

COMPARATIVE STUDY OF SQUATTING POSITION VS DORSAL RECUMBENT POSITION DURING SECOND STAGE OF LABOUR

Alka Dani¹, V. R. Badhwar², Ganpat Sawant³, S. Chowdhury Salian⁴

¹Assistant Professor, Department of Obstetrics and Gynaecology, Pad. Dr. D. Y. Patil Medical College & Hospital & Research Centre.

²Professor, Department of Obstetrics and Gynaecology, Pad. Dr. D. Y. Patil Medical College & Hospital & Research Centre.

³Professor, Department of Obstetrics and Gynaecology, Pad. Dr. D. Y. Patil Medical College & Hospital & Research Centre.

⁴Professor, Department of Physiotherapy, Pad. Dr. D. Y. Patil Medical College & Hospital & Research Centre.

ABSTRACT

INTRODUCTION

Before 17th Century, the upright position was common for birthing. There is a need to revisit the age old practice of labour as for the patients in squatting position: *Pelvic outlet widens 30% more. *Straightens the birth canal. *Makes use of gravity. *Expected to quicken the second stage of labour.

METHOD

This observational study has been conducted at the Department of Obs & Gynae, Pad Dr. D.Y. Patil Medical College & Hospital and Research Centre, Navi Mumbai. A total of 200 patients, 100 patients for case study group (squatting position) and another 100 patients for control group (Dorsal Recumbent position) depending on the inclusion and exclusion criteria were randomly selected. Patients of both the groups were comparable i.e. age, parity, socio-economic status and other parameters. Antenatal registered patients with full term without high-risk pregnancy were selected.

RESULTS

The age of patients in both groups varied between 18-37 years. There were 30% primi-gravida and 70% multigravida in both groups. It is found that duration of 2nd stage was decreased by an average of 9 minutes in both primi's and multi's, which is significant. The vaginal instrumental delivery and LSCS rates are non-significant. The maternal and fetal morbidity due to episiotomy given or perineal tear and resuscitation of new born respectively are non-significant statistically. Need for oxytocin and its dosage required was significantly less, while maternal satisfaction on VAS is significantly high in study group

CONCLUSIONS

Squatting position for 2nd stage of labour is much convenient for mothers' in terms of duration of 2nd stage, need and oxytocin quantity required for the subjects, extension of episiotomy and maternal satisfaction on VAS. No significant variation is found in incidences of maternal and fetal complications, need for instrumental delivery and LSCS.

KEYWORDS

Protocols, Primi-Gravida, Episiotomy, Perineal Tear and Resuscitation.

HOW TO CITE THIS ARTICLE: Alka Dani, V. R. Badhwar, Ganpat Sawant, S. Chowdhury Salian. "Comparative Study of Squatting Position vs. Dorsal Recumbent Position During Second Stage of Labour". Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 54, December 07, 2015; Page: 8769-8773, DOI: 10.18410/jebmh/2015/1223

INTRODUCTION: Various birthing positions were prevalent since ancient times when medical protocols were not developed and child birth was handled by midwives having basic knowledge of labour. The upright birthing position was common before seventeenth century in western countries. [1] In India, sitting and semi-recumbent positions were common in practice during ancient times. In India during ancient times, experienced elderly ladies of the

family or neighbourhood assisted during the child birth and "the squatting position or the seated (kneeling) posture was often favoured for childbirth". [2] Supine position for childbirth came into practice for the convenience of health professionals rather than the benefit for parturient. [1] Squatting position for child birth has following advantages over presently practiced Dorsal recumbent position:

1. Sacroiliac joints move up by gliding movement in squatting position. [3]
2. There is abduction of hip which separates the pubic bone which widens the pelvic outlet. Squatting opens the pelvis by 30% more as compared to lying down position. [4]
3. Coccyx can move freely in squatting position which also aids in widening the pelvic outlet. [5]

Submission 25-11-2015, Peer Review 26-11-2015,

Acceptance 30-11-2015, Published 07-12-2015.

Corresponding Author:

Dr. Alka Dani,

Flat No. 204, Chaurang CHS Ltd., Plot No. 4,

Sector 16, Sanpada, Navi Mumbai-400705.

E-mail: alka.dani@gmail.com

DOI: 10.18410/jebmh/2015/1223

4. The above three helps in and quickens the second stage of labour. [6]
5. In squatting position, gravity also plays great role in descent of the baby's head.
6. There is lengthening of gluteus muscle, hamstring muscle, quadriceps and calf muscle which helps in better pushing down efforts.
7. Urge to bear down is better in squatting position and pushing down efforts and duration is shortened.
8. Inferior vena caval compression is minimal in squatting position hence foeto-placental circulation is better and chances of foetal distress is less.
9. There is reduction in labour pains by shortening of second stage duration.

METHOD: This study was approved by the ethical committee. This observational comparative study has been conducted at the Department of OBGY, Pad Dr. D.Y. Patil Medical College & Hospital and Research Centre, Navi Mumbai.

A total number of 200 patients were enrolled, out of which, 100 patients for the case study group and another 100 patients for control group; were selected randomly and by convenience method depending on the inclusion and exclusion criteria. Patients of both the groups were antenatally registered low-risk patients with full term pregnancy (>37 weeks and <41 weeks) excluding high-risk pregnancy like pre-term delivery, foetal distress in first stage, post-term pregnancy, PROM>12 hours, severe PIH, severe anaemia, heart disease, multi-foetal gestation, congenitally malformed foetus, malposition and estimated foetal weight on USG \geq 3.5 kg. Patients of both the groups were comparable as regards to age, parity, socio-economic status and other parameters. Informed and written consent was taken from patients for including in either of the groups. During first stage of labour patients in control group were resting in bed in lying-down position as per prevailing practice, while patients in case-study group were kept ambulatory and on liquid diet. A partogram charting and cardiotocography was carried out for patients in both the groups to monitor progress of labour and foetal heart rate monitoring respectively throughout the labour. During second stage of labour patients of control group were given Dorsal recumbent position on delivery table for delivery as per standard practice while patients of case-study group were given squatting position on the labour table with hand bars for support and back support was provided by the birth attendant. Patients were given plastic stool to rest in between the uterine contractions and deliver the baby in same position. Oxytocin drip was administered according to uterine contractions and dose of oxytocin given was recorded. Perineum assessed for its stretchability (rigid/lax) and episiotomy was given accordingly, if required, to deliver the baby. Duration of second stage of labour was recorded. Fetal outcome was recorded in terms of APGAR score at 1' and 5'. Occurrence of birth injuries, if any, were noted down. Maternal complications were noted down for perineal injury, cervical tears, and extension of episiotomy,

need for instrumental deliveries (Forceps and 11 ventouse) and LSCS due to second stage complications were recorded in both the groups. Dose of oxytocin administered was recorded for both the groups.

Third stage of labour was conducted in Dorsal recumbent position in both the groups. Third stage complications were recorded in terms of occurrence of PPH and puerperal sepsis for patients in both the groups. Feedback from the patients of both the groups on overall maternal satisfaction was taken on Visual Analogue Scale after 8 hours of delivery.

For quantitative variables like age, baby wt., oxytocin quantity, duration of 2nd stage labour, unpaired t-test was used, for nominal scale data like maternal and foetal complications, Chi-square test for comparing significant difference between proportions in-between two groups viz. Dorsal recumbent & Squatting was used whereas for ordinal scale data like APGAR & VAS, Mann-Whitney U-test was used.

RESULTS: The age of the subjects varied between 18 years to 37 years with a mean age of 24.4 years Fig. 1. The mean age of Dorsal recumbent subjects and squatting subjects is comparable with no significant difference between the two (t value=0.075>0.05). The age distribution for the two groups viz. squatting and Dorsal recumbent for age range Table 1 Parity wise subject distribution group <19, 20–29, 30–39 was fairly uniform.

Table 1 shows the parity wise subject distribution, which is quiet similar between the squatting and Dorsal recumbent group with no significant variation between the two groups.

Table 2 enumerates the comparative results for squatting and Dorsal recumbent positions. The mean baby weights for both Dorsal recumbent position and squatting position were quiet comparable (~2.8 kg) with no significant difference between the two (t value=0.534) The sex ratio of babies have been 55% female babies in squatting position and 43% female babies in Dorsal recumbent position and 45% male babies in squatting and 57% male babies in Dorsal recumbent position. There is no significant difference in sex ratio for the two groups.

The mean duration of second stage of labour in primi's for squatting group is 26.2 min as compared to 36.0 min for Dorsal recumbent group. This difference is statistically significant. In multi's for squatting group, mean duration of second stage of labour is 12.6 min as compared to 21.7 min for Dorsal recumbent position. This difference is also statistically significant between the two positions.

The Episiotomy given to 46% subjects in squatting position whereas to 34% subjects in Dorsal recumbent position, while episiotomy not given to 54% and 66% respectively. This variation is statistically not significant.

The Maternal complications like 1° perineal tear, 2° perineal tear, cervical tear, forceps delivery, ventouse delivery, LSCS etc. and foetal complications like foetal 11 distress, resuscitation, birth injuries etc., have no significant difference between the two groups. The

episiotomy extension was 150% for squatting position while 6% for Dorsal recumbent position which is statistically significant for this maternal complication between the two groups.

The Oxytocin was administered to 42% subjects in squatting position with a mean dosage of 1531.31 mIU. While to 55% of subject Dorsal recumbent position with a mean dosage of 2000.91 mIU. The oxytocin dosage variation is very Significant both for the percentage of subjects and the quantity of oxytocin administered. There are 30 and 29 subjects in squatting and Dorsal recumbent position respectively in primi group, with oxytocin dosage of 1438.7 mIU. & 2334.5 mIU. for squatting & Dorsal recumbent positions respectively, which is a significant variation. There are 70 and 71 subjects in squatting and Dorsal recumbent position respectively in multi group, with oxytocin dosage of 302.2 mIU. & 598.6 mIU. For squatting & Dorsal recumbent positions respectively, which is a significant variation.

The third stage complications like retained placenta, atonic PPH, local infections etc. were NIL for both the groups.

The mean VAS score for total no. of sample was 5.18. The mean rank for VAS score for squatting position was 66.90 as compared to 132.77 for Dorsal recumbent position, which is very significant indicating VAS for Squatting is much better than Dorsal recumbent position. There were total 30 subjects with mean rank of VAS as 19.55 in squatting position as compared to 27 subjects with mean rank of VAS of 39.50 in Dorsal recumbent position in primi group, which is a significant variation.

There were total 70 subjects with mean rank of VAS as 45.79 in squatting position as compared to 73 subjects with mean rank of VAS of 95.85 in Dorsal recumbent position in multi group, which again is a significant variation.

The mean APGAR score at 1' and 5' for the total no. of sample (200) was 8.21 and 8.97 respectively. Whereas, the mean rank for APGAR score for 1' for squatting position was 111.54 as compared to 89.46 for Dorsal recumbent position, which is significantly higher. There was no significant variation in APGAR score at 5'. Parity 5wise APGAR distribution is as below: There are 59 subjects with 29 subjects in squatting position and 30 subjects in Dorsal recumbent position in primi group and 141 subjects with 70 subjects in squatting and 71 subjects in Dorsal recumbent position in multi group. There was no significant variation in APGAR score for 1' or 5' in primi group where as significant variation was observed in 1' APGAR score for the muti group with mean rank of 81.42 & 60.8 for squatting and Dorsal recumbent position respectively. There was no significant variation in 5' APGAR score of multi group with mean rank of 71.48 & 70.53 for squatting and Dorsal recumbent position respectively.

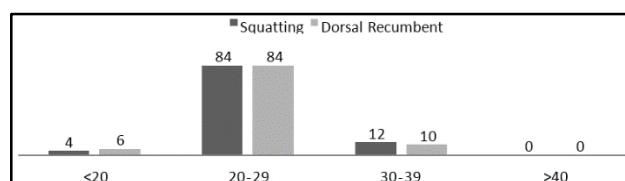


Fig. 1: Age Distribution

Position	P0	P1	P2	P3	P4	Total
Dorsal Recumbent	29 (29%)	44 (44%)	24 (24%)	3 (3%)	0 (0%)	100
Squatting	30 (30%)	43 (43%)	16 (16%)	9 (9%)	2 (2%)	100

Table 1: Parity wise subject distribution

Parameters	Details	Squatting	Dorsal Recumbent	P Value
Birth Weigth	Nos.	100	100	
	Birth Wt.	2.84	2.81	
Sex Ratio	Female	55	43	
	Male	45	57	
Duration of 2nd stage of labour	Primigravida	36'(29)	26.2(30)	P=0.027
	Multigravida	21.77'(71)	12.64'(70)	P=0.000
Episiotomy	Given	54(54%)	66(66%)	P=0.056
	Not Given	46(46%)	34(34%)	
Complications	Perineal Laceration	0	0	
	Perineal Tear I ^o	6	5	P=0.500
	Perineal Tear II ^o	1	0	P=0.500
	Perineal Tear III ^o & IV ^o	0	0	
	Forceps Delivery	1	0	P=0.500
	Ventouse Delivery	3	1	P=0.311
	LSCS	6	4	P=0.374
	Epi Extended	6	0	P=0.014
	Total	23/100 (23%)	10/100 (10%)	
Foetal Complication	Foetal Distress	2	2	P=0.050
	NICU admission	1	1	P=0.751
	Birth Injury	0	0	
	Total	3	3	

Oxytocin Required	Primi(Nos./dose mIU.)	25/2708	24/1798	P=0.002
	Multi(Nos./dose mIU.)	30/1412	18/1175	P=0.188
	Total	55/2001	42/1531	
Third Stage Complication	Retained Placenta	Nil	Nil	
	Atonic PPH	Nil	Nil	
	Infection(Local)	Nil	Nil	
	Total	Nil	Nil	
Maternal Satisfaction	Primi	39.5	19.55	P=0.000
	Multi	95.85	45.79	P=0.000
APGAR Score (Mean Score)	APGAR 1M	89.46	111.54	P=0.000
	APGAR 5M	99.02	101.98	P=0.181
Table 2: Comparative results for Squatting and Dorsal Recumbent birthing positions				

DISCUSSIONS: Duration of 2nd Stage of Labour:

Allahabadia GN et. al. (1993) [7] reported the mean differences in primigravidae and multigravidae of the squatting and control groups were 20 and 13.5 minutes respectively. P.R. deJong et. al. (1997) [8] reported Blood loss in 3rd stage of labour and duration of second stage in two groups were similar (average duration in 2nd stage for supine 13' while for squatting 15'). Gupta JK et. al. [9] reported there was a non-significant reduction in duration of second 19 stage in the upright group (mean difference (MD)-3.71 minutes; 95% confidence interval (CI)-8.78 to 1.37 20 minutes; 10 trials, 3485 women. Ganapathy et. al. [10] Reported significant decrease of 11' in the duration of second 21 stage of labour among women in supported sitting posture as compared to supine lithotomy group.

In this study significant difference in duration for 2nd stage of labour is found. (26.2' for squatting as against 36' for Dorsal recumbent for primi while 12.6 min as compared and 21.7 min for squatting and Dorsal recumbent positions 25 respectively for Multi group.

MATERNAL COMPLICATIONS:

Allahabadia GN et.al. (1993) [7] reported that there were 79 normal vaginal deliveries, 16 forceps deliveries and 5 caesarean sections for squatting group, sample size=100, while in the control group there were 80, 18 and 2 cases respectively, sample size=100. P.R. deJong et.al. (1997) [8] reported the there was no difference in the need for Obstetric intervention. There was no increase in Obstetric or Neo-natal mishap in upright position. Nasir et.al. (2007) [11] Reported 2% Forceps delivery observed in Supine position. 0% in Squatting 2% cases had shoulder dystocia in Supine group. In this study there were 95 normal deliveries, 0 forceps delivery, 1 ventouse delivery and 4 caesarean sections for squatting group, sample size=100, while in the control group there were 90, 1, 3 and 6 cases respectively, sample size=100. However, these variations are not statistically significant.

Allahabadia G. N. et.al. (1993) [7] Reported that the incidence of maternal injuries was observed in 14 cases in control group and 38 cases in squatting group. P. R. deJong et.al. (1997) [8] reported significantly less perineal trauma (needing repair 118 in upright as compared to 97 in supine position), less pains, Fewer episiotomy (19 in

upright out of sample size of 257 while 52 in supine out of sample size of 260) and no difference in the degree of maternal 44 satisfaction in upright group. No increase in third degree tears or vulval haematoma in upright group. Terry et.al. (2006) [12] reported more first degree perineal lacerations in Non-supine than in Supine Position, but women in Supine 46 position had more severe lacerations. Less perineal trauma while delivering larger babies in Non-supine position as 47 well as less vulvar oedema. Less need for episiotomy for non-supine position deliveries. Nasir et.al. (2007) [11] Reported that Para urethral tears occurred in 5% in squatting position for patients not given any episiotomy. No 2^o/ 3^operineal tears in squatting group, whereas 9% of patients suffered 2^o-4%/ 3^o-5% perineal tears in supine group. No difference in the application of episiotomy in two groups, however, extension of episiotomy was observed in 7% of Supine group. 52 1% of Supine group had to have LSCS due to persistent occipito-posterior position. In this study, 54% of the patients were given episiotomy in squatting position while 66% of the patients needed episiotomy in Dorsal recumbent position, which is statistically not significant No extension of the episiotomy occurred in squatting group while in Dorsal recumbent group extension of episiotomy occurred in 6% of cases, which is statistically significant.

THIRD STAGE COMPLICATIONS:

P.R. deJong et.al. (1997) [8] reported there was no increase in PPH. Nasir et.al. (2007) [11] that there was no case of retained placenta or PPH in Squatting group while in Supine group 4% of cases had retained placenta & 1% had atonic PPH. In this study there was no reported case of PPH either in Dorsal recumbent or in squatting position.

FETAL OUTCOME

Terry et.al. (2006) [12] Reported that there is no difference in 1' and 5' APGAR score between two groups. Nasir et.al. (2007) [11] Also reported no significant difference in APGAR score, abnormal FHR pattern or requirement of neo-natal resuscitation. In this study there was no significant variation in APGAR score for 1' or 5' in primi group where as significant variation was observed in 1' APGAR score for the muti group with mean rank of 81.42 & 60.8 for squatting and Dorsal recumbent position respectively. Again there was no significant

variation in 5' APGAR score of multi group with mean rank of 71.48 & 70.53 for squatting and Dorsal recumbent position respectively.

MATERNAL SATISFACTION ON VAS: PR Jong et. al.^[8] reported more maternal satisfaction on 5-point scale in upright position than in recumbent position. Ganapathy et. al.^[10] reported reduction in labour pain scores on VAS scale by 12 mm in supported sitting posture as compared to supine lithotomy posture. In this study, significantly high mean ranking of VAS (132.77) in 28 squatting group as compared to Dorsal recumbent group (mean ranking-66.90) indicating higher maternal satisfaction in squatting position group.

CONCLUSIONS: Squatting position for 2nd 3rd stage of labour is much convenient for mothers' in terms of less duration of 2nd stage of labour, less no. of patients administered oxytocin and lesser quantity administered to the subjects, lesser extension of 36 episiotomy and greater maternal satisfaction on VAS. No significant variation is found in incidences of maternal and fetal complications, need for instrumental delivery and LSCS indicating squatting position has no adverse impact on maternal and fetal complications.

REFERENCES:

- Dunn PM, Perinatal lessons from past, Archives of diseases in childhood, 1991; 66-78-79.
- Trasi N. Child birth in India, Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures, Springer Reference, 2nd Edition, pp 94-95.
- Borrel V., Fenstrom I., The movements at the sacro-iliac joints and their importance to changes in the pelvic dimensions during parturition. Acta Obstet Gynecol Scand 1957; 36: 42-57.
- Russell JGB, Moulding of the Pelvic Outlet, J. Obst. Gynae British Cwith, Sept. 1969, Vol. 76, 817-820 4
- Lisa M, Blanco K., Young D., Proper birthing positions: reduces risk of shoulder dystocia and injury to the baby, Medical Veritas 2, 2005, 472-488.
- Gardosi J, Hutson N, B-Lynch C. Randomised, controlled trial of squatting in the second stage of 52 labour. Lancet. 1989 Jul 8; 2(8654): 74-7.
- Allahbadia GN, Vaidya PR. Squatting position for delivery. J Indian Med Assoc 1993; 91: 13-16.
- P.R.deJong, R.B.Johanson, P.Baxen, V.D.Adrians, S.vander Westhuisen, P.W.Jones, Randomised trial comparing the upright and supine positions for the second stage of labour, British Journal of Obstetrics and Gynaecology, May 1997, Vol 104, pp.567-571.
- Gupta JK, Hofmeyr, GJ and Smyth, R. 2006, Position for women during second stage of labor, Cochrane Library. Issue, 2. Chic Hester, UK: John Wiley and Sons Ltd.
- Ganapathy T, Maternal birthing position and outcome of labor, The Journal of Family Welfare, Vol. 58, No. 1, June 2012, 68-73.
- Ayesha Nasir, Razia Korejo, K.J.Noorani, Child Birth in Squatting position, Journal of Pakistan Medical Association, Vol. 57, No. 1, Jan 2007, pp. 19-22.
- Richard R. Terry, Jeanne Westcott, Laura O'Shea, Frank Kelly, Postpartum Outcomes in Supine Delivery by Physicians vs. Nonsupine Delivery by Midwives, JAOA, Vol 106, No. 4, April 2006, pp. 199-202.