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Case Report

# Effect of *Matra Basti* of *Eranda Taila* in non-progress of labor and neonatal outcome by umbilical cord blood study – A case report

Soni Kapil [a, *], Anil Bhardwaj [b], Kaminey [a]

[a] P.G. Department of Prasuti Tantra evum Stree Roga, Rajiv Gandhi Govt. PG, Ayurvedic College and Hospital, Paprola, 176115, H.P., India
[b] P.G. Department of Panchakarma, Rajiv Gandhi Govt. PG Ayurvedic College and Hospital, Paprola, 176115, H.P., India

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ABSTRACT

Every pregnant woman expects a natural, safe and uncomplicated delivery. The outcome of pregnancy i.e. childbirth is a natural but at the same time very complex process. The time taken for normal labor in primigravida is 12h–14 h and latent phase of labor is expected not to exceed more than 8 h. Thus, any intervention that augments and eases labor is well accepted for mother and fetus. *Apana Vayu* is having pivotal role in regulating the process of labor. A woman, aged 27 years, primigravida with full term pregnancy and pain in lower abdomen for 7 h visited Rajiv Gandhi Govt. Post Graduate Ayurvedic College & Hospital, Paprola. She was given a soap water enema and kept under a close observation for 2 days. There was neither significant progress of labor nor the pain subsided with afore mentioned management. On the third day, she was given *Matra Basti of Eranda Taila*. This showed the therapeutic effect on progress of labor and ultimately safe delivery of baby. To evaluate any kind of fetal distress, APGAR score of neonate and umbilical cord arterial blood was collected for determination of pH value. Present case suggests an example to manage delayed labor with *Eranda Taila Matra Basti* without any altered fetal parameters and fetal distress.


## 1. Introduction

The series of events that take place in the genital organs in an effort to expel the viable products of conception out of the womb through the vagina into the outer world is called labor [1]. The mean duration of human singleton pregnancy is 280 days (40 weeks) from the first day of last menstrual period. First stage of labor commences with latent phase of labor which is defined as the period between the onset of true labor pains and the point where cervical dilatation becomes 3–4 cm. Normal duration of latent phase in primigravida is average 8.6 h. After that the labor becomes active. In active phase cervical dilatation accelerates. The normal rate of cervical dilatation in active phase is 1.2 cm/h in primigravida [2].

In *Ayurvedic* classics *Prasvotsuka* means which is going to deliver, when *Sanyoga* with *Apaan Vayu*, the head of fetus rotates (*Parivartit Garbha*) and comes forward and then gets expeled [3].

The probable description of *Ayurvedic* references related to stages of labor according to modern literature is mentioned here. On the basis of clinical features, stages of labor can be explained in following ways.

- *Prajayini or Prasavotsuka* mentioned by *Sushruta and Bhavmishra* – One or two days before the labor or just beginning of 1st stage.
- *Prajanan Kalambhito or Aasanna Prasava* mentioned by *Charaka, Vagbhatta and Kashyapa* – 1st stage of labor
- *Upasthita Prasava* mentioned by *Sushruta and Bhavmishra* – End of 1st stage and beginning of 2nd stage.
- *Parivartita Garbha* mentioned by *Charaka, Vagbhatta and Kashypa* – 2nd stage of labor.
- *Apara Patan* mentioned by all *Acharyas*- 3rd stage of labor [4].

## 2. Patient information

A woman aged 27 years, primigravida with full term pregnancy having absence of menses since 9 months 10 days and pain in lower abdomen since 7 h, visited the Department of Prasuti Tantra evum Stri Roga, Rajiv Gandhi Govt. P.G. Ayurvedic College

* Corresponding author.
*E-mail:* skbhardwaj73@gmail.com
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and Hospital, Paprola. Pain was periodic with occasional tightening of abdomen and localised in lower abdomen. There was no history of bleeding per vaginam or leaking per vaginam. No history of burning micturition or increased frequency of micturition, with these complaints patient was admitted in IPD. She was known case of hypothyroidism and under medication of tab. Thyroxine 50 mcg based on TFT reports, earlier she was taking tab. Thyroxine 75 mcg. She had taken regular Iron, calcium, multivitamin and protein powder, and was immunized by two doses of Tetanus Toxoid. The USG reports depicted normal findings. She had undergone routine investigations like Hb gm%, Urine Routine/Microscopic, ABO Blood Group, Bleeding time (BT), CT (Clotting time), TFT, Serological Test, Human Immunodeficiency Virus (HIV), GTT, Random Blood Sugar (RBS). All reports were with in normal limits.

Menstrual history

Duration of menses − 4–5 days.
Interval of menses − 28–30 days.
Age of menarche − 13 years.

Obstetric history: primigravida

LMP − 08/06/2020.
EDD − 15/03/2021.

Family History- Father, mother and siblings were healthy.

Date wise routine hematological and urine investigations in antenatal period are shown in tabular form (Table 1).

### 2.1. Trimester-wise ultrasonography report

- USG report on 16/10/2020 showed single intrauterine pregnancy with breech presentation of gestational age 17 weeks 6 days, fetal weight 209 g, FHR (Fetal Heart Rate) 147 beats/minute, placenta anterior and upper.
- USG report on 12/1/2021 showed single intrauterine pregnancy with cephalic presentation of gestational age 30 weeks and 1 day, fetal weight 1682 g, FHR 152 beats/minute, placenta anterior and upper.
- USG report on 1/3/2021 showed single intrauterine pregnancy with cephalic presentation of gestational age 39 weeks and 1 day, fetal weight 3796 ± 569 g, FHR 137 beats/minute, placenta anterior grade-2.

## 3. Clinical findings

### 3.1. Per abdomen examination: during admission

Fundal height − Term size.
Fetal Part Presentation − Cephalic (not engaged).
FHR − 140 bpm (beats per minute) (regular).
Uterus − Irritable.

### 3.2. Per vaginam examination: during admission

Cervix − 1–1.5 cm dilated, 20–30% Effaced, Station −3, Membranes +, Show +, Pelvis− Adequate.

Patient was admitted and given soap water enema and kept under close observation for 1 whole day for vital signs, fetal heart sound & uterine contractions. There was neither any progress of pain nor the pain subsided with afore mentioned management rather intermittent uterine contractions persisted. There was very slow progress in cervical dilatation and effacement for 3 days. On third day, therapeutic intervention was planned.

## 4. Timeline

Time line Shown in Table 4 depicts the progress of labor after admission till delivery of the patient.

## 5. Diagnostic assessment

The duration, intensity and frequency of uterine contractions was assessed by using a cardio-tocodynometer. The progress of labor was assessed on standard parameters of partograph. The time

**Table 1**
Routine investigations.

| S. No. | Date | Hb gm% | Urine | Blood Group/BT/CT. | TFT | Venereal Disease Research Laboratory | Hepatitis B surface Antigen | GTT 1st hour | Fasting Blood Sugar | RBS | HIV |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 15/10/2020 | 11.9 mg/dl | EPC-2-3/hpf | O+ve/1 minute 30 s/5 min 20 s | | | | | 82 mg/dl | | |
| 2 | 17/10/2020 | | | | T3 (Tri-iodothyronine) − 1.27 ng/dl<br>T4 (Tetra-iodothyronine) − 12.10 μg/dl<br>TSH (Thyroid Stimulating Hormone) − 9.164 μIU/ml | | | | | | |
| 3 | 16/11/2020 | | | | | Non reactive (NR) | NR | | | 122 mg/dl | NR |
| 4 | 28/12/2020 | 11.9 mg/dl | PC-2-3/hpf<br>EPC-10-12/hpf | | | | | 93 mg/dl | | 78 mg/dl | |
| 5 | 17/2/2021 | | | | T3 − 1.30 ng/dl<br>T4 − 10.86 μg/dl<br>TSH − 5.34 μU/ml | | | | | | |
| 6 | 13/3/2021 | | | | T3 − 3.26 ng/dl<br>T4 − 20.3 μg/dl<br>TSH − 0.5 μIU/ml | | | | | | |
| 7 | 15/3/2021 | 12.2 mg/dl | NAD (No Abnormality Detected) | BT − 1 min, 45 s<br>CT − 5 min, 45 s | | | | | 78 mg/dl | | |

taken in different stages of labor was assessed against standard mean duration.

### 5.1. Observation

The data was collected and analysed on standard parameters of progress of labor by using partograph. Latent phase of first stage of labor should not exceed 8 h. In this case delayed progress was observed after admission. Days wise observation of patient in latent phase of labor before therapeutic intervention is mentioned in tabular form (Table 2).

## 6. Therapeutic intervention

According to *Acharya Bhela*, for augmentation of labor *Anuvasana Basti* with *Tikshna Taila* (pungent oil) should be given [5].

*Eranda* has aphrodisiac properties and *Vatahara.* [6] rejuvenating, causes detoxification of *Yoni* (reproductive tract), alleviates *Vata* and *Kapha* and vitiated *Dosha* especially from lower region (i.e below the umbilicus) [7].

Type of Therapeutic intervention – *Eranda Taila Matra Basti*.

Administration of Therapeutic intervention – Dose – 60 ml [8,9].

Mode of administration – Per rectum [10,11].

*Basti Pratyagamana Kala* – 3 h [12].

On third day, dated 17/3/21 at 5 a.m patient was given *Matra Basti of Eranda Tail*a 60 ml per rectum, after soap water enema, then progress of labor was observed. Consequently, patient started to have rhythmic mild to moderate uterine contractions, which were progressive in nature. Close observation was maintained for FHS/BP/Pulse Rate (PR)/Temperature/Uterine contractions/Leaking or bleeding per vaginam.

## 7. Follow up and outcome

In this case the standard rate of cervical dilatation was enhanced after administration of *Matra Basti of Eranda Taila.* In latent phase the frequency of contractions was <3 contractions/10 min, when patient landed into active phase the frequency of contractions increased up to 3–5 contractions/10 min. Neither induction nor augmentation of labor was done with hormonal based drugs like oxytocin, prostaglandins etc. Progress report of labor after administration of *Eranda Taila Matra Basti* is given in Table 3. Continuous monitoring of patient was done by CTG machine during active phase of labor. It showed normal pattern throughout the labor with baseline FHR remains between 110 and 150 bpm, base line variability of fetal heart rate within 5–25 beats per minute, with intermittent accelerations (2/20 min approximately) and no deceleration of FHR with moderate uterine contractions.

The observations showed good progress of cervical dilatation, head station, duration and intensity of contractions. Patient delivered a full-term male baby at 12:44 pm on Dated 17/3/2021 by NSVD (Normal Spontaneous Vaginal Delivery) with RMLE (Right Medio-Lateral Episiotomy) and cephalic presentation. Placenta with intact membranes expelled out spontaneously within 3–4 min. APGAR score and other parameters were recorded after the birth of baby. Cord blood sample was collected from umbilical cord after delivery of baby for haematological and biochemical investigations. All observations showed normal findings.

| | |
|---|---|
| **Fetal parameters after delivery** | |
| Baby cry | Immediate |
| APGAR Score | |
| | 1 min–8 |
| | 5 min–9 |
| Baby weight | 2.9 kg |
| Heart rate of baby | 138 bpm |
| Respiratory rate | 60/min |
| Umbilical cord | Normal Anatomy |
| **Haematology report of blood collected from Umbilical cord** | |
| **Blood Group** | O POSITIVE |
| **Random Blood Sugar** | 110 mg/dl |
| **Liven Function Tests** | |
| Total Bilirubin | 2.4 mg/dl |
| Direct Bilirubin | 0.8 mg/dl |
| Indirect Bilirubin | 1.6 mg/dl |
| **Hbgm%** | 16.1 g/dl |
| **Platelet count** | 182/10^3/Ul |
| **Blood Ph Value** | 7.3 |

Observations showed no harmful effect of *Eranda Taila Matra Basti* on fetal parameters.

Effect of *Eranda Taila Matra Basti* in augmentation of labor is shown in Table 5. It is evident from table that duration of stages of labor is less than the standard mean duration.

## 8. Discussion

In the case discussed, there was evidence of prolonged latent phase of labor. At first, soap water enema was given to the patient at admission to rule out the false labor pains [1]. But the pain did not subside in this case. To augment the progress of labor, *Eranda*

**Table 2**
Assessment chart of progress of labor before intervention.

| Days | Cervical dilatation | FHS | Bishop Score | Contraction pattern |
|---|---|---|---|---|
| 1st (15/3/2021) | $C_x$ (Cervix) – 1–1.5 cm dilated, 20–30% effaced, station –3, membranes +, show +, pelvis– adequate. | 140 bpm (regular) | 4 (Unfavourable) | Duration – <20 s<br>Interval – 30–40 min |
| 2nd (16/3/2021) | Same status | 136 bpm (regular) | | Same status |
| 3rd (17/3/2021)<br>At 4:00 am | $C_x$ – 2–2.5 cm dilated, 40–50% effaced, station –3<br>membranes +, show +, pelvis– adequate | 142 bpm (regular) | 6 (Favourable). | Duration – 20–30 s<br>Interval – 20–30 min |

**Table 3**
Progress Report after administration of *Eranda Taila Matra Basti*.

| Partograph | Cervical Dilatation | Station | Membranes | Contraction per 10 Min. | Blood Pressure (BP) | Pulse | FHS |
|---|---|---|---|---|---|---|---|
| At 8 am | $C_x$ – 2.5–3 cm dilated, 40–50% effaced | –3 | Intact | 3 | 120/80 mm of Hg | 74/min | 130 bpm |
| At 10am | $C_x$ – 4–4.5 cm dilated, 50–60% effaced | –2 | Negative, Liquor – clear | 3 | 110/80 mm of Hg | 80/min | 136 bpm |
| At 11am | $C_x$ – 6–6.5 cm, 90% Effaced | –1 | Negative | 3 | 120/82 mm of Hg | 78/min | 130 bpm |
| At 12.30 pm | $C_x$ – 9.5–10 cm | 0 | Negative | 5 | 130/90 mm of Hg | 72/min | 124 bpm |

**Table 4**
Mentioning treatment protocol and timeline.

| Day | Date and Time | Observation |
|---|---|---|
| Day 1 | 15th March 2021 (4:00 PM) | Patient visited the hospital and admitted in P.G. Dept of PTSR with mild labor pains |
| Day 2 | 16th March 2021 | No progress of labor |
| Day 3 | 17th March 2021 (5:00 AM) | Matra Basti with *Eranda taila* 60 ml per rectum |
| Day 3 | 17th March 2021 (12:44 PM) | Normal Spontaneous Vaginal Delivery of male baby with immediate cry |

**Table 5**
Effect of *Eranda Taila Matra Basti* in augmentation of labor.

| Stages | Standard duration in primigravida | Therapeutic effect of drug in progress of labor. |
|---|---|---|
| Duration of latent phase (1st stage of labor) | 8.6 h | 3 h (after administration of *Eranda Taila Matra Basti)* |
| Duration of active phase (1st stage of labor) | 8 h | 3 and half hours |
| Duration of second stage of labor | 2 h | 50 min |
| Duration of third stage | 15 min | 5 min |

*Taila Matra Basti* was administrated per rectum after evacuating the bowel by giving soap water enema so that *Virya* (active principle) of the drug can absorb properly. Soap water enema is advocated if rectum feels loaded, it neither shortens the duration of labor nor reduces the infection rate [1]. Studies have shown that the castor seeds exhibit estrogenic properties. At term, increased estrogenic activity and comparatively decreased progesterone is required which causes initiation of labor as oestrogen increases the sensitivity of myometrium to oxytocin [1]. Also, the bioactive component of castor oil is ricinoleic acid that activates the prostaglandin EP3 receptors which are present in uterine myometrium and causes increased frequency and intensity of uterine contractility [13].

Thus, this could be verifying the use of castor oil (*Eranda Taila) Basti* for enhancement of labor. *Basti* is given through anal canal then it begins its action from rectum. The upper 1/3rdof the rectum is drained into the portal vein. While the lower 2/3rd is drained into inferior iliac vein that goes directly in the inferior vena cava (thus bypassing the liver) [14]. Thus, by giving medicine through anus we can bypass the liver and medicine works with its undisturbed *Virya* (active principle) in a more effective way. *Guda is Moola* of *Siras*, therefore, the active principle of *Eranda Taila* get absorbed and augments the *Aavi* (uterine contractions). *Erand Taila* by its *Ushna Virya* and *Tikshna Guna* reaches to all the minute channels there by causes *Vatanulomana* (maintains normalcy of *Vata)* [7]. As vitiation of *Vayu* has been considered as major aetiological factor for delayed progress of labor [15] and *Basti* is regarded as best treatment of *Vata* vitiation [16].

It stimulates enteric nervous system by exerting local action in gastrointestinal tract by operating through large intestine and thereby exerts systemic action. Basti karma can activate the autonomic nervous system that further helps to stimulate uterine contractions [14].

After administration of *Eranda Taila Basti*, significant progress was observed in cervical ripening, effacement, dilatation and ultimately safe delivery of the baby. To evaluate any kind of possible fetal distress, umbilical cord arterial blood was collected for determination of pH value of blood as well as Apgar score of the neonate was evaluated. pH of umbilical cord arterial blood was 7.3 within normal range and APGAR score was >7 i.e. 8 at 1 min and 9 at 5 min of birth.

## 9. Conclusion

In the present study, *Eranda Taila Matra Basti* showed positive result in augmenting the labor and reducing duration of all stages of labor without adversely affecting the fetal parameters (fetal distress). As fetal distress in this case was ruled out by good APGAR score of delivered baby and by investigating cord blood pH. It has been observed that there was no need of oxytocin infusion to enhance the progress of labor in this case and labor accomplished smoothly without the use of any manipulative procedure with good neonatal outcome.

## 10. Patient's perspective

Patient gave consent for Ayuvedic intervention and was satisfied with the treatment protocol. She delivered a healthy male baby without any complication. She supported the use of herbal medicines for normal labor and assured to propagate the traditional way of management of labor.

## 11. Informed consent

Informed consent of patient was taken before submission of case study for publication. She was informed that her images and other critical information relating to her case to be reported for medical publication in Journal, Website and or other form of publication. Her name and initials will not be published and efforts will be made to conceal her identity, but that anonymity cannot be guaranteed.

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## Conflict of interest

None.

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