

Fetomaternal outcome in alternate birth positions during second stage of labour

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ABSTRACT:

BACKGROUND: The main objective of our research was to study the fetomaternal outcome in alternate birth positions during second stage of labour. Evidence suggests that the freedom to choose birthing positions positively impact the woman's comfort level, progression of labour and intra-partum birthing experience.

Material and Method: In the present study we counselled our antenatal and intra-natal patients about the benefits and risks of alternate birthing positions. We enrolled 50 consecutive consenting parturients with prior vaginal delivery, who opted to adopt alternate birthing positions during second stage of labour. Duration of second stage of labour, amount of blood loss during second and third stage of labour, occurrence of perineal tears, birth weight, APGAR score and NICU admission requirement of the newborn were documented and analysed.

Results: Majority of the participants opted for left lateral position for delivery, two reverted to dorsal position for delivery, duration of second labour was under 30 minutes in 48/50 participants (96%) with mean duration of second stage of labour being 20.4 minutes. The mean birth weight of newborns was 2.7 kg. Perineal tears were seen in 7 out of 50 (14%) participants. Normal APGAR was observed in 46 newborns (92%), while 3 newborns (6%) required NICU admission.

Conclusion: Alternate positions during labour were observed to facilitate improved maternal comfort, reduced duration of second stage of labour, with favourable foetal outcomes. It may be added however, that upright birthing positions may increase the rate of blood loss and perineal tears. Overall, maternal experience was in favour of alternate birthing position.

KEY WORDS:

All four, alternate birth position, left lateral, lithotomy, sitting, squatting.

INTRODUCTION:

The most exhilarating, yet most frightening experience for a women to undergo is the birthing stage of her pregnancy⁽¹⁾. Interest has always been expressed in birth positions other than supine and lithotomy during second stage of labor. It has been claimed that

physiologically non recumbent positions are advantageous in view of increase in pelvic dimensions, smaller risk of aorto-caval compression, better alignment of fetus during passage through pelvis, more efficient uterine contractions and facilitation by the force of gravity.

Respectful Maternal Care also encompasses protecting the woman's right to assume the position of her choice during labor and birth⁽²⁾. Currently the most commonly used position in obstetrical practice during labor and delivery is Supine or Lithotomy. Non recumbent positions by promoting use of gravity and women's urge to bear down have been found to improve the labour and delivery experience of the woman and at the same time it is without increasing intra-partum and postpartum complications⁽²⁾. The body's natural physiological process is expedited to facilitate birth of the baby and increase mother's contentment with her birthing experience^(3, 4, 5). However, some evidences have reported an increase hemorrhagic risk associated with upright positions due to perineal damage rather than uterine atony.^(6, 7)

METHODS AND MATERIALS:

This observational study was conducted in the Department of Obstetrics and Gynecology of a tertiary care Centre in South Gujarat over a period of one year after obtaining ethical approval. Fifty consecutive consenting parturients fulfilling inclusion criteria admitted in labour room were enrolled in study.

Inclusion Criteria:

- Multigravida with previous birthing experience in lithotomy position having
- Singleton pregnancy
- Cephalic presentation
- Full term pregnancy
- Low risk pregnancy

Exclusion Criteria:

- Primigravida
- Multifetal pregnancy
- Non cephalic presentation
- Preterm pregnancy
- High risk pregnancy
- Pregnancy with singleton cephalic pregnancy who were not consenting for inclusion.

Maternal positions were considered as follows:

(a) Recumbent position: The lady lying on her back, which was not included as alternate birthing position.

(b) Upright position: The woman in an upright position standing by herself or against a support.

(c) Squatting position: The patient crouching during contraction and then recuperating during relaxation.

(d) Sitting position: The lady sitting on a bed, on a chair or on a ball.

(e) All four position: The lady is kneeling and bent forward in order to support her weight with the arms.

The alternate birthing positions were further grouped as:

(1) Upright position = Squatting or Sitting

(2) Horizontal position = Left lateral or All fours

Adoption of alternate birth during second stage of labor according to individual parturient's preference was encouraged and delivery was managed according to established departmental protocols. V-drapes with measurement scales were used for measurement of blood loss during the second and third stage of labor after the measurement scales in these V-drapes had been pre-calibrated using a standardised measuring jar.

Feto-maternal outcome in terms of duration of second stage of labor, second and third stage blood loss, perineal tears, newborn's birth weight, APGAR score, NICU admission or any complication were documented and analyzed after obtaining approval by the ethics committee of the Institute as per the Helsinki declaration.

RESULTS:

CHOICE OF BIRTH POSITION ADOPTED AT DELIVERY:

The distribution of choice of birthing position adopted in second stage is presented in Table-1.

Table 1: Choice of positions adopted during Childbirth

| Alternate Position adopted | No. of participants (n=50) | Percentage |
|----------------------------|-------------------------------|------------|
| Squatting | 16 | 32% |
| Left lateral | 23 | 46% |
| All fours | 6 | 12% |
| Sitting | 5 | 10% |

This shows that majority were more comfortable in the left lateral position during the second stage of labour which is generally preferred by most women during increased pains. This was followed by squatting position, which was accepted probably because our participants were accustomed to using Indian toilets. Some participants opted for "all fours" and sitting, the concept of which was quite new to them.

SUBSEQUENT ADOPTION OF DORSAL POSITION AT TIME OF CHILDBIRTH:

The participants were free to adopt the position of their choice during childbirth. We noted that some of them preferred to revert back to lithotomy during birth.

Table: 2 Adoption of dorsal position for childbirth

| Subsequent adoption of lithotomy/dorsal position for childbirth | No. of participants (n=50) | Percentage |
|---|----------------------------|------------|
| YES | 2 | 4% |

Out of 50 participants in our study, 48 (96%) continued in alternate birth position, while two opted to go back to dorsal position for perceived convenience for continuous electronic fetal monitoring required for non-re-assuring Fetal Heart rate pattern in second stage of labour in IUGR and calf discomfort noted by one participant after squatting for some time.

DURATION OF SECOND STAGE OF LABOUR:

The details of duration of second stage of labour are presented below:

Table: 3 Details of duration of second stage of labour

| Position adopted | Duration of Second stage of labour | | p-Value |
|-------------------------------|------------------------------------|----------------------|------------------------------|
| | ≤30 minutes (n=48) | >30 minutes (n=2) | |
| Upright position (n=21) | 20 (95.23%) | 1 | 0.4 (Chi square- 0.05) |
| Horizontal position (n=29) | 28 (96.55%) | 1 | |

- The mean duration of second stage of labour in our study was: 20.4 minutes.
- Two subjects had second stage duration of more than 30 minutes, of which one who had adopted squatting position had poor maternal bearing down and other, who chose all fours position had newborn weight of 3.7kg at birth. Both newborns were healthy at birth and were immediately shifted to mother for early initiation of breastfeeding.
- The difference between duration of second stage of labour in upright position and horizontal positions was not significant (p- value-0.4).

BLOOD LOSS AND PERINEAL TEAR WITH RESPECT TO BIRTH POSITION:

We measured the approximate blood loss in our study by measuring the volume of blood collected in the V-drape placed below the participant's buttocks in second and third stage of labour.

We proceeded to analyse the details of perineal tears in our participants:

Table 4: Blood loss and perineal tear with respect to birth position:

| Blood loss | Upright position | Horizontal position | P value |
|---------------|------------------|---------------------|---------|
| <500 ml | 4 | 12 | 0.04 |
| >500 ml | 17 (80.95%) | 17 (58.62%) | |
| TOTAL | 21 | 29 | |
| Perineal tear | | | |
| No | 17 | 26 | 0.19 |
| Yes | 4 (19.04%) | 3 (10.34%) | |
| Total | 21 | 29 | |

Second and third stage blood loss was higher in upright positions as compared to horizontal positions (p-0.04), but none of the subjects had a significant fall in haematocrit requiring blood transfusion. The higher volume could also be because of the dilution by amniotic fluid in hindwaters and requires further evaluation

NEONATAL OUTCOME WITH RESPECT TO BIRTH POSITIONS:

The Birthweight and APGAR scores of all newborns were assessed at birth. The details of newborns requiring NICU admission are given below:

Table 5: Neonatal outcomes with respect to birth positions:

| | Upright position | Horizontal position | P value |
|-----------------------|------------------|---------------------|---------|
| Birth Weight | | | |
| <3 kg | 12 | 21 | 0.26 |
| >3 kg | 9 | 8 | |
| Total | 21 | 29 | |
| Apgar score | | | |
| Normal | 19 | 27 | 0.7 |
| Abnormal | 2 | 2 | |
| Total | 21 | 29 | |
| NICU Admission | | | |
| Yes | 1 | 4 | 0.14 |
| No | 20 | 25 | |
| Total | 21 | 29 | |

The difference in birthweight of babies of parturients delivering in upright and horizontal positions was not statistically significant (p-value-0.26)

The difference in APGAR score at birth between the two groups was not statistically significant (p-value- 0.7).

The difference in requirement for NICU admission between horizontal and upright positions was not noted to be significant in our study (p-value-0.14).

DISCUSSION:

In the present study we had counseled the mother about the various birthing positions, their benefits, and risks involved and depending on her choice she delivered in alternate positions suitable to her liking. We had familiarized all the labouring women admitted in our labour room with the concept of Alternate Birth positions. Alternate birth positions according to individual preferences were encouraged and child birth was managed. In our study, the most preferred position for delivery was left lateral position, which was chosen by maximum (46%), since the choice of position is the parturient's decision it is bound to vary from study to study. Reversion to recumbent position was seen with 2 parturients. As far as the duration of second stage of labour is concerned, majority parturients delivered in less than 30 minutes time. The mean duration of second stage of labour in our study was: 20.4 minutes, the mean duration of second stage of labour in the study by Suto et al⁽⁸⁾ was 22 minutes and that by DeJonge et al⁽⁹⁾ was 34.4 minutes. Our results of blood loss in alternate birth positions of more than 500ml were 34 out of 50 parturients. In Metaanalysis of 46 studies by DeJonge et al,⁽⁹⁾ 90 out of 943 subjects had blood loss of more than 500 ml. In the Cochrane review⁽⁵⁾ of 15 RCTs, blood loss of more than 500 ml was noted in 6.5% subjects while delivery in alternate birth position, in a study having 1000 participants. However, this was cited as a "low level evidence" Hence further research is required in this aspect. The difference in the perineal tears between horizontal and upright positions was not statistically significant in our study (p value - 0.19). In our study (n=50), 14% patients had perineal tears while perineal tears in studies by Meyvis et al⁽¹⁰⁾ (n=209) were 20.10%, DeJonge et al⁽⁹⁾ (156) were 49% and Suto et al⁽⁸⁾ (n=1099) were 3%. Also, 50% neonates were in average Indian birth weight range of 2.5 to 3 kg, mean Birth weight of newborns was 2.7 kg, lowest Birth weight was 2.1

kg and highest Birth weight was 3.8 kg.46 neonates of mothers delivering in alternate birth position were healthy at the time of birth and had a normal APGAR score, while 4 babies had abnormal APGAR score, but overall outcome was favourable. 90% of the babies in our observational study did not require any NICU admission but 10% of the babies (5 out of 50 babies) needed to be admitted in the Neonatal Intensive care unit. Most babies were admitted only for observation and did not require mechanical ventilation.

CONCLUSION:

The literature indicates there is a paucity of studies focusing on the use of alternate birth position and maternal and neonatal outcome. This topic needs to be further explored. Future research must explore and create new ways of monitoring the mother and the foetus in alternate birth position. The key aspect is providing information to educate the pregnant woman and their families about labour and the delivery process. Families can be educated as they approach the childbirth process so that an informed decision can be made. It is also suggested that the labouring woman be given information about all positions and then she selects the position suitable to her voluntarily.

Alternate birth positions are easy, applicable and cost effective method for better fetomaternal outcomes, with less complications and better birthing experience.

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