation study on term pregnant women. Study inclusion criteria included all term pregnant women. Exclusion criteria included multiple pregnancies, preterm patient, severe pre-eclampsia, and eclampsia, preterm premature rupture of membranes, severe intrauterine growth restricted fetus. The measured data were maternal general characteristics, duration of labor process, type of delivery and neonatal outcome. Patients were divided into two groups. Group A - if they spent more than 50% in a recumbent position and Group B - any other alternating position.

Results: A total 250 women were equally included in this study. The demographic characteristics were matched in both groups and found no significant difference. In the process of labor, Group B had a difference of 1 hours as compared to Group A and the rate of cervical dilation was also faster in Group B. Both of these variables were found to be statistically significant. However, there were no significant difference in the terms of type of delivery and neonatal outcome.

Conclusions: The ancient practice of recumbent position during labor is to be discarded as alternating maternal position during the process of labor may a positive influence on the total duration labor. However even though it may or may not have an influence on the other outcome such as route of delivery and neonatal outcome, it is best to encourage women to move and deliver in the most comfortable position.

Keywords: Labor process, Maternal position

INTRODUCTION

All through the years in human cultures women from all over the world have preferred to give birth with their bodies in sitting or squatting by grasping a rod or a companion, ropes etc. and usually do not prefer lying flat on their back positions. However in the present era, in developing countries, there has been an ongoing obstetrical practice that once a labouring woman has had

a hospital admission it is imperative that she is stranded in the supine position and restrain from any spontaneous activity that involves her ambulating.^{1,2} This is in assumption that it would be easier to monitor the fetal wellbeing and process of labor followed by the administration of analgesia if required.^{2,3} In the present literature there has never been any consensus regarding the best position of labor and its agreement on the betterment of maternal-fetal outcome although the

recumbent position if known to be convenient for the staff.^{1,4,5} However this position may make the birth process complicated and strenuous.

The upright position makes us unique amongst mammals. However we do not even take the advantage of the help that gravity can provide as an upright position is associated with more effective uterine contractions, better alignment of birth canal, increase pelvic outlet diameters and thereby reducing maternal and neonatal morbidity.⁶⁻¹⁰ In contrast the recumbent position is best suited to palpate for uterine contraction and perform vaginal examination and also assess the fetal heart rate, but it is also known to cause aortocaval compression, less effective uterine contractions, longer duration of labor, more chances of operative deliveries and more request of analgesia.¹¹⁻¹⁴ It is reasonable to believe that lack of birthing position as hospital may be one of the contributory factor to women choosing to give birth in recumbent positions.

The aim of this study was to categorize the patient as those who spend more than 50% of labor in recumbent position to those who spend more than 50% of labor in alternating position in terms of intra partum, materno-fetal and neonatal outcome.

METHODS

This was an observational study in term pregnant woman admitted to the labor room in a tertiary care hospital in South India from August 2017 to July 2018. All the patients were informed about the study and consented for the same. According to the criteria of labor, presence of regular uterine contractions and second stage of labor was defined with full dilatation of cervix.¹⁵

Inclusion criteria

- Term pregnant woman at labor onset, a Trans-abdominal ultrasound was done to confirm the fetal position.

Exclusion criteria

- All cases of multiple pregnancies, preterm labor, severe pre-eclampsia, eclampsia and severe IUGR

where the associated co morbidity may alter the mode of delivery chosen or restrict the ambulation.

Intra partum date was collected on a partogram. For all woman, general characteristics such as age, BMI, gestational age, labor process i.e., duration of first stage and second stage of labor, analgesia required and mode of delivery (spontaneous, operative vaginal delivery or cesarean section), neonatal outcome at birth Apgar score at birth and 5 minutes. Group A - included patients who spent more than 50% of their labor in lying down position and Group B included patient who spent more than 50% of their labor in any other alternative position i.e., sitting or squatting. All patients were monitored according to protocol as described in intra partum care for healthy women and babies in NICE guidelines.¹⁶ Pain intensity was assessed by determining the analgesia requested by the patient.

The primary objective of this study is determining the outcome between two groups in terms of duration of labor and progress of labor. Secondary outcome is to compare the maternal analgesia request, mode of delivery i.e., operative vaginal delivery or by caesarean section.

Statistical analysis

Statistical analysis was performed using SPSS software. Statistical significance was defined as $p < 0.05$.

RESULTS

Study recruited a total of 250 women in this study. Group A - had 125 patients and Group B had 125 patients. The mean age in Group A was 30.52 ± 2.55 years and the mean age in Group B was 30.48 ± 3.24 years. Mean BMI in Group A was 25.24 ± 3.3 and in Group B was 25.52 ± 3.6 . None of these findings were proven to be statistically significant. Group A and Group B were both matched for general maternal characteristics (Table 1).

In Group A, 85 (68%) cases had vaginal delivery, of which 3 (3.5%) cases had assistance with forceps and 3 (3.5%) cases had assistance with vacuum. 40 (32%) cases underwent caesarean section. In Group B, there were more number of vaginal deliveries i.e. 92 (73.6%) of which 4 (4.3%) cases had assistance with forceps and 4 (4.3%) cases had assistance with vacuum.

Table 1: Demographic characteristics.

Demography	Group 1 (n = 125)	Group 2 (n = 125)	p value (< 0.05 is significant)
Maternal age (mean±SD)	30.52±2.55	30.48±3.24	0.25
BMI (mean±SD)	25.24±3.3	25.51±3.6	0.28
Parity			
Primigravida	60	63	0.70
Multigravida	65	62	
Gestational age (weeks)	38.5±0.2	38.2±0.4	0.497
Occipital posterior position	7 (5.6%)	4 (3.4%)	

Group B also had less number of caesarean section i.e., 33 (26.4%) cases. Even though there were more number of vaginal deliveries and lesser number of caesarean section, this difference did not prove to be statistically significant.

Statistically significant differences were found in duration of labor of both the first and second stage of labor (mean 5.22±1.98 hours in Group A and 4.26±2.18 hours in Group B), a difference of almost 1 hours. (p value <0.05). The mean duration of first stage of labor in Group A was 235±107 minutes and 206.34±121 minutes in Group B. The mean duration of second stage of labor

in Group A was 53.7±22.2 minutes and 48.6±18.12 minutes in group B. Study also found the rate of cervical dilation was more in Group A than in Group B (mean 1.50±0.64 in Group A and 1.78±0.74 in Group B) which was found to be statistically significant (Table 2). However, both groups had no significant different in the requirement of analgesia.

Considering only Group B patients, no significant difference was found in the duration of labor comparing alternative positions (Table 3) however more number of patients 58 who adopted the propped position had normal vaginal delivery which was found to be statistically significant (Table 4).

Table 2: Comparison between the groups in terms of duration of labor and need for analgesia.

Outcomes	Group 1 (N = 125)	Group 2 (N = 125)	p value (<0.05 is significant)
Duration of labor(hours)	5.22±1.98	4.26±2.18	0.024
Stage 1 (min) mean±SD	206.34±121	235±107	0.033
Stage 2 (min) mean±SD	48.6±18.12	53.7±22.2	0.032
Rate of cervical dilatation (cm/hour)	1.50±0.64	1.78±0.74	0.007
Requirement of analgesia	18	10	0.10

Table 3: Comparison in Group B patients and their total duration of labor.

Outcomes	Propped up	Walking	Sitting	p value (<0.05 is significant)
Stage 1 (min) mean±SD	190.85±114.32	222.60±117.5	217.85±139.39	0.45
Stage 2 (min) mean±SD	48.08±19.78	51.30±15.16	45.07±17.09	0.48
Rate of cervical dilatation (cm/hour)	1.85±0.80	1.59±0.65	1.83±1.09	0.44

Table 4: Comparison of mode of delivery in Group B patients.

Outcomes	Propped up	Walking	Sitting	p value (<0.05 is significant)
Normal delivery	58	10	16	0.04
Assisted delivery A. Forceps	1	2	1	
B. Vacuum	2	0	2	
Caesarean section	14	9	10	

There were no significant differences found in the neonatal outcome of both Group A and Group B as determined by Apgar score at birth and 5 minutes.

DISCUSSION

The journey of pregnancy is not a straight road as there are many bends and curves which can make it an unpleasant one. Of them, the most crucial part of pregnancy that many women fear about is that of childbirth. The reason behind this could be due to lack of knowledge about it. A pleasant experience during childbirth is subjective to many factors such as perception to pain, health care support, motivation, and support by relatives. One of the factors that may have a positive influence on the whole experience is a change in the position in labor.¹⁷ There have been many disadvantages

of recumbent position, few being the uterine hypo perfusion associated with it, less effectiveness of uterine contractions and the fetal alignments to the pelvic dimensions.¹⁴ A recent meta-analysis has stated that vertical positions have lesser analgesia request, reduced labor length, necessity of interventions thereby making the labor process more comfortable for the women in labor.^{4,18,19} Interventions such as amniotomy, oxytocin augmentation or monitoring of fetal condition and uterine contractions are more difficult in vertical positions than in recumbent position which is why most facilities offer recumbent positions.¹⁹ Contrary to the above, several studies have reported that a laboring woman may have a shorter duration of labor, avoiding augmentation if a comfortable position is allowed with good motivation from the health support and from the family members.^{8,9,13,20}

Till date, there have been no definitive evidence to define the real role of position in labor.^{1,4,5} In this study however we found that in the patients assuming alternative positions other than recumbent had shorter duration of labor probably confirming that effect of gravity in favoring uterine contractions and fetal alignment at birth canal. The vertical position has an advantage of gravity, and increase in the size of pelvic diameter thanks to the nutation movement and to the coccyx re-propulsion thereby making the labor process less painful and more effective uterine contractions. The sitting position has an advantage on gravity by increasing the pelvic diameter and fetal alignment to the pelvis but has a disadvantage by increasing the pressure on the sacrum with a risk for perineal trauma. The ‘all fours position’ reduces the effect of gravity and uterine contraction and is known to be the best position for correcting fetal malposition to reduce the cervical edema and sacral pressure of the presenting part, it thereby increases the anteroposterior diameter in the expulsive phase. The squatting position uses gravity, there is an increase on the pelvic diameters and expedites fetal descent.^{19,21} This study did not a significant difference in the duration of labor in patients who opted for position other than recumbent position this could probably due to limitation of sample size however study found a statistical significant difference in the mode of delivery in the patients who opted for position other than recumbent position, mainly patients who were in propped up position had more number of vaginal deliveries similar to study done by Gizzo et al assuming vertical position during delivery had a positive outcome in the mode of delivery and duration of labor.²² However this study also had limitation in the variety of position offered as Gizzo et al, included “all fours position” and squatting position and proved that adopting “all fours position” has an impact on the rotation of head.²²

In spite of various studies due to absence of strong evidences, it is unreasonable to impose a laboring position different from the spontaneous one.²³ Although Golara et al proved that maternal immobilization may be a causative factor for shoulder dystocia, in the presence of high risk pregnancy or continuous intra partum care the use of alternative positions should be carefully evaluated.²⁴⁻²⁸ However there should be further evidence to prove it, in the absence of any antepartum/intra partum complications with the mother or the fetus, it is imperative that all women should be encourage for alternative positions in labor for an easier and a comfortable labor process.

CONCLUSION

Pregnancy is the most natural process that a woman goes through in her life and ensuring that she has the most comfortable and pleasant time is the duty of her caretakers. A simple sitting position for the women in labor may go a long way in reducing the discomfort by shortening the duration of labor and also help in the mode of delivery and provide a safe birthing experience.

However, in situations when strict monitoring of fetal wellbeing is required or intensive intra partum care are necessary, the use of alternative positions should be carefully considered. But in the absence of any such indications, the most natural and spontaneous position should be adopted for the betterment of maternal wellbeing.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Rao S, Sridharan S, Vasudeva A, Roopa PS. Will women's choice of position in first stage of labor affect labor process?. *Int J Reprod Contracept Obstet Gynecol* 2020;9:1515-9.