



“STUDY THE EFFICACY OF DHANVANTAR TAIL AS ABHYANGA IN PROMOTING NORMAL GROWTH IN LATE PRETERM BABIES”

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ABSTRACT

Infants who are born between 34 weeks 1 day to 36 weeks 6 days are called as ‘late preterm’ infants¹. There is always a problem in normal growth of premature babies like feeding and nutrition, physical growth, nutritional status etc². Oil massage(abhyanga) is non-invasive procedure that has positive effect on physical growth of late preterm babies including weight gain, promotion of normal development, decreases stress behavior, improves sleep³. Major contents of Dhanvantar tail i.e. Bala, Dashmoolas, tila tail, godugdha are jeevaniya, brihaniya, dhatuwardhaniya . Abhyanga (massage)with dhanvantar tail showed more increase in anthropometric mesurement when compared to abhyanga with coconut oil.6 parts of godugdha and bala present in dhanvantar tail due to its madhur ras ,madhur vipak ,sheeta virya ,laghu,snigdha,picchila gunas & has helped in increasing the physical parameters .Acharya has specifically indicated it in balarogas⁴. This is an informed, consented open randomized controlled clinical study. Total 40 newborn babies 34.1 to 36.6 weeks of gestational age who were born at delivered Bharati vidyapeeth(deemed to be university)college of Ayurveda and Hospital, Pune,india , from IPD are selected for the clinical trial. Abhyanga with Dhanvantar Tail and Coconut Oil was done in trial and control group respectievely for 3 Months. Patients were followed up every 15 days for 2 months and then eery 30days for the next 2 months.

Result: Abhyanga with Dhanvantar tail shows effect earlier than abhyanga with coconut oil on growth late preterm babies.

Key words: Late preterm infants, *Abhyanga* ,*Dhanavntar tail*, growth ,massage

INTRODUCTION

Premature-

Infants who are born before 37 weeks of gestation age are called as '*Premature*'.

The prevalence of Premature is higher in Asia than elsewhere, Premature babies (less than 37 weeks) is one of the main determinants of neonatal and postnatal morbidity. According to WHO statistics the rate of Premature is 17% in the urban mothers with 24% of babies in urban areas have Premature compared to 14.7 % in rural areas. Being a developing country, Indian people are illiterate and poor. Due to poverty, garbhini doesn't get nutritional diet during pregnancy. Some of women are working bounded to undergo physical and emotional stresses during antenatal period. All these factors predispose spontaneous preterm deliveries in India. About 10-12% of Indian babies are born preterm (Less than 37 completed wks of gestation) as compared to 5-7 % incidence in the west.²

In preterm the general activities is poor, baby assumes extended posture due to poor tone. As compared to term baby premature shows more acceleration of maturation, physical growth. There is always a problem in normal growth of premature babies like neuromotor development, cognition and seizures, Hearing, Behavior problems, learning disabilities, feeding and nutrition, physical growth, nutritional status etc therefore After discharge from hospital babies should be regularly followed up for assessment of all these problems. In classical text of Ayurveda, Abhyanga explained in Jatatraparicharya. Abhyanga yields good health of Neonates. Abhyanga (oil massage) is very useful in infants, as oil massage stimulates all the senses of the baby and establishes a more intense visual and tactile communication. Baby massage aids growth, built trust and intimacy. Abhyanga is non-invasive procedure that has positive effect on normal physical growth of late preterm babies including weight gain, decreases stress behavior, improves sleep.

Aim and Objectives of the study

Aim:

Study the efficacy of dhanvantar tail as abhyanga in promoting normal growth in late preterm babies up to corrected age of 4 months.

Objectives:

1. The effect of *Abhynga* with dhanvantar tail in late preterm babies in detail.
2. To study role of *Abhynga* in late preterm babies.
3. To study guna, karma of coconut oil in detail
4. To study the guna, karma of Dhanvantar tail in detail.

➤ MATERIAL AND METHODS:-

▪ MATERIAL:-

1) Total 40 late preterm babies (prevalence 3.3%) delivered Bharati vidyapeeth (deemed to be university) college of Ayurveda and Hospital, Pune, India

2) Dhanvantar tail : preparation was done from GMP certified pharmacy according to standard process as mentioned in classical texts.

DHANANTAR TAILA⁴

INGREDIENTS: BalaMoola: 6 parts, Kshira : 6 parts, Tilataila : 1 parts, Yava, Ber, Kulthee, Dashmoola 1 part, Meda, Mahameda, Devdaru, Manjishta, Kakoli, Kshirkakoli, Chandan, Sariwa, Kusht, Tagar, Jivak, Vrubbhak, Saindhavlan, shilajeet, vacha, Agar, Punarnava, Ashwagandha, shatawari, Yashtimadhu, Triphala, Soya, Mashparni, Dalchini, Elaichi, TejPat-Kalk

- **Bala (sidacordifolia)** Gana: balya, brimhana, madhurskandha, prajastapan, Rasa - madhura, Guna – laghu, snigdha, picchila, Virya- shita, Vipaka- madhura, Doshaghanata – vata pitta har, tridoshashamak, balya. Karma- Vatvikar, Raktasthapana, Prajasthapana- promotes fetal health, Balya – strengthening of the body, Bhrihmaniya- strengthening and nourishment of the body⁵
- **Tilataila (sesamum indicum)**- Rasa - Madhur, Guna- guru, snigdha, sukshma, vyavahi, vishadha, Virya- ushna, Vipaka- madhura, it works as balya, sthairyakara, brimhana, deepana, shulaprashamana.⁵ Chemical composition- lipids, glycolipids, glycosides, sesamol, sesaminol etc. Resistance to oxidative deterioration is an excellent characteristic of sesame oil. Its remarkable stability is due to the presence of endogenous antioxidants sesaminol and sesamol. Glycolipids are most essential part of cell membrane for stability of cell. Massage of sesame oil helps to strengthen the bones, muscles, joints⁶
- **Godugdha** - Rasa- madhura, Guna – guru, snigdha, Vipaka : madhura, Virya: shita. Doshaghanata; balya, brihmana, rasyana, asthapan. It possesses ten properties- madhura, sita, mridu, snigdha, bahala, slakshna, picchila, guru, manda and prassana. It enhances ojas as qualities of cow's milk are similar to qualities of ojas, hence acts as rasayana as well as jivaniya

ABHYANGA (OIL MASSAGE)⁷

Benefits: Varnya: Oil Nourishes The Skin And Improves Kanti, Prabha, of The Skin And Helps To Maintain Snigdhta On Skin. It Improves Lustre And Smoothness Of Skin. Vatahar: Sneha Has Vatavirodhi Property Hence It Can Prevent Disease Caused By Prakupit Vayu And Also Maintain Proper Functions Of Vata. Pushtikar: It Nourishes All Dhatu Of Body And Thus Increases Mass And Strength Of Muscles. Bala Pradan : It Gives Strength To Muscles So It Is Balpradan To Body. Drushtiprasadan, Shramhar, Ayushyakar, Kleshahatwa, Aghatshatwa Are The Other Benefits Described In Ayurvedic Literatures

METHODS:-

This is an open randomized controlled clinical study

Total 40 cases divided into two groups as prevalence is 1.4%

1) Trial group.

2) Control group.

A) Trial group:-Abhyanga group.

Total 20 patients who were fulfilling inclusion criteria were selected randomly.

-Procedure was started from the day of discharge from NICU/from the 1st day of IPD.

-Proper consent was taken.

- Abhyanga was started on 1st day of IPD.

- Once in a day at morning in sunny day and time to prevent heat loss .

-Abhyanga given in draft free room.

-SPO₂ , temperature, respiratory rate, heart rate were monitored during abhyanga .

Abhyanga was given in anulomagati. 1st on head then chest then abdomen then upper limb then lower limb and then in back.

-Baby should not take any feed one hour before and one hour after Abhyanga

-If baby passes urine and motion during Abhyanga then cleaning will be done with tissue paper And Abhyanga was continued

-no other oil, soap, powder, application was done.

- In hospital ipd Abhyanga was given by Vaidya (SELF). Then After discharge the trained mother or relative would give abhyanga to the baby for period of two months.

B) CONTROL GROUP:-

Control group:-Total 20 patients were enrolled in this group for coconut oil Abhyanga.

Drugs and Doses:

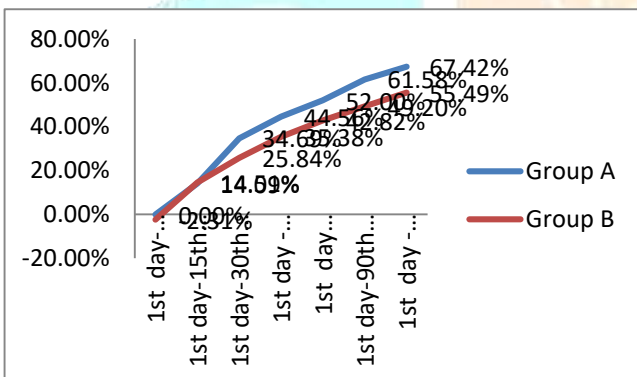
- 1) 10 ml-upto1 month, 15 ml of oil for 2nd month for Abhyanga.
- 2) Each Abhyanga was done up to 15minuts.
- 3) Luke warm Dhanvantar tail was taken for Abhyanga
- 4) Total duration is for 15min
- 5) Follow up daily when baby admitted in ipd and then on 10th 15th,30th,45th 60th 90th 120th day of life

SOURCE OF DATA

Source of data of late preterm babies 34.1 to 36.6 weeks in IPD were obtained from, department of pediatrics Bharati vidyapeeth(deemed to be university)college of Ayurveda and Hospital, Pune,india

OBSERVATION AND RESULT :

Comparison between Group A (Dhanvantar Taila)and Group B (Coconut Oil) on weight in late preterm babies.(Graph no.1)



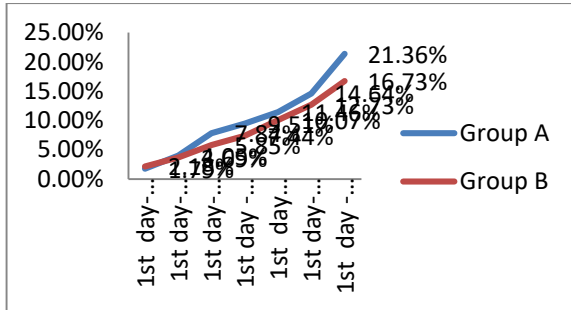
Weight	mean	t value	p value
Group A	6.645	8.76	0
Group B	4.965		

In Group A average birth weight 2.1 kg babies reached to 6.5 kg by the end of 4 months. I.e.4400 gm weight gain is observed in 4 month. In Group B average birth weight 2.22 kg babies reached to 5 kg by the end of 4 months. i.e. 2780 gm weight gain was observed in 4 months

As p value<0.05 we found that there was no statistical significant difference between Group A (Dhanvantar Taila)and Group B (Coconut Oil) on weight in late preterm babies .

But as percentage of improvement seen from above table we get percentage of improvement in Group A (Dhanvantar Taila)was more than Group B (Coconut Oil) on weight .Therefore we can say that Group A (Dhanvantar Taila)is effective earlier than Group B (Coconut Oil) on Weight in late preterm babies .

Comparison between Group A (Dhanvantar Taila) and Group B (Coconut Oil) on head circumference in late preterm babies (graph no.2)



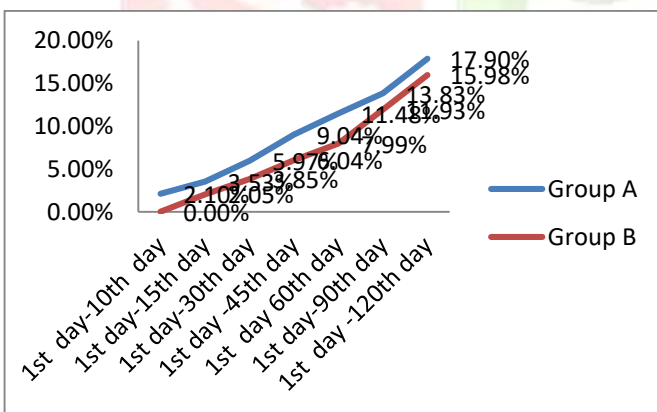
HEAD CIRCUMFERENCE	Mean	t value	p value
Group A	35.225	12.832	0
Group B	32.1		

In Group A average birth head circumference 29cm babies reached to 35.2 by the end of 4 months. I.e. 6.2cm increment in Head circumference is observed in 4 month. In Group B average birth head circumference 27.5cm babies reached to 32.1 cm by the end of 4 months. I.e. 4.2cm increment in head circumference was observed in 4 months.

As p value < 0.05 we found that there was no statistical significant difference between Group A (Dhanvantar Taila) and Group B (Coconut Oil) on Head circumference .

But as percentage of improvement is seen from above table we get percentage of improvement in Group A (Dhanvantar Taila) was more than Group B (Coconut Oil) on Head circumference .we can say that Group A (Dhanvantar Taila) is effective earlier than Group B (Coconut Oil) on head circumference in late preterm babies

Comparison between Group A (Dhanvantar Taila) and Group B (Coconut Oil) chest circumference in late preterm babies. (graph no.3)



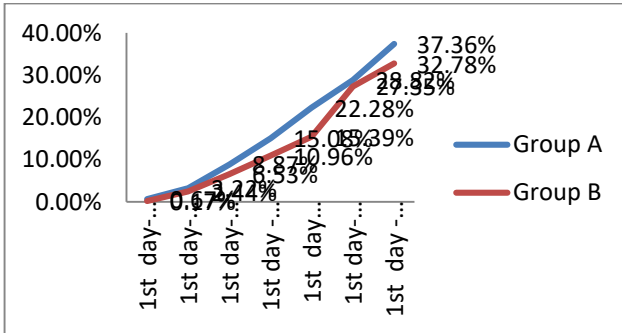
CHEST CIRCUMFERENCE	mean	t value	p value
Group A	32.6	12.329	0
Group B	29.4		

In Group A average birth chest circumference 27.7cm babies reached to 32.6cm by the end of 4 months. I.e. 4.9cm increment in Head circumference is observed in 4 month . In Group B average birth head circumference 25.35cm babies reached to 29.4 cm by the end of 4 months. I.e. 4.05cm increment in chest circumference was observed in 4 months.

As p value < 0.05 we found that there was no statistical significant difference between Group A (Dhanvantar Taila) and Group B (Coconut Oil)

But as percentage of improvement is seen from above table we get percentage of improvement in Group A (Dhanvantar Taila) was more than Group B (Coconut Oil) hence, we can say that Group A (Dhanvantar Taila) is effective earlier than Group B (Coconut Oil) on chest circumference in late preterm babies.

Comparison between Group A (Dhanvantar Taila) and Group B (Coconut Oil) on length in late preterm babies. (graph no.4)



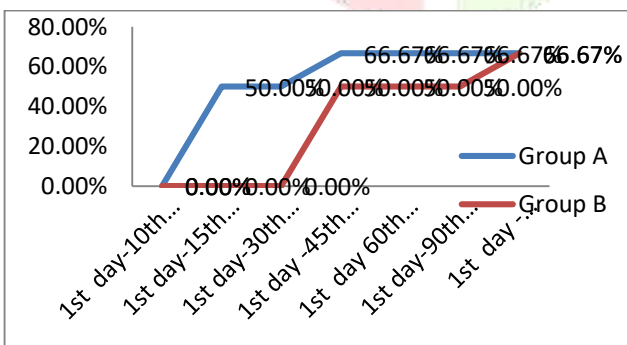
LENGTH	Mean	t value	p value
Group A	61.95	4.598	0
Group B	59.95		

In Group A average birth length 45.1cm babies reached to 62cm by the end of 4 months. I.e. 16.9cm increment in length is observed in 4 months. In Group B average birth height 45.15cm babies reached 59.95 cm by the end of 4 months. i.e. 14.8cm increment in length was observed in 4 months.

As p value < 0.05 we found that there was no statistical significant difference between Group A (Dhanvantar Taila) and Group B (Coconut Oil)

But as percentage of improvement seen from above table we get percentage of improvement in Group A (Dhanvantar Taila) was more than Group B (Coconut Oil) we can say that Group A (Dhanvantar Taila) is more and effective earlier than Group B (Coconut Oil) on length in late preterm babies.

Comparison between Group A (Dhanvantar Taila) and Group B (Coconut Oil) on SLEEP in late preterm babies. SLEEP in late preterm babies. (graph no.5)

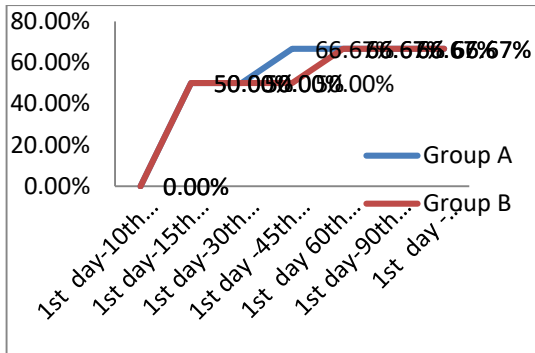


SLEEP/24HRS	Mann-Whitney U	Z	p value
Group A	200	0	1
Group B			

As p value > 0.05 we found that there was statistical significant difference between Group A (Dhanvantar Taila) and Group B (Coconut Oil)

But as percentage of improvement seen from above table we get percentage of improvement in Group A (Dhanvantar Taila) was more than Group B (Coconut Oil).

Comparison of Group A (Dhanvantar Taila) and Group B (Coconut Oil) on wakefulness in late preterm babies. (graph no.6)



WAKEFULNESS	Mann-Whitney U	Z	P value
Group A	200	0	1
Group B			

As $p \text{ value} > 0.05$ we found that there was statistical significant difference between Group A (Dhanvantar Taila) and Group B (Coconut Oil)

But as percentage of improvement seen from above table we get percentage of improvement in Group B (Coconut Oil) was more than Group A (Dhanvantar Taila) we can say that Group B (Coconut Oil) is early effective than Group A (Dhanvantar Taila) on wakefulness in late preterm babies.

Discussion :

Anthropometric measurements leads to physical growth i.e. weight, length, head circumference, chest circumference. Abhyanga (massage) with Dhanvantar tail showed more effect on physical growth as compared to coconut oil abhyanga (massage). Dhanvantar tail contains major part of Bala which is guru in guna. as well as Dhanvanatar tail contains jeevaniya gana i.e. meda, mahameda which are snighda, guru in guna. Dhanvantar tail is a composition of many drugs which have properties of *balya*, *brihaniya*, *pushtikar*, *jivaneeya* and *vatahara*. Abhyanga with dhanvantar tail showed more increase in weight, length, head circumference, chest circumference when compared to abhyanga with coconut oil. 6 parts of godugdha and bala present in dhanvantar tail, due to its madhur ras, madhur vipak, sheeta virya, guru, snigdha, picchila gunas & has helped in increasing the physical parameters.⁸

In classical texts Acharya said that, the drayas which bring about bruhan of the body are guru gunas. Hence, guru guna dravyas of dhanvantar taila helps to bruhan (nourishment) of body.⁹

Due to Snigdha guna various parts of the body like skin become moist and unctuous. Snigdha guna is the exclusive property of jala mahabhoota. Snigdha guna relieves vata and increases kapha which has a similar tendency. Snigdha guna strengthens all the dhatus and helps to bruhan karma of body.

Jeevaniya gana dravyas – i.e. kakoli, kshirkakoli, meda, maha meda, mudgaparni, mashparni, jeeak, rushbhak, yashtimadhu are Rejuvenating and restorative in properties. They acts as rasayana on mansa, meda, asthi, and shukra dhatus. which ultimately showed positive effect on physical growth of late preterm babies.¹⁰

A Study which was titled effect of oil massage on growth and neurobehavior in very low birth weight preterm neonates from Department of Pediatrics, Maulana Azad Medical College and Associated Lok Nayak Hospital, New Delhi was done in three groups a) massage with coconut oil (b) massage without oil and (c) no massage indicates that, in group A which was massage with oil showed the improved weight gain was probably due to oil absorption as the weight gain in the only massage group was no different from controls. The mechanism by which cutaneous application of oil improves weight gain is unclear. The early trials on use of cutaneous application of oil for reversal of essential fatty acid deficiency in neonates receiving total parenteral nutrition have documented its absorption and beneficial effect. Hence it is proved that oil application in neonates' leads to weight gain.¹²

C.sleep and wakefulness:

Massage therapy, which causes compression of soft tissue, may counteract negative effects of stress and sleep deprivation by providing tactile-kinesthetic stimulation and increasing parasympathetic (vagal) activity. This may result in stress reduction and is calming for infants. Massage reduces stress hormones, and this in turn may indirectly affect sleep.¹³ Hence both group A and group B shows positive effect on sleep and wakefulness but group A (dhanvantar tail) shows early positive effect on sleep and wakefulness, as it contains of sesame oil, godugdha, jeevaniya gan drayas which are vatshamak, sthairyakar in properties than coconut oil.

Conclusion:

The logical conclusion drawn on basis of discussion was as follows:-

- Massage therapy is considered a safe practice and there are no significant harmful effects, if performed in the traditional method by a trained person.
- Dhanvantar tail due to its brihaniya, vatahara, jeevaniya, and rasayana properties has shown to be positive effect on physical growth parameters such as weight, length, head circumference, chest circumference after Dhanvantar tail massage.
- Coconut Oil also gives nourishment to body of late preterm and shows positive effect on physical growth in late preterm babies.
- Massage reduces stress hormones, and this in turn may indirectly affect sleep. Hence both group A and group B shows positive effect on sleep and wakefulness but group A (dhanvantar tail) shows early positive effect on sleep and wakefulness, as it contains of til taila, dashmoolas, godugdha, jeevaniya gan drayas which are vatshamak, sthairyakar in properties than coconut oil.
- Coconut Oil also gives nourishment to body of late preterm and shows positive effect on physical growth in late preterm babies.

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13. Preterm infants show reduced stress behaviors and activity after 5 days of massage therapyAuthor links open overlay panelMariaHernandez-Reif^aMiguelDiego^aTiffanyField^{ab}touch Research Institute, University of Miami School of Medicine, United States Fielding Graduate University, United States