RANDOMISED CONTROLLED TRIAL ON MODIFIED SQUATTING POSITION OF BIRTHING

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SUMMARY

Objective : To study the advantage of modified squatting over lithotomy position during birthing, on an indigenously devised birth cushion.

Method : Seven hundred and fifty eight women were registered during labour for a period of two years and randomization was done. High risk pregnancy, women who refused to squatt and those who came late in labour; were excluded from the study group. 294 women squatted on the birth cushion and 323 women delivered in lithotomy (Hospital) position. Control group was not informed about the device.

Results : IInd stage of labour was shorter in modified squatting position (P <.001). Ventouse application was more in lithotomy, relative risk was 2.33 while relative risk reduction was 57%. Time taken for ventouse application was less in squatting (P <.01). More second degree perineal tears occured in lithotomy, R.R. 1.73. RRR 42% NNT 40. RR of PPH was 0.92 in primi & 1.80 in multigravida. RRR is (-) 8.9 in Primi & 44.6 in Multigravida. NNT is (-) 883 in primi & 65 in Multigravida.

Apgar score was similar in both positions. Postpartum vulval odema was more in modified squatting. 91.27% women found modified squatting convenient and 68% would like to adopt the same position in next labour.

In conclusion modified squatting position of birthing is advantageous over lithotomy position and can be adopted in modern labour techniques and rural obstetrics.

INTRODUCTION

Historically women gave birth in upright postures and the striking feature to emerge on reviewing of primitive birthing position is the dominant desire of the women to keep her trunk vertical during second stage of labour (Russel 1982, Haukeland 1981, Kirchhoff 1977) more so in non-western society (Naroll 1961). Controversy of child birth in the upright postures and lithotomy has been discussed since Engelmann (1982); however, little has been done to encourage alternative birthing positions, that may be more beneficial to the parturient women.

Today, when more and more women want to exercise their rights, by actively participating in the birth process and to make it more personal; women must decide which position they would adopt for delivery (W.H.O. 1992). A considerable increase in the rate of L.S.C.S. and other obstetrical complications during labour are a cause for concern; there is no justification to have a caesarean section rate of higher than 10-15% and vaginal deliveries after a caesarean section should be encouraged (W.H.O. 1989).

About 200 years back when obstetricians assumed increasing responsibility for care of the labouring women, the incidence of obstetrical interventions increased and lithotomy position for giving birth became customary (Liu. 1979), interprofessional struggles of surgeons and midwives during 17th century (Dundes, 1987) and advent of anesthesia for delivery during 19th century increased the incidence of lithotomy position (Shannahan et al 1985) though, not based on sound scientific research. Now once again another thought should be given to this.

Recently, some workers have suggested the potential benefits from the traditional posture (squatting) including shortening in second stage of labour (Naroll 1961, Yuen 1974, Kirchhoff 1977, Gardosi 1989) enlargement of pelvic outlet, (Russel 1969, Liu, 1979, Robert 1980), reduction in the need of episiotomy, forceps (Mc Kay 1984, Gardosi 1989). Further the same muscles involved in defaecation are used for expulsion of the foetus and also gravity aids in expulsion (Atwood 1969). In many rural Indian communities squatting position is practiced. In the state of Western Uttar Pradesh squatting position is practised as it was practiced in several millenia B.C. in Egypt. (Bhardwaj 1992). This practice seems to be dying due to fast developing health system (Hospitals) in the rural areas. Authors during their field study found three main disadvantages of natural squatting position i) the women in labour get exhausted when unsupported ii) injury to the Newborn, if distance between the perineum and the floor is more. iii) difficult to give proper support to the perineum. The present randomized controlled trial was conducted in a hospital recognised by the Indian Council of Medical Research (ICMR) to compare whether there is any advantage of modified squatting position by use of a 'Birth Cushion' over the lithotomy position practiced in our hospitals.

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Dangers of a natural unsupported squatting position has also been experienced in an English Hospital (Samra et al 1989). To overcome these factors, authors tried to modify the squatting position by making it a supported squatting by devising a cushion, rather than be unsupported & uncomfortable on the bricks. It was important to put this new device on trial, before using it for the home births.

SUBJECTS & METHODS

The study was approved by the Research Committee of the Vivekanand Medical Foundation and Research Centre. The committee had accepted the 'British Cushion' for the trial which was indigenously prepared by the authors. The cushion is devised specially for rural use. It is cheap, made of coir and foam with a washable rexine cover. It has two handles used for support during bearing down pains in the second stage of labour. It can be conveniently used on conventional hospital beds and also on the floor while in rural use. The parturient woman is seated on the 'Birth Cushion' along with the back rest - this helps her to sink into modified squatting position which is comfortable during labour. Anteriorly the cushion is cut in a 'U' shape which allows the concerned obstetrician easy access to the perineum. All disadvantages of natural quatting position are overcome by means of this birth cushion. Medical staff accepted this position because they have foreknowledge about its practice in rural areas.

Pregnant women in the age group of 15-45 years were registered during labour, whether spontaneous or induced, during their admission in the labour room they were given number (odd or even) randomly, irrespective of their OPD No. (outdoor patient department number). This register had information regarding women i.e. odd numbers would squat and even numbered lot would go in for normal routine (lithotomy) labour of the hospital. Randomisation occured before exclusion criteria was applied. The trial started from 1st January 1992 to 30th December 1993 for a period of two years in Vivekanand Hospital (Latur) a district place in the State of Maharashtra (India). Criteria for the inclusion of the pregnant women in the trial was completed 37 weeks of gestation, Vertex presentation and no antenatal risk factor.

Exclusion criteria were all those women who were high risk pregnancies i.e. previous L.S.C.S., Maternal factors, epilepsy, hypertension, jaundice in pregnancy, malaria, heart disease, diabetes mellitus, Rh factor (negative) and postmaturity (40 weeks gestation). All presentations other than Vertex, antepartum haemorrhage, severe anaemia, women with cephalopelvic disproportion, premature labour, women who registered late in labour and those who refused to squat were excluded from the trial.

Seven hundred and fifty eight pregnant women were registered during labour. 129 (17.1%) women were excluded from the trial as they were high risk pregnancies due to - elective caesarean section - 72 (55.81%), emergency caesarean

section 3 (2.32%), premature labour 17 (13.18%) and other antenatal risk factors 17 (13.18%) inclusive of pre-eclamptic toxaemia, bad obstetrical history, rheumatic heart disease and intrauterine death. Five (3.88%) women were excluded on account of twin pregnancy and 2 (1.55%) due to vaginal breech delivery. Thirteen (1.71%) women were excluded due to miscellaneous reasons such as - 7 (0.92%) women came fully dilated, 5 (0.65%) women refused to squat and 1 (0.13%) woman could not be squatted due to rush in the labour room Initially, we had only one birth cushion. A total of 142 out of 758 (18.74%) women were excluded from the study.

The remaining 616 (81.26%) women were allocated by admitting to the upright group (squatting) or control group (lithotomy). It was decided that every odd numbered woman will squat irrespective of her parity, age, socio-economic status, education and choice for position of delivery. This method of randomization avoided foreknowledge and made it easy to check that the correct group has been allocated. By the method of randomization we had 294 (47.72%) women in the squatting group (study group) and 323 (52.43%) in the lithotomy group (Control group). The groups were well matched and had similar rates of induction i.e. intravenous oxytocin infusion and augmentation (oxytocin) as shown in Table - I.

Women in the study group were made to squat on 'birth cushion' and the control group was not informed about this device. During squatting most of the weight of the woman is taken by the thigh rather than the feet, so the position can be maintained without any effort and the sinking down effect is enhanced when the woman pulls the handles upwards with each contraction during labour.

Women were free to walk about, sit up or lie down in bed during their first stage of labour. Most of the women in both the groups spent first stage of labour predominantly, lying down in the bed. The

TABLE I
COMPARION OF STUDY GROUP & CONTROL GROUP

Comparable variables	Study group (squatting) n = (294)	Control group (Lithotomy) n = (323)
Mean (SD) Maternal age (yrs)	22.1 (4.3)	21.4 (4.3)
Mean (SD) Maternal height (cms)	154.9 (12.10)	155.12 (4.84)
Mean (SD) Gestation (WK)	39.8 (1.3)	39.9 (1.3)
Number (%) of women with induced labour	30 (10.20)	35 (10.83)
Augmented labour (first stage)	34 (11.56)	44 (13.62)
Predominantly lying down in first stage	124 (42.17)	130 (40.24)

average length of the first stage timed from admission to the labour ward was 7.8 hours in the squatting group and 7.3 hrs in the lithotomy group. This does not give the exact time of first stage of labour, because the women were in different phases of first stage of their labour at the time of admission.

House-surgeons who were trained to handle squatting position were on duty round-the-clock and were competent to deliver the women in squatting position and consultant was called only in case of complication during labour.

All the women in the study group were asked for consent & none of them refused except the one who was hence excluded from the trial. All women who squatted were told "they could adopt conventional, lithotomy position during second stage of labour, whenever desired". Women who spent 90% of the active bearing down phase in upright position were considered qualified for the position. Details of labour and its outcome were recorded by the doctor on duty. Active second stage was timed from starting the bearing down efforts and bearing down was usually encouraged when the parturient woman started to feel the urge to push. There was no arbitrary time limit for the duration of the second stage, the usual indication for vaginal operative delivery (ventouse) was foetal distress, maternal exhaustion or obvious failure to progress. Episiotomy was not done routinely in squatting portion but was usually done to avoid a potentially greater tear or to expedite delivery, if this was thought necessary or for elective ventouse application. Blood loss was estimated visually by the marked vessels collecting blood during labour.

Apgar score was assessed by the doctor on duty at one minute and after 5 minutes of the birth. Postnatal odema of the vulva and perineum was recorded by doctors in the postnatal wards who were not aware of the trial allocation during labour. For the first three days of post-partum they judged whether oedema was absent, mild, moderate or severe.

The two groups were compared by the original intention to treat allocation irrespective of the actual second stage positions adopted. Results were not revealed to the women & the clinicians who came to know only after the analysis of the trial. Statistical analysis was done by applying Chi-square test, Mann-whitney ('U' test) and students 't' test & tests as appropriate for the distribution of the continuous variables.

RESULTS

Spontaneous vaginal birth occured in 97.6% in modified squatting position and 94.4% in lithotomy position as shown in Table II. Out of 616 women included in the trial 294 (47.72%) delivered in modified squatting position and 323 (52.43%) delivered in lithotomy position. Out of 294 women delivered in modified squatting position, 136 (46.25%) were primigravida and 158 (48.91%) were multigravida. Out of 323 women who delivered in lithotomy position, 148 (45.82%) were primigravida and 175 (54.17%) were multigravida.

Total mean time spent during second stage of labour in modified squatting position was 26.26 min (SD 14.62). 95% confidence Interval (24.59 - 27.93) & in Lithotomy position was 45.13 min (SD 23.07) 95% C.I. (42.61-47.64). The length