Original Article

Child birth in squatting position

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Abstract

Objective: To assess the risks and benefits of squatting position during second stage of labour. and its comparison with the supine position.

Methods: The study was conducted at the Department of Obstetrics and Gynaecology, Jinnah Postgraduate Medical Centre, Karachi from 1st January 1999 to 31st January 2000. A total of two hundred patients of similar ante partum, intrapartum and socio-economic conditions were selected. Only patients of gestation more than 37 weeks, presenting in active labour with cephalic presentation were included. Patients with multiple gestation, malpresentation, previous scar, maternal fever and prenatal diagnosed fetal malformation were excluded from the study. Random selection was done after informed consent and alternately divided into two groups A and B. Both groups were ambulatory during first stage of labour. In second stage, group-A adopted the squatting position, while group-B remained supine in lithotomy position. The third stage of labour in both the groups was conducted in the supine position.

Results: There was no difference in the application of episiotomies in both groups, however extension of the episiotomy occurred in 7% patients of the non-squatting group($P<0.05$). Para urethral tears occurred in 5% patients in squatting group, but all occurred in patients who were not given an episiotomy. Second degree, and third degree perineal tears occurred in 9% patients in the non-squatting group but none in the squatting group ($P<0.05$). Forceps application was also significantly less in group-A 11% and 24% in group-B ($P<0.05$).There were two cases of shoulder dystocia in group B but none in the group-A.

During the Third stage of labour there were no cases of retained placenta in group A but there were 4% cases of retained placenta and 1% case of postpartum haernorrhage of more than 500ml due to atony of the uterus in group-B. One patient in the non-squatting position had to have a caesarean section due to persistent occipito posterior position. There was no significant difference in the apgar scores, foetal heart rate patterns or requirement of neonatal resuscitation.

Conclusion: It appears that squatting position may result in less instrumental deliveries, extension of episiotomies and perineal tears (JPMA 57:19;2007).

Introduction

Before the 17th century the upright birthing position was common in western countries.[1,2] The supine position became popular because of the convenience for health professionals rather th,an the benefits for women.[3,4] The lithotomy position, with a mother flat on her back and her feet in stirrups, has become the standard position in hospitals and is considered the ideal posture for doctors to deliver the baby due to easy access. For the mother, who has to push her baby uphill against the force of gravity when lying on her back however it may not be so ideal.

Tearing is also much more common due to the mother's perineum being stretched by the positioning of the stirrups Where western healthcare has not had much influence, the upright position is still very common.[5,6]

Squatting is a position adopted during defecation. There is no right or wrong, best or worst position to give birth, it depends on where the patient is most comfortable, with minimum complication.

This study was performed to assess the risks and benefits of squatting position during second stage of labour, and its comparison with the supine position.

Subject and Methods

This case control study included two hundred patients of similar ante partum, intrapartum and socio-economic conditions. Only patients of gestation age more than 37 weeks, presenting !n active labour with cephalic presentation and longitudinal lie were included and patients with multiple gestation, malpresentation, previous scar, maternal fever and prenatal diagnosed foetal malformation were excluded from the study.

They were randomly selected and an informed consent was obtained after a detailed discussion regarding both the modes of delivery. They were alternately divided into two groups, A and B. Both groups were ambulatory during the first stage of labour. In second stage, group-A adopted the squatting position, while group-B was kept supine in lithotomy position. Foetal heart sounds were monitored by

a sonic aid. Episiotomies were given according to stretchability of the perineal tissues. Use of outlet forceps was limited to patients who had a prolonged second stage of labour due to inability to push. The third stage of labour in both the groups was conducted in the supine position.

Data was analyzed by SPSS version-10 and relevant descriptive statistics were computed for data presentation, Chi-square test and Fisher's Exact test was used to compare the proportions of the entire characteristic between the two groups. Statistical significance was taken at $p<0.05$.

Results

No difference was noted in the application of episiotomies in both groups, which was given according to the case requirement, however, extension of the episiotomy was observed in 7 (7%) of non-squatting groups. There were no extensions of episiotomy in group-A (Table).

Para urethral tears occurred in 5 patients (5%) in the squatting group, who were not given an episiotomy. There were no second degree, or third degree perineal tears which were encountered in (9%) patients in the non-squatting group-B ($P<0.05$). Second degree tears appeared in 5 patients and a third degree tear involving the external anal sphincter occurred in 4 patients and two of these patients had been delivered by forceps due to inability to push.

Table. Complications of delivery in squatting v/s supine position.

Complications	Group-A (n=100)	Group-B (n=100)	P-value
Episiotomy	43	48	0.48
Extension of Episiotomy	0	9	0.007*
Para-uretheral tears	5	2	0.222
2nd and 3rd degree perineal tear	0	9	0.002*
Shoulder dystocia	0	2	0.25
Retained placenta	0	4	0.061
Postpartum haemorrhage	0	1	0.5

* Statistically significant difference $P<0.05$

Forceps application was also less in group-A (11%) patients whereas 24% patients were delivered by forceps in group-B, ($P<0.05$).

There were two cases of shoulder dystocia in-group B in spite of their weight not being more than 3.5kg, and who were then delivered by McRoberts maneuver. Group A women did not experience any such difficulties. Third stage of labour was also markedly shortened with blood loss of less than 500ml and there was no case of retained placenta or postpartum haemorrhage in group-A.

There were 4 (4%) cases of retained placenta and 1 case of postpartum haemorrhage (1%) due to atony of the uterus in group-B ($P>0.05$).

One patient in the non-squatting position had to have a Caesarean section due to persistent occipitoposterior position. There was no significant difference in the apgar scores, abnormal foetal heart rate patterns or requirement of neonatal resuscitation.

Discussion

In our study no special birthing chairs were used, and delivery was conducted on regular delivery tables. Although the squatting position was more difficult to maintain, patients were reluctant to lie down flat, after adopting the squatting position as it was easier to push in this posture. This finding was similar to the study by Gardosi[7] in a controlled clinical trial involving 151 primigravidae and 18 midwives assessing the acceptability and outcome of second-stage labour in upright position.

Women were managed either conventionally (semi-recumbent and lateral), or encouraged to adopt upright positions (squatting, kneeling, sitting or standing). Of the women allocated to the upright position, 74% completed the second stage upright, with kneeling being the most favoured position, but squatting was, despite all assistance, too difficult to maintain. This was in contrast to our study as women found it much easier to push in this position. There was a clinically apparent reduction of forceps deliveries in the upright group. Moving the parturient from recumbent to upright positions. was often perceived to be beneficial when there was slow progress. Estimated blood loss was similar in the two groups, as was the condition of the newborn (Apgar score and umbilical artery pH). Similarly Mayberry, Linda et al[8] in a descriptive study evaluated outcomes from a sample of 74 healthy women having their first childbirth. They all received epidural analgesia during the first and second stages of labour. Their results showed that all women were able to maintain upright positions throughout the second stage of labour following epidural analgesia administration. No adverse neonatal outcomes or maternal problems (such as excessive vaginal bleeding) were documented, however it was observed that although women were capable of assuming upright positions during second stage, constant physical and emotional support was necessary for most women.

This was in contrast to another exploratory study by Helen, Rose[9] which was conducted in Tanzania at four government hospitals where they used structured exit interviews with postnatal women at each hospital (n = 1151) to document the use of mobility during labour, the position for delivery, and women's views about these practices. Women's postpartum opinion was considered to be the most, appropriate method for recording mobility and delivery position in this setting. It was observed that supine

position (most commonly left lateral position with back slightly to one side) was used routinely at all the study hospitals. Upright positions, including sitting upright and squatting, were used very infrequently. The data suggested that women's preference for delivery position was supine; more than 80% of women at all hospitals said they would choose supine position. Only very few women at the referral (1.7%) and regional (4.4%) hospitals said they would choose to deliver in a sitting position. Similarly, squatting would be the choice of very few women.

Women in our study who delivered in the physiologically normal squatting position were found much less prone to have perineal tears, and more likely to have normal non- surgical second stages of labour which was in contrast to the study by Shorten, Allison et al[10] where data from 2891 normal vaginal births was analyzed and descriptive statistics were obtained that showed that the lateral position was associated with the highest rate of intact perineum (66.6%) and had the most favorable perineal outcome profile. The squatting position was associated with the least favorable perineal outcomes (intact rate 42%), especially for primiparas.

We found a reduction in the rate of instrumental deliveries in the squatting group, 11% patients had a forceps delivery as compared to 24% in non-squatting group, which was similar to the study by De Jonge et al[11] which assessed the maternal and neonatal effects of upright compared with recumbent positions during delivery, in terms of defined outcome variables in a randomized controlled trial of 517 women of low obstetrical risk. The results of the trial showed that women who adopted the upright posture for delivery experienced less pain, perineal trauma and fewer episiotomies and instrumental deliveries than those who delivered in the supine position.

Gupta[12] reviewed various trials which compared various positions assumed by pregnant women during the second stage of labour. Relevant trials identified from the register of trials maintained by the Cochrane Pregnancy and Childbirth Group, and from the Cochrane Controlled Trials Register were included. Results were interpreted with caution as the methodological quality of the 18 trials was variable and showed that use of any upright or lateral position, compared with supine or lithotomy positions, was associated with reduced duration of second stage of labour and a small reduction in assisted deliveries. A reduction in episiotomies was noted. However a small increase in second degree perineal tears and an increased estimated risk of b1ood loss> 500ml was found which was in contrast to our study where we observed blood loss to be less than 500ml in the squatting group. In another study Van Diem et al[13] measured and compared blood loss during delivery in both upright and supine positions and found that blood loss appeared more in the upright position than the supine position. It was presumed that increased pressure on the perineum in an upright position may cause an increased blood loss from perineal damage. It was however suggested that this could have been because it was easier to collect blood in a receptacle in the upright position whereas it was not so easy in the supine position.

During the second stage of labour women who squat increase the size of the bony diameters, in both the transverse and anterior / posterior dimensions by as much as 28%.[14] When a woman is in a supine position during delivery, she is commonly seen unable to "keep her bottom down" on the bed as the baby moves past the sacrum. What is worse is the inability for the baby's head, to move past the impacted sacrum on the now narrowed pelvic outlet due to the tailbone being forced inwards.

The coccyx is designed to move out of the way as the baby's head descends. Sitting on the coccyx during birth restricts the pelvic outlet and can also lead to dislocation of the coccyx.

In our study we had two cases of shoulder dystocia who were then delivered by McRobert's maneuver[15], which is designed to increase the functional size of the bony pelvis through flattening of the lumbar lordosis and cephalad rotation of the symphysis; decrease the bisacromial diameter (i.e, the breadth of the shoulders) of the foetus through application of suprapubic pressure (i.e., internal pressure on the posterior aspect of the impacted shoulder); or change the relationship of the bisacromial diameter within the bony pelvis through internal rotation maneuvers and is a position where the mother is placed flat on her back with her knees pulled up and back, simulating an upside down squatting position.

Lying supine while trying to push is an unfavorable birth position because it places excess pressure on the posterior vagina. Squatting position distributes pressure evenly throughout the vaginal circumference and helps to bring the baby's head down due to an increased urge to push as it is more influenced by the foetal head and the force of gravity.[16] When women are left to initiate pushing in the second stage, depending upon their response to pelvic floor pressure, the time needed for pushing is minimized and hence maternal fatigue reduced.[17,18]

The squatting position also keeps the gravid uterus off the major blood vessels and this prevents aortocaval compression, several babies go into foetal distress because the mother is lying on her back. The first report of "supine hypotension in late pregnancy" was published in 1953.[19] This described hypotension which occurred in patients upon

This described hypotension which occurred in patients upon assuming the supine position, and which resolved with lateral positioning. It is caused by compression of the inferior vena cava by the gravid uterus with a consequent reduction in venous return. Three to seven minutes are generally required in the supine position for significant hypotension to become manifest and can present with foetal distress.

It is also no longer necessary to keep woman supine to hear foetal heart sounds with the invention of Doppler sonic aids.[20]

A surplus of resources can manufacture such beds that assume many positions and come apart during the pushing stage and assume upright sitting position with various handles and foot rests for the mothers use.

However, till such facilities become common in a developing country, it would not be wrong to say that squatting position may yield better results as it not only guarantees more patient satisfaction but also prevents caval compression, increases the diameter of pelvic outlet and the maternal expulsive forces are facilitated by the force of gravity.

Conclusion

It appears that the routine use of supine position may have some disadvantages in terms of more instrumental deliveries and episiotomies. Moreover women experience significant pain in this position. It is suggested that more trials should be conducted and the position at the moment of birth should be registered to measure its influence on birth outcome.

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