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Research Article

ROLE OF KRISHNA SARPANIRMOKA DHOOPANA IN PRASAVA (2ND STAGE OF LABOUR): A COMPARATIVE STUDY

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ABSTRACT

The time period from complete dilation of the cervix to birth of the infant is called as the second stage of labor associated with risks of adverse maternal outcomes and severe perineal lacerations if prolonged. The objective is to evaluate the Krishna Sarpanirmoka Yoni dhoopana in Dwitiya avastha of prasava (Second stage of labour). This was a study of random sampling with thirty patients divided into two groups, 15 in each. In Group A, patients were allowed to deliver normally without any interventions like oxytocin for augmentation etc. Only psychological support was given. In Group B, Krishna Sarpanirmoka Dhoopana was administered. The present study showed that the Group B produced significantly better results compared to Group A in the duration of uterine contractions and interval between uterine contractions with statistical significance p value < 0.05. Group B showed statistically significant results in duration and interval of uterine contractions in second stage of labor compared to Group A.

Keywords: Prasava, Labour, Krishna Sarpanirmoka, Dhoopana

INTRODUCTION

World Health Organization (WHO) has been warning about the rising rate of C-section in the world and recommends that countries should maintain a rate of 10-15%.¹ The second stage of labor is defined as the time period from complete dilation of the cervix to birth of the infant. Prolonged second stage of labor has been associated with risks of adverse maternal outcomes, including severe perineal lacerations.²

While in most instances there is sufficient reserve to maintain oxygenation of the fetus during the second stage of labor even though the uteroplacental circulation is reduced, in some circumstances both the fetal and maternal condition can deteriorate rapidly. Deterioration can occur both in pregnancies with known complications, such as pre-eclampsia or intrauterine growth restriction, but also unpredictably in low-risk pregnancies.³

Close monitoring and the skills and capacity to offer timely intervention are required for all births to prevent adverse outcomes. High-quality care in the second stage of labor is necessary to prevent stillbirth and newborn complications arising from undetected hypoxia and acidemia, as well as maternal mortality and morbidity from complications such as vesicovaginal fistula, genital tract lacerations, infection and hemorrhage as well as worsening of hypertensive disease.⁴

An elaborate description of Prasava is given in Ayurvedic Samhitas which help us tremendously to understand concept of Prakrita prasava (normal labour). People are not aware of concept of labour in Ayurveda though it is a very scientifically described in Ayurvedic texts. At the onset of labour the head of the foetus gets turned and comes forward due to the action of Prasuti Maruta and then is expelled out through Apatyapatha (birth canal). This is termed as "Prakrita Prasava" (normal labour).⁵

A brief regimen for each and every step (Prasava Paricharya) is also explained in texts which help to prevent any untoward phenomenon during labour. By having the exact knowledge of process and mechanism of labour and following the Prasava paricharya complications can be prevented. But as there are no much clinical studies on the prasava or the labour that is described in Ayurvedic texts, the present study was carried out to evaluate the efficacy of Krishna Sarpanirmoka yoni dhoopana in Dwitiya avastha of prasava (Second stage of labour).

MATERIAL AND METHODS

Patients were selected from the IPD of Prasuti Tantra and Stree Roga, Shri J.G.C.H.S, Ayurvedic Medical College and Hospital, Ghataprabha. This was a single blind clinical study followed with simple randomized sampling method after thorough physical and lab investigations. 30 Primigravida patients of active reproductive age between 28 to 35 years, pregnant woman in true labour, with average height of 145 to 170 cm, average weight of 40 to 60 kg, with hemoglobin 10.5 gm% or more and with negative VDRL, HbSag and HIV tests were included for the study.

Primigravida patients above 35 years of age, multigravida patients, with height less than 145 cm (short stature), having hemoglobin less than 10.5 gm%, with anatomical pelvic abnormality, CPD, mal presentation, placenta previa, APH, over weight > 80 kg, cases having pathology of reproductive system like fibroids, fothergill repair, high risk pregnancies including jaundice, preeclampsia, eclampsia, twins, PIH etc, cases of systemic disorders like T.B., diabetes, Asthma, cardiac disorders, Hypertension (130/90 mm of Hg or more) and Renal diseases etc were excluded.

Assessment Criteria

Outcome of Dwitiya avastha of prasava was observed assessed and was compared with the control group. Progress of labor was assessed on the duration, interval of uterine contractions and time taken for the second stage of labor.

Ethical clearance and consent

The study was approved by the institutional ethical committee and signed informed consent was obtained from all patients.

Table 1: Assessment Criteria

Grading of the duration of uterine contractions	Duration of Uterine Contractions	
	3	20 seconds – 35 seconds
	2	35 seconds – 50 seconds
	1	50 seconds – 65 seconds
	0	65 seconds – 80 seconds
Grading of the interval of uterine contractions	Interval of Uterine Contractions	
	3	2 in 10 minutes
	2	3 in 10 minutes
	1	4 in 10 minutes
	0	5 in 10 minutes

Intervention

Group A

In this group, patients were allowed to deliver normally without any interventions like oxytocin for augmentation etc. Only psychological support was given.

Group B

Patients with complete dilatation of cervix were included in this group. The drug called Nirmoka measuring about 50 cm was used

for dhoopana. Heated charcoals about 8-10 were put in an earthen sharaava. Patient was advised to lie in a dorsal position on her back with head elevated at 30 degrees and thighs placed on abdomen. The vaginal walls were retracted with Sim’s speculum. Nirmoka was then put on the sharaava and the dhooma obtained was exposed to the vaginal walls and cervix. Dhoopana was done in between contractions. Dhoopana was done once in 10 minutes for the duration of 2-3 minutes. Maximum of 3 sessions of dhoopana were administered depending upon the progress of labor.

RESULTS

Table 2: Demographic data

Age		
18 – 20 years	28	46.66%
21 – 23 years	25	41.66%
24 – 26 years	7	11.66%
Religion		
Hindus	47	78.33%
Christians	9	15 %
Muslims	4	6.66%
Education		
Primary	23	38.33%
High School	33	55%
Graduates	4	6.66%
Economic Background		
Poor	18	30%
Lower middle class	42	70%
Occupation		
Homemakers	46	76.66%
Teachers	14	23.33%
Age of Menarche		
12yrs	12	20%
13 yrs	25	41.66%
14 yrs	17	28.33%
15 yrs	6	10%
Rajah srava kala		
3 days	36	60%
4 days	16	26.66%
5 days	8	13.33%

Vedana in Rajah kala		
Pain	27	45%
No Pain	33	55%
Diet		
Veg	27	45%
Mixed	33	55%
Prakruti		
Vata pitta	16	26.66%
Pitta kapha	19	31.66%
Vatakapha	25	41.66%
Satwa		
Pravara	28	46.66%
Madhyama	24	40%
Avara	8	13.33%
Fetal position		
LOA (Left Occipito Anterior)	42	70%
ROA (Right Occipito Anterior)	18	30%
Hb%		
10.5-11.4	13	21.66%
11.5-12.4	19	31.66%
12.5-13.4	27	45%
13.5-14.4	1	1.66%

Thirty patients who were in the second stage of labour were included for the study. Demographic data is detailed in Table 2. In this study maximum number of 28(46.66%) patients were traced from the age group of 18-20 years, 47(78.33%) patients were belonging to Hindu community, 33(55%) patients had their high school education followed by 23(38.33%) receiving primary education and only 4(6.66%) were graduated, 42(70%) patients belonged to lower middle class and 18(30%) were from poor class, 25(41.66%) patients had their menarche at the age of 13 years, 36(60%) patients had menstrual flow for 3 days, 16(26.66%) for 4 days and 8(13.33%) had the flow for 5 days, 33(55%) patients had no pain during menstruation whereas 27(45%) had pain during menstruation, 46(76.66%) patients were homemakers and 14(23.33%) patients were working as teachers,

The between group comparison showed that there are significant changes in Group B in the duration of uterine contractions and interval between uterine contractions in the second stage of the labour. The findings were statistically significant as far as the efficacy of Group B is concerned with p value being < 0.05 in all the parameters. (Table 3-5)

DISCUSSION

In today's era safe and healthy motherhood is a challenge and forming a major area of concern finds special emphasis in Ayurveda as antenatal care (Garbhini Paricharya). By adopting the Ayurvedic monthly antenatal care regime (Masanumasik Garbhini Paricharya) of food (Ahara), lifestyle (Vihara) and medicine (Aushadha) described in Ayurvedic text, we can fulfill dual goal of easy parturition and healthy progeny.⁶

Pregnancy, parturition and puerperium are the three main stages occurring during active reproductive period of a woman's life. Among them parturition is the stage that needs highest attention. Labour is a nature's process. Very often it requires minimal assistance. However, due to altered anatomy and physiology a perfectly normal labour may suddenly become abnormal and even fatal. The present study deals with aiding a mother to be woman to pass through a normal labour, unhindered and uncomplicated, without hindrance and without risk to the life of the mother and child.

tailors etc, 33(55%) patients were of mixed diet followed by 27(45%) patients being vegetarians.

25(41.66%) were of vata pitta prakruti, 19(31.66%) were of pitta kapha prakruti and 16(26.66%) were of vata kapha prakruti, 28(46.66%) patients were of Pravara satwa followed by 24(40%) patients of madhyama satwa and 8(13.33%) patients were of Avara satwa. It was observed in the present study that maximum number 27(45%) patients had Hb% ranging between 12.5-13.4 gm%, 42(70%) had left Occipito anterior position and 18(30%) had right Occipito anterior position. It was also observed that in Group A 5(33.33%) patients underwent emergency cesarean section due to uterine hyperactivity and only 1(6.66%) patient of Group B underwent cesarean section due to Failure to progress, 8(80%) patients in Group A had episiotomy and 11(78.57%) patients in group B had episiotomy.

Here in this study, comparison of outcome among patients of Group A and Group B shows that Krishna Sarpanirmoka dhoopana produced significantly better results than in patients placed on Control group (Group A). In all the parameters i.e. duration of uterine contractions, interval between uterine contractions and duration of second and third stage of labor, statistical analysis produced p value < 0.05 indicating the drug employed is really effective.

The opinions of Ayurveda Acharyas regarding the onset of labor vary with each other; still all the opinions coincide to conclude that in between 9 and 12 months the labor should take place. Kala prakarsha and Naadi Vibandha Mukti (Sushruta), Garbhavaasa Vairagya (Haareeta), Sampoorana Gaatrata (Bhela) are the causes mentioned for onset of labor. Based on Clinical features, the process of labor can be divided into five stages: prajaayini, prajananakala abhimata, upasthita prasava, vishikaantarapraveshanam and aparapaatana.

The same is explained in modern obstetrics within the three stages of labor. Virtually all the Ayurvedic classics provide description pertaining to Prasava Paricharya. Kashyapa stresses more on recitation of auspicious hymns to facilitate smooth and uneventful labor, Acharya also advises intake of meat soup during this period; in the lines similar to Kashyapa, Sushruta also advocates the chanting of auspicious hymns, he also advises the parturient lady to be surrounded by male children and carry in her hand

fruits that bear masculine names. Acharya also stresses on intake of Yavagu prior to labor possibly with the intention in keeping her energy level.

Acharya Charaka opines that Prasavini should lie down on the ground on soft beddings possibly to make her feel comfortable, Acharya stresses on educating the woman regarding the role she has to play in labor such as to bear down during pain and not to bear down in the absence of pain, Acharya also advocates the employment of mantras, all these acts can place the woman in a psychologically pleasant and self-confident mood which is so very essential for labor to progress. Acharya Vagbhatta opines similar to Acharya Charaka and Sushruta and advocates Yavagu with ghrita to be consumed by the prasavini before the commencement of labor, Acharya also advocates inhalation of medicinal smoke during the inter contraction period as well as gentle massage of the flanks with oil. These acts are intended to increase the strength of the contraction and bring in labor that is smooth and safe.

A normal labor passes through three stages; the aim of a competent obstetrician is to see that the woman passes through the three stages uneventfully and delivers a healthy baby safely. In the first stage of labor, duration of the stage plays a very important role since prolonged labor due to ineffective uterine contractions or late ripening of the cervix can have an adverse effect on the mother and the baby. It is equally important that second and third stage also occur within the normal range of time, any gross deviation in the time range definitely indicates some pathology.

The present study was undertaken with a view to bring about safe, effective and enhanced uterine contractions at regular intervals so that the second stage of labor pass off without any complication within the stipulated time period. For this, a drug that is effective and economically feasible was identified such as Krishna Sarpanirmoka, which is being used for its medicinal use since centuries, also safe and economical and was employed in the present study to evaluate its efficacy in the second stage of labour.

Dhoopana is a common form of sthaanika chikitsa; wherein the drugs employed come directly in contact with the part or the structure where an anticipated response is required. Krishna Sarpanirmoka yoni dhoopana was used with the intention of enhancing smooth and powerful uterine contractions. In the present study, random sampling was undertaken so that sampling errors do not occur, and the drugs chosen were thoroughly examined for their authenticity and unblemished nature.

Previous studies have also shown the effectiveness of Ayurvedic management in the second stage of labour such as the study of Thakur Jyotsna *et al.*,⁷ in which, total 60 pregnant women were randomly selected for the clinical trial in which the efficacy of oil enema and vaginal tampon on cervical status and progress of labour along with comparative study of two medicated pastes were evaluated for their effect on progress, duration of stages of labour and pattern of uterine contractions for augmentation of labour. Here, on comparison of second stage of labour with standard mean duration, the mean duration of second stage in group I was 22 minute 28 seconds whereas in group II it was 28 minute 21 seconds which was less than standard mean duration of 57 minutes so, showing highly significant results and therapy had good effect on cervical ripening and shortens the duration of stages of labour with favorable Bishop's score showing significant results ($p < .001$).

The therapeutic intervention shortened the duration of three stages of labour and had highly significant results as compared to standard data. It reduces intensity of pain felt by pregnant women during the course of labour.

The study was also observed for the effect of therapy on pattern of uterine contractions which showed that the frequency and duration of contractions was not increasing but duration of stages of labour was significantly decreased in group I But in group II the effect of therapy on pattern of uterine contractions has not shown significant results.

In the study of Murthy Seema *et al.*,⁸ the study was carried out to compare the effect Pippalimula and Apamarga in the management of Sukha prasava. 30 female patients with 9 months amenorrhea were registered for the present research work and were divided into 2 equal groups. 15 patients were treated with group-I drug i.e. Pippalimula varti and 15 patients were treated with group-II drug i.e. Apamarga varti. Statistical analysis showed that both drugs were significantly effective to conduct normal delivery. The comparison between group I and group II for the assessment parameters shows significant results with ($p < 0.001$). Normal labour with vaginal delivery in Group I patients was 80% at third follow up, whereas improvement (with operative delivery) was seen in 20% cases. In Group II, it was 66.66% at third follow up and improvement (with operative delivery) was seen in 33.33% cases.

Another study selected pregnant women who were randomly divided in two groups; Group A was given Madhur aushadha siddha tail Anuvasana Basti twice weekly and Pichu daily in ninth month and in Group B Sukha prasavakar yoga was given 3 gm bid daily and found significant reduction in with the time taken in different stages of labour, reducing episiotomy and reduced rate of caesarean sections in Group A compared to Group B. Group A was also found more effective than Group B in various other subjective and objective parameters. The drugs used in both the groups were effective without any side effects. In Group A, the mean duration of time in all the stages of labour was reduced showing highly significant effect.

Whereas, in Group B the mean duration of 1st and II stage of labour was 6 .00 hours and 30 min respectively and actual time taken was 5.43 hours and 24.13 min, which showed statistically significant difference. Combined effect of Basti and Pichu was helpful to reduce the time taken in delivery by causing uterine contractions in proper manner and also helped in softening and relaxing the ligaments and fibrous tissues to prevent tear or episiotomies. While in group B only the use of Sukha prasavakar Yoga could not have so much effect on relaxing and stretching of the perineum.⁹

Further the biochemical analysis of Krishna Sarpa Nirmoka showed that it had nitrates in the form of Nitrous oxide when given dhoopana and it induced the relaxation of cervix as well as enhanced the reflex uterine contractions, dilated the vagina and relaxed the perineum.

In the present study, the between group results showed a significant p value ($p < 0.05$) in Group B and showed that there is significant changes in the duration of uterine contractions and interval between uterine contractions in the second stage of the labour. The findings were statistically significant compared to Group B. A comparison of results pertaining to Group A and Group B indicate that patients in Group B responded much better than Group A, the p value was statistically significantly as far as all the parameters such as duration of uterine contractions, interval between uterine contractions and time

taken for second and third stage. It can also be inferred that the constituents of Krishna Sarpanirmoka such as nitrates, when converted into nitrous oxide played a significant role in bringing about these changes.

Furthermore, regarding the incidence of episiotomy in Group A and B, it was observed that 80% of patients in Group A had episiotomy and only 33.33% of patients had episiotomy in Group B which showed that there was significant reduction in episiotomy in Group B. Where in Group A, maximum no. of patients (80%) had to go through Episiotomy compared to Group B with (70%) patients delivered uneventfully without episiotomy and only 30% of patients were given the episiotomy. This might be due to the relaxation of vagina, vaginal introitus and perineum due to the presence of nitrous oxide in the Nirmoka. The dhoopa possibly softened the tissues, making them more susceptible to dilate without tear.

CONCLUSION

The between group comparison yields a significant p value ($p < 0.05$) in Group B (Krishna Sarpa Nirmoka Dhoopana) with significant changes in the duration of uterine contractions and interval between uterine contractions in the second stage of the labour compared to Group A.

Strengths of the study

One among the very few studies conducted on the second stage of labour or the prasava.

Limitations of the study

A smaller sample size.

Recommendations for Future study

A larger study can be conducted with larger sample size at multiple centers so that these valuable Ayurvedic medicines can be employed for the welfare of society in the days ahead. A longer follow up needs to be carried out.

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