

# Role of vaginal application of Potaki (*Basella alba L.*) oil for Sukha Prasava (easy delivery)

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## Abstract

Childbirth is one of the most significant moments in the lives of women. Various medical conditions and the mother's preference can affect the way a child is born and determine its delivery method. In labor, management should focus on the goal of delivering a healthy newborn while minimizing discomfort and complications for mother. There are various drugs prescribed in Ayurveda for easy delivery (Sukha Prasava). Among these Potaki has been mentioned in Bhavaprakash for Sukha Prasava. For the present study 30 cases in trial and 30 in control group were registered. Potaki oil Pichu (Tampon) insert vaginally at the beginning of latent phase (cervical dilatation <1cm) and after 4 hours Pichu was removed and observed the interval, duration and intensity of uterine contraction, cervical dilatation, effacement, head station and status of membranes. Fetal heart sound, maternal blood pressure, pulse rate and temperature were recorded. If patient unable to approach active phase (cervical dilatation >3cm) pichu was inserted maximum for 3 times. As per results interval, intensity and duration of uterine contractions, cervical dilatation, effacement, position, head descent and status of membranes were statistically significant during first four hours and highly significant in second four hours. Due to shortened latent phase total duration of labour in trial group was highly significant ( $p < 0.001$ ). Potaki oil Pichu facilitates easy labour safely with the effect in term of timely smooth progress with coordinated uterine contractions.

**Key Words:** Sukha Prasava, Labour, Uterine contraction, Cervical dilatation, Effacement, Head station.

## Introduction

Childbirth is a transformative event in a woman's life. It is one of the most tremendous and worthwhile event for mother. The onset of motherhood presents a unique set of physical, emotional, psychological challenges and it is usually a painful experience. Thus effort should be made for easy and minimum level of stress that help in comfort natural birth.

Research has estimated that up to 95 percent of

women can safely give birth without medical interventions (including epidurals, caesarian sections, vacuum extraction and forceps) [1]. Therefore, usually holds a more holistic approach to labour and delivery, tends to avoid such routine interventions which can lead to complications for both mother and infant when used for the sake of convenience, and rely on medical tools only when they are deemed absolutely necessary to ensure safety. Instead of interventions, a variety of non-invasive methods are employed during natural childbirth to aid the mother, since they do not to carry the inherent risk of medical procedures.

Ayurveda has stressed the importance of safe motherhood. It aims at excellence in the formation of the fetus, its development without anomalies, a comfortable full term delivery, and maintenance of the health of mother. The holistic approach of medicine also described different kinds of herbal preparations for easy delivery (Sukha Prasava). Many herbs used in Ayurvedic preparations are available at door step and often used as food. The confidence level of women and family members are high with these herbs that make the Ayurvedic compounds more acceptable. These herbal drugs are cost effective and may act without significant harm to mother and fetus [2-4].

Therefore, there is always a scope for search of herb which is safe, easily available and works clinically in establishing normal vaginal delivery. It should have the power to minimize various complications during first stage of labour without adverse effects and shorten the duration of labour for minimizing pain.

Bhava Prakasha and Bhaisajya Ratnavali mentioned that paste of roots of Potaki (*Basella alba*) added with Sesame oil (Tila Taila) smeared to the interior of Vagina, helps the woman for easy delivery [5,6]. Potaki and Tila Taila have properties of Vata hara [7-11]. If Apana Vayu functions properly lead to coordinated uterine contractions associates with appropriated dilatation of cervix and descent of head the labour can be less painful and the duration of labour can be shorted. Keeping this hypothesis in mind this study was undertaken to evaluate the efficacy and safety of Potaki oil for Sukha Prasava.

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## Materials and Methods

### Selection and grouping of the patients

Total 60 patients were registered from Prasuti Tantra clinic, at Sir Sundarlal Hospital, Banaras Hindu University (BHU), India and divided into two groups i.e. trial group (group T) and control group (group C) consisting of 30 patients in each group.

### Inclusion Criteria

Parity 0 to 4, the active reproductive age between 18 to 36 years, gestational age of 36 to 40 weeks, height 145 to 170 cm, hemoglobin level > 7gm%, negative for VDRL, HBsAg, HIV of both partners, and Rh positive were included. All women were selected who has no history of complication during present or previous pregnancy, no history of hypertension, no history of induction of labour and also women with cervical dilatation < 1.0cm in labour.

### Exclusion Criteria

Parity above 5, age below 18 and above 36 was excluded. Less than 7gm% of hemoglobin level, height below than 145cm, pelvic abnormality, any organic pathology of reproductive system, major systemic pathology like heart diseases, diabetes, tuberculosis, bronchial asthma, renal disease, and psychological disorders were also excluded. Women with advanced first stage of labour were not considered.

## Investigation

### Hematological profile:

Blood group, Rh factor, VDRL, HIV and HBsAg of both partners, Hb%, Total Leucocytes Count, Differential Leucocytes Count, Platelet Count were checked.

### Biochemical Profile:

Fasting Blood Sugar (FBS) and blood urea assessment was done to assess the general health of the patient.

### Specific Investigations:

USG was done for exact gestational age, placental site, and any other fetal anomalies and assess fetal well being.

The cases having regular antenatal follow up and admitting to the labour room in early first stage were subjected to per abdominal examination of lie, presentation, position of the fetus, fetal heart sound, and uterine contractions and per vaginal examination for clinical scoring.

### Following parameters were observed during 1st stage of Labour

Cervical dilatation, cervical effacement, station of the fetal head were recorded at 4 hourly interval from starting of latent phase to active phase of 1st stage (Up to 3.5-4 cm cervical dilatation).

- Fetal heart sounds and duration and interval of uterine contractions recorded at one hourly interval.
- Increase in uterine pressure during contraction with Cardiotocography (CTG) machine.
- Time and mode of rupture of membranes.
- Duration of latent phase of 1st stage of labour, active phase of 1st stage, 2nd stage, 3rd stage and total duration of labour.
- Mode of delivery.
- Presence of any complications.
- Psychological status of mother including her pain threshold, anxiety levels, corporation with attending physician.
- Maternal and neonatal outcome.
- Monitoring of vitals like blood pressure, pulse rate, respiratory rate and temperature etc.

All the cases were given routine soap water enema. After the evacuation of bowels the cases of trial group were subjected to the therapeutic trial and the cases of control group were observed without any intervention with same environment.

### Therapeutic Trial

Fresh roots of Potaki (*Basella alba*) were collected from BHU and Ganga river bank of Varanasi which were identified and evaluated for its quality and purity by experts in the Department of Dravya Guna Vignana and Ayurvedic Pharmacy, Banaras Hindu University.

### Method of Preparation

Ingredients:	Root of Potaki ( <i>Basella alba</i> )	6Kg.
	Tila Taila ( <i>Sesamum indicum seed oil</i> )	2L
	Kalka (Paste made with root of Potaki)	500 g

The fresh roots of Potaki was collected and dried till the material became moisture less. Then material was made into coarse powder (Kwatha Choorna) and mixed with 12 L of water. Thereafter all the components were boiled in a cylindrical container till the total volume of the decoction was reduced to 1/4th quantity of the water taken. Subsequently liquid was filtered and obtained decoction was mixed with Tila Taila and Potaki Kalka. And all the contents were put as per the procedure of Taila Paka. After that all the characteristics of Khara Paka were observed, and oil was taken out, filtered and packed under sterile condition.

### Mode of Administration

Medium size pichu, each weight 4 g were made by

using cotton and covered with 4×6 inches gauze piece and autoclaved was saturated in 25ml of Potaki oil and inserted into vagina up to the external os of the cervix in aseptic conditions at 4 hourly intervals under normal body temperature. The Pichu was inserted as the patient enters latent phase of 1st stage of labour (Cervical dilatation < 1cm with active uterine contractions) and removed after 4 hours. Then Per Vaginal (PV) examination was done to examine cervical dilatation, effacement, membranes and head station. If cervical dilatation has not reached to >3 cm, again Pichu was inserted and after 4 hours removed and PV examination was done. Same procedure continued (maximum 3 times) up to starting of active phase of labour (cervical dilatation > 3-4 cm).

When expectant mother reached to active phase of 1st stage of labour Pichu was removed and the progress of labour was recorded without active management.

#### Criteria for assessment of progress of labour

The clinical dilatation, effacement and position of fetal head as plotted on a partogram were taken for assessment of progress of labour.

The onset of labour pains were assisted by history of uterine contractions and rise of uterine pressure during contractions was recorded with CTG monitoring.

#### Statistical analysis

To see the significant difference between socio demographic, psychosocial, obstetrical and other variables, Chi square test, *t* test and one way ANOVA were applied.

#### Uterine contractions

**Table 1: Interval and Duration of Uterine contractions at 1<sup>st</sup>, 4<sup>th</sup> and 8<sup>th</sup> hour during labour**

Group	Interval of Uterine Contractions ( Mean ±SD)			Duration of Uterine Contractions ( Mean ±SD)		
	1 <sup>st</sup> hour	4 <sup>th</sup> hour	8 <sup>th</sup> hour	1 <sup>st</sup> hour	4 <sup>th</sup> hour	8 <sup>th</sup> hour
Trial Group	7.817±2.31	6.450±1.75	4.317±1.42	29.67±3.70	32.00±3.11	2.00±3.11
Control Group	6.967±2.08	6.300±1.51	5.650±1.44	29.67±3.20	31.50±2.68	31.50±2.68
Between the group comparison unpaired <i>t</i> test	t=1.499 p>0.05 NS	t=0.355 p>0.05 NS	t=3.608 p<0.001**	t=0.000 p>0.05 NS	t=0.668 p>0.05 NS	t=0.668 p>0.05 NS

\*\*Highly Significant

Interval of uterine contractions (in minutes) decreases in both groups but decrease value in trial group is comparatively higher. At 8th hour it's highly significant. Mean duration of uterine contraction is increased in both groups but the difference is statistically not significant. Within group comparison it is highly significant in both the groups.

#### Results and Discussion

It was observed that there was statistically insignificant variables in all the above named age, height, weight, BMI, educational status, occupation, socio-economical stage, psycho social profile, menstrual history and dietetic pattern in between the both groups. Therefore both trial and control groups were homogenous in present study.

Most of the cases were in full term pregnancy in both groups but difference was not significant ( $p > 0.05$ ). Mode of delivery were recorded in both the groups, it was observed that 28 cases of trial group in comparison to 29 cases of control group delivered their baby by spontaneous vaginal delivery (SVD) with vertex presentation. Caesarian section was done in 2 cases of trial group and one case in control group due to failure progress of labour with Miconium stained amniotic fluid with fetal distress. This difference was not significant.

Among 30 cases of trial group 8 cases (26.67%) were inserted Potaki Pichu twice while 22 cases (73.33%) were inserted only once to reach active phase (cervical dilatation >3 cm).

Mean fetal heart rate at the time of delivery in trial group was  $137.74 \pm 32.01$  and in control group was  $151.30 \pm 28.63$ . Z value was 1.729 and not significant.

Maternal pulse rate at first, fourth and eighth hour in both groups almost same. Maternal systolic blood pressure at 4th and 8th hour is statistically highly significant. But mean systolic blood pressure in both groups within normal limit and its clinically not very important. Maternal diastolic blood pressure in between groups is not significant. Mean temperature in both groups is increased around 1 degree but that difference was statistically not significant.

## Cervical Changes

**Table 2: Position of the cervix, Cervical Dilatation, Effacement and Bishop's score at 1<sup>st</sup>, 4<sup>th</sup> and 8<sup>th</sup> hour during labour**

Group	Position of cervix (% and Mean $\pm$ SD)											
	1 <sup>st</sup> hour				4 <sup>th</sup> hour				8 <sup>th</sup> hour			
	Pos.	Int.	Ant.	(Mean SD)	Pos.	Int.	Ant.	(Mean SD)	Pos.	Int.	Ant.	(Mean SD)
Trial	53.5%	30%	16.7%	0.63 $\pm$ 0.765	0.00	23.3%	76.7%	1.77 $\pm$ 0.430	0.00	0.00	96.7%	1.93 $\pm$ 0.365
Control	43.3%	43.3%	13.3%	0.7 $\pm$ 0.702	13.3%	53.3%	33.3%	1.23 $\pm$ 0.679	6.71%	23.3%	70%	1.63 $\pm$ 0.615
Between the group comparison unpaired t test	t= 0.352 p>0.05				t= 3.635 p<0.001**				t = 2.298 p< 0.05*			
Cervical Dilatation (Mean $\pm$ SD)												
	1 <sup>st</sup> hour			4 <sup>th</sup> hour			8 <sup>th</sup> hour					
Trial Group	1.37 $\pm$ 0.22			2.88 $\pm$ 0.57			7.18 $\pm$ 2.67					
Control Group	1.35 $\pm$ 0.27			1.78 $\pm$ 0.52			2.58 $\pm$ 1.00					
Between the group comparison unpaired T test	t =0.261 p <0.001**			t =7.827 p <0.001**			t =8.836					
Effacement (Mean $\pm$ SD)												
	1 <sup>st</sup> hour			4 <sup>th</sup> hour			8 <sup>th</sup> hour					
Trial Group	26.67 $\pm$ 23.39			47.67 $\pm$ 22.85			78.33 $\pm$ 25.88					
Control Group	26.67 $\pm$ 19.71			37.00 $\pm$ 17.45			53.00 $\pm$ 19.85					
Between the group comparison unpaired T test	t =0.000 p >0.05 NS			t =2.032 p <0.05*			t =4.254 p <0.001**					
Bishop's Score (Mean $\pm$ SD)												
	1 <sup>st</sup> hour			4 <sup>th</sup> hour			8 <sup>th</sup> hour					
Trial Group	4.17 $\pm$ 1.315			6.60 $\pm$ 1.567			9.83 $\pm$ 2.64					
Control Group	4.10 $\pm$ 0.995			4.97 $\pm$ 1.608			6.63 $\pm$ 1.847					
Between the group comparison unpaired T test	t = 0.221 p> 0.05			t = 3.985 p<0.001**			t = 5.439 p<0.001**					

Pos. = Posterior Int. = Intermediate Ant. = Anterior \*Significant \*\*Highly Significant

Position of the cervix was posterior, maximum number of cases in both groups at 1st hour and end of the 8th hour all the cases had anterior position of cervix in trial group, 70% of cases in control group. Difference was highly significant at 4th hour and significant at 8th hour.

Mean cervical dilatation is increased in higher value in trial group comparatively. At 4th hour and 8th hour the difference between two groups is highly significant. Mean effacement is increased in both groups while trial group is higher than control group. At 4th hour the difference is statistically significant and at 8th hour the difference is highly significant.

### Head Station

Table 3: Head Station at 1<sup>st</sup>, 4<sup>th</sup> and 8<sup>th</sup> hour during labour

	1 <sup>st</sup> Hour						4 <sup>th</sup> Hour						8 <sup>th</sup> Hour													
	Floating		High up		-2		Floating		High up		-3		-2		-1		0		+1							
	n	%	N	%	n	%	n	%	N	%	n	%	n	%	n	%	n	%	n	%						
Trial Group	01	3.3	06	20.0	22	73.3	01	3.3	01	3.3	25	83.3	03	10	00	00	03	10	00	00	07	23.3	04	13.3		
Control Group	00	00	07	23.3	23	76.7	00	00	02	6.7	25	83.3	03	10	00	00	02	6.7	22	73.3	05	16.7	01	3.3	00	00
Chi-square value	2.099						1.333										16.824									
Significant	0.552						0.721										0.010*									

\*Highly Significant

Foetal head station is highly significant at 8th hour. At 8th hour most of cases (15) were at -3 position, 3 cases were at -2 position, 7 cases were in 0 position and 4 cases at +1 in trial group. While control group 22 cases were at -3, 2 cases were high up, 5 cases at -2; one case was at -1 and no one at 0 or +1 position.

## Status of Membranes

**Table 4: Membranes at 1<sup>st</sup>, 4<sup>th</sup> and 8<sup>th</sup> hour during labour**

	1 <sup>st</sup> Hour						4 <sup>th</sup> Hour						8 <sup>th</sup> Hour					
	BOM+		Memb -		Sticky		BOM+		Memb -		Sticky		BOM+		Memb -		Sticky	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Trial Group	23	76.7	00	00	07	23.3	27	90.0	02	6.7	01	3.3	13	43.3	16	53.3	00	00
Control Group	25	83.3	01	3.3	04	13.3	25	83.3	02	6.7	03	10	25	83.3	02	6.7	03	10
Chi-Square Value	1.902						1.077						18.678					
Significant	0.386						0.584						0.000*					

\*\*Highly Significant

Status of membranes is statistically highly significant at 8th hour during labour. In trial group most of the cases were ruptured membranes spontaneously and others had Bag of Membranes (BOM).

## Duration of labour

**Table 5: Duration of labour**

Variable	Trial Group Mean ± SD	Control Group Mean ± SD	t	p
Duration of Latent phase (Hours)	4.667 ± 1.84	16.450 ± 10.00	6.344	0.000*
Duration of Active phase (Hours)	5.058 ± 3.11	4.968 ± 3.61	0.105	0.917
Duration of first stage (Hours)	9.725 ± 4.21	21.417 ± 9.62	6.101	0.000*
Duration of second stage (Minutes)	29.33 ± 11.28	27.80 ± 8.35	0.599	0.552
Duration of third stage (Minutes)	4.07 ± 1.44	4.33 ± 1.24	0.769	0.445
Total duration of labour (Hours)	10.15 ± 4.54	21.16 ± 10.35	5.336	0.000*

\*Highly Significant

Duration of latent phase, 1st stage and total duration of labour was highly significant. When comparing both groups mean duration of latent phase in control group was four times larger than control group. Mean of total duration of labour in control group also double comparing to trial group.

Carefully observation of every neonate just after delivery was done to assess the age of neonate and it was found that all the neonates (100%) were appropriate for their gestational age in both the groups. It was found that all the neonates were in same Apgar score 7 in first minute, 8 in fifth minute and 9 in tenth minute in both the groups.

Table 1 is an evidence for increase of interval, duration and intensity of uterine contractions. At the 8th hour of introducing the Potaki Pichu, strong uterine contractions were observed in trial group. In trial group 1st hour mean interval of uterine contraction was 7.8 and at eight hour it was increased up to mean 4.3 minutes and mean duration 29.67 to 32 seconds. Interval, duration and intensity of uterine contraction in control group were comparatively less. This could be due to property of increase uterine contractions, Garbhashaya Vishodana and regulation of Apana Vayu of Tila taila contained in Potaki oil [12,13,14]. Roots of Pokati can be used for removal of placenta [15], hence it can be inferred that Potaki roots can increase the uterine contractions.

Trial group showed remarkable dilatation of cervix and effacement comparing to control group (Table 2). It means that Potaki oil Pichu facilitate the cervical dilatation and effacement drastically. Prasuti Maruta which is action of Apana vayu is responsible for pushing the fetus down. Uterine contractions result in both cervical dilatation and fetal head descend. Dilatation of the cervix should be accompanied by descend of the head needed for labour.

Head station is highly significant at 8th hour (Table 3). At 8th hour 50% of cases were at -3, 23.3% of cases were at 0 position and 13.3% of cases were at +1 position in trial group. While 73.3% in control group were at -3 position at the end of eight hour. Hence the Potaki oil has positive role in increasing the normal regular uterine contractions during the labour and coordinate cervical dilatation simultaneously and facilitates descend of the fetal head. It has been proved that roots of Potaki has property of pacifying Vata Dosha and also roots has been used for removal of placenta and membranes. Tila Taila also has a property to pacify the Vata Dosha and it helps to increase and initiate uterine contractions [16, 17].

In trial group beginning of 1st hour Bag of Membranes (BOM) present in 76.7% of cases, thus end of the 8th hour spontaneously ruptured of membranes seen in 53.3% of cases. In control group, beginning of 1st hour and end of the 8th hour BOM present in 83.3% of cases without any change. It was highly significant statistically at 8th hour (Table 4).

It was observed in this study that total duration of labour was certainly shortened by Potaki oil Pichu. It has also been observed that this shortening of duration of labour is mostly confined to the latent phase. Active phase duration in both groups was more or less same. Table 5 demonstrated the average duration of latent phase in trial group was 4.667 hours as compared to controls in which was 16.45. The average duration of active phase was 5.058 and 4.968 hours in trial and control groups respectively. Results in the present study concerning the duration of second stage and third stage of labour were similar to both groups with minimal difference. It can be inferred that is due to action of Potaki oil.

Apana Vayu is the main factor which facilitates labour in appropriate progress. Therefore, it's essential to balanced Apana Vayu for each and every event of labour process.

Due to Madura Rasa, Guru and Snigdha Guna and Madhura Vipaka of Potaki and properties of Vata, Kapha hara of Tila taila can assist to restoration of proper function of Apana Vayu [15,16,18].

All above factors rally round to balance Apana Vayu properly at the process of delivery. Final outcome in patient has an easy delivery (Sukha Prasava) within short period. No adverse effects were seen in the follow up period of mother specially post partum hemorrhage and vaginitis.

## Conclusion

These observations and results illustrate that the vaginal application of Potaki oil Pichu gradually increase the frequency, intensity and duration of uterine contractions, cervical dilatation, effacement, head descent and decrease of the duration of labour specially latent phase of first stage. It can be concluded that use of Potaki oil facilitate labour safe in parturition women and it has got beneficial effect in term of timely smooth progress with normal pain with coordinated uterine contractions. Use of Potaki oil Pichu smooths the progress of Labour easily and safely.

This study was done with lack of sophisticated modern technology and it is recommended that further study should be carried out using more sophisticated cervical parameters at cellular level.

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