



Review Article

ROLE OF NINTH MONTH *GARBHINI PARICHARYA* AS PARTUS PREPARATORY FOR EASY AND SAFE DELIVERY: A CRITICAL REVIEW

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ABSTRACT

Pregnancy is women’s crowning creative experience of lifetime. Giving birth is an ecstatic, jubilant adventurous experience which brings a new life to the world. Pregnancy and labor have been an essential part of human existence for millennia but unfortunately the experience has not been so easy for all women. Every new mother aspires that end of this beautiful journey should be safe, smooth and comfortable with minimum pain, agony and aids. The well established Bishop’s score (BS) is most important criteria for assessment of cervix with a BS of 6 or less indicating an unfavorable cervix and a score of 8 or more a favorable one. On screening the *Garbhini paricharya* regimen specially month wise regimen mentioned in Ayurveda classics, it was found that, this regimen is highly scientific in terms of modern medical science for birth preparedness or to achieve *Sukhprasava*. From ninth month onwards, Acharya has mentioned to give *Anuvasan basti* i.e., medicated enema of oil medicated with *Madhura skandha* drugs along with *Yoni Pichu* (vaginal tamponing) of same oil. Therapies advised in the form of *Anuvasana basti* and *Yoni pichu* have potential of inducing effective cervical ripening (favorable Bishop’s score), efficient myometrial activation required for the onset of labour by virtue of its essential fatty acids, phytoestrogens and flavanoid content. So, it is high time to pave way towards Ayurveda and adopt holistic safe birth preparedness procedures for easy parturition and healthy obstetric outcome.

INTRODUCTION

Pregnancy is women’s crowning creative experience of lifetime. Giving birth is an ecstatic, jubilant adventurous experience which brings a new life to the world. Pregnancy and labor have been an essential part of human existence for millennia but unfortunately the experience has not been so easy for all women. Every new mother aspires that end of this beautiful journey should be safe, smooth and comfortable with minimum pain, agony and aids. It is well established that Bishop’s score (BS) is most important criteria for assessment of cervix with a BS of 6 or less indicating an unfavorable cervix and a score of 8 or more a favorable one^[1].

Poor Bishop’s score has been labelled as major predictor for likelihood of caesarean section^[2]. As per NFHS-5 in 2019 -2020, rate of caesarean section in India has worsen upto 21.5% and is a matter of international concern to avoid its long term health risks^[3]. In modern era, although there is wide range of chemical products like oxytocin, prostaglandins for cervical ripening and initiation of labour but with lot of side effects. According to NICE Guidelines for induction of labour, induced labour has been said to be more painful for women^[4]. Likewise, the institute of safe medicine practices labelled Oxytocin a ‘High Alert medications’ because of high likelihood of significant patient harm when it is used in error^[5]. On the other hand, since time immemorial, Ayurveda- an ancient scientific system of medicine has given great emphasis on safe motherhood and has described Antenatal care in the form of *Garbhini paricharya* to fulfil the dual goal of easy parturition and healthy progeny. During past decade public interest in natural therapies is increasing both in developing as well as developed

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countries. Alternative to synthetic chemical products for initiation of labour, many herbs are available in Ayurveda literature used to address the difficulties and complications of these biological processes and to better prepare the expectant mother for pregnancy, delivery and lactation. Specific month wise antenatal care (*Garbhini paricharya*) regimen has been described in Ayurvedic text for nine months of pregnancy and has specified the use of *Anuvasan basti* (oil based enema) and *Yonipichu* (vaginal tamponing) of oil prepared with the drugs of *Madhur* group during ninth month of pregnancy as a partus preparator for the sake of natural and safe vaginal delivery^[6]. Various clinical studies have been conducted so far to evaluate the efficacy of regimen and have shown encouraging results in terms of favourable Bishop's score, spontaneous onset of labour, reductions in duration of labour and natural termination without any complication^[7]. So, here an effort has been made to review these therapies and medicated oil for their physiochemical properties as per Ayurvedic and modern perspective so as to establish their role as partus preparator for the sake of easy and safe vaginal delivery.

AIM AND OBJECTIVE

1. To find out an effective partus preparatory for initiation of labour.
2. To promote the use of herbal agents for easy and safe delivery.
3. To minimize the pain and agony of labour.
4. To decrease the rate of operative delivery due to poor Bishop's score.

MATERIALS AND METHODS

Source of data: All the information regarding these drugs was collected from ancient compendiums, relevant contemporary text books of Ayurveda, modern text books, internet, related journals, research and review articles, Ayurvedic Pharmacopeia of India, Books on Dravyaguna, modern books of pharmacology and from previous research work on these drugs.

Review on Madhura Skandha Drugs

Acharya Charak has mentioned to use oil medicated with drugs of *Madhura skandha* mentioned in *Charak vimana sthana* under *Shadrassa skandha*^[8]. Drugs having predominantly *Madhura rasa* (sweet taste), *Madhura vipaka* (final transformation of drug) and *Madhura prabhava* (can produce specific action similar to *Madhura rasa* and *Vipaka*) are included under *Madhura Skandha*. In total 85 drugs are mentioned out of which 68 are botanically identified, 14 are unidentified and 3 drugs found to be controversial. Among them, 56 drugs are *Madhura rasa* dominant, 53 are *Madhura vipaka* dominant and 18 are categorized under *Madhura prabhava* and all are

capable of attributing functions like *Jeevneeya* (invigorating), *Preerana* (soothing), *Balya* (promotes strength), *Brihmana* (nourishing), *Rasayana* (anti-aging), *Vrishaya* (aphrodisiac) due to their *Tridosha-shamak*, *Vata anulomaka Snigdha* (unctuous) and *Guru* (heavy) *Guna*. Recent researches show that they have antioxidant, immunomodulatory, cytoprotective, anti-inflammatory, antimicrobial properties^[9].

Considering the crucial role of *Vata* in conception till delivery, all the diet and life style advised for pregnant woman are mainly *Snigdha*, *Ushan*, *Brihanam* which helps in maintaining the fine equilibrium of *Vata* and hence its proper functioning. Normalcy of *Prasuti maruta* including both *Apana vayu* responsible for *Garbha-nishkramana* (expulsion of fetus) and *Vyana Vayu* responsible for *Prasarana-akshepa* (contraction and relaxation of uterus) lay the groundwork for culmination of labour into *Sukhprasava*^[10]. *Madhura sakandha* drugs have *Vaatahamaka*, *Vatanulomaka* properties due to which it maintains *Vayu* in normalcy thereby help in natural expulsion of fetus termed as *Prakrita* or *Sukha prasava*. *Madhura rasa* having *Prithavi* and *Jala mahabhuta* predominance does the *Pushti* of same *Mahabhuta*. So, acts as *Balya*, *Brihana* and provides strength to *Manasa dhatu*. Thus, administration of *Madhura skandha* medicated oil *Anuvasana basti* causes *Vata anulomana* (especially of *Vyan* and *Apana vayu*), increases *Snigdha* in the mother's body parts like abdomen, flanks, sacrum and perineal area due to *Snigdha*, *Guru guna*s of oil. *Snigdha guna pradhanata* of drug alleviates *Sthanik rukshata*, lubricates *Yoni marga*. Oil due to its *Sukshama* properties reaches every cell or channel of the body and nourishes them. Due to *Balya* and *Brimhaneeya* properties of oil, it provides strength to the *Maanspeshi* of *Garbhashaya* and *Yoni*.

Review on Treatment Therapies

Basti is the prime treatment modality for vitiated *Vata dosha*. *Anuvasana Basti* by its *Sneh guna* counter the *Rukshata* in the *Pakvashaya* and performs *Anulomana* of *Vata dosha*. *Veerya* of the *Basti* administered in the *Guda* circulates throughout the body and nourishes all the *Dhatu* and organs of the body as *Guda* is *Mula* for all *Siras* in the body thereby eliminates the vitiated *Doshas* from all over body as water poured in roots of a plant reaches upto leaves^[12]. Similarly, *Basti dravya* reaches up to *Grahani* by *Sukashma strotasa* and stimulates *Jatharagni*, alleviates *Vata dosha* and provides strength to uterine musculature and perineum to withstand the strain of labour.

Yoni Pichu (sterile cotton swab soaked in medicated oil) performs the function of *Snehana* (lubrication), *Vishyandana* (fluidity) and *Mardavta*

(softness) thereby lubricates the vaginal passage and also enhances *Bala* and *Tanutva* so that stretch-ability of vaginal and perineal tissue increases.

DISCUSSION

Labour is the most perilous journey a woman has to undertake. Human Labour does not involve a simple on-off mechanism but needs considerable preparation during the pre-labour phase. Cervical ripening with an increase in the formation of gap junctions and an increase in myometrial excitability along with inflammatory amplifications lay the groundwork for labour onset. Pre-labour changes start few weeks before the actual commencement of labour and represent significant period in human parturition. Labour onset involves very complex physiology characterized by cervical ripening, membrane activation and myometrial excitability. Cervical ripening is the process by which cervix becomes soft, compliant and partially dilated due to combination of biochemical, endocrine, mechanical and possibly inflammatory events. On the other hand, in myometrium switch from state of relative quiescence stage during pregnancy to a muscle which is spontaneously active and highly sensitive to action of endogenous uterotonins during labour is termed myometrial activation. Progesterone and estrogen are the key hormones to play role in maintenance of pregnancy and initiation of parturition by modulating their levels. Although studies have reported that there is no apparent change in level of progesterone and estrogen during labour and instead if these alterations, progesterone withdrawal and estrogen activation are mediated by changes in responsiveness of myometrium to progesterone and estrogen. Target tissue responsiveness of myometrium to estrogen and progesterone is principally controlled by amount and type of cognate receptors. Transformation of pregnant myometrium from quiescent to contractile state involves decrease in its responsiveness to progesterone and increase in responsiveness to estrogen via increased expression of ER-alpha and ER-beta. Studies have reported that ER-beta is expressed in higher quantity in human myometrium and cervix and heralds an alteration in estrogen progesterone ratio which further induces synthesis of oxytocin, its receptors and also stimulates prostaglandins release resulting in gap junction formation, decrease in resting membrane potential of myometrial cells thereby enhanced excitability and cervical ripening that jumpstarts labour^[13]. Studies have also reported that, inflammatory amplification due to localized paracrine interactions in intrauterine space is an essential component of uterine transition for labour^[14].

On screening the *Garbhini paricharya* regimen specially month-wise regimen mentioned in Ayurveda classics. It was found that, this regimen is highly scientific in terms of modern medical science for birth preparedness or to achieve *Sukhprasava*. From ninth month onwards, Acharya has mentioned to give *Anuvasan basti* i.e., medicated enema of oil medicated with *Madhura skandha* drugs along with *Yoni pichu* (vaginal tamponing) of same oil. Acharya have also emphasized on taking ample amount of *Ghrita* in daily diet during this month. On critical analysis of physiochemical properties of oil and *Ghrita*, it seems that *Ghrita* and sesame oil are rich source of omega-6 fatty acids specially Linoleic acid^[15]. It is scientifically evident that essential fatty acids give rise to downstream molecules after complete metabolism via a series of de-saturation and elongation steps to arachidonic acid (AA) which further modulates function of ion channels and also gives rise to specific pro-inflammatory prostaglandins and leukotrienes which in turn activate inflammatory cascade locally via G-Protein coupled receptors to recruit neutrophils and regulate platelet aggravation thereby help in cervical ripening^[16].

On the other hand, all herbs of *Madhura skandha* contain phytoestrogens which are hormonally active plant derived chemicals having structural similarity to 17-beta estradiol and have higher binding affinity to ER-beta than ER-alpha and further activate ER dependent gene transcription^[17]. Ligand (phytoestrogen) binding to these membrane receptors causes rapid and transient activation of second messenger pathway such as increased intracellular Ca or cAMP levels results in stimulation of signal transduction pathways important for neuronal signaling^[18]. Here also, activation of Estrogen receptor-beta by phytoestrogens may initiate neuronal signals resulting in gap junction formation which further makes myometrial cells excitable which is a pre-requisite for onset of labour. Studies postulate that phytoestrogens also stimulate both PGF2-alpha and PGE2 receptors in bovine endometrium via an ER-dependent genomic pathway so also modulate prostaglandin production which further causes cervical ripening through collagenolysis^[19].

Apart from this *Guduchi* and sesame seeds also contain ample source of calcium and calcium is the key factor in muscle contraction. Here, High extracellular content of medicated oil increases cervical cell permeability and provide good amount of calcium for internalization^[20]. Also, Ricinolic acid present in *Ricinus communis* is selective agonist of EP3 and EP4 prostanoid receptors^[21]. EP3 receptors are PG receptors for prostaglandins E2 (PGE2) which mainly act on cervix due to their collagenolytic property.

Maximum drugs of *Madhura skandha* contain flavanoids, glycosides especially saponins which interact with membrane cholesterol to form pores in cell membrane, thus making it permeable for influx of neutrophils^[22], calcium ions causing collagenolysis. Saponins are also amphipathic in nature, so act as hydrophilic compounds therefore imbibe water and cause cervical softening.

Basti given through rectal route stimulates Gut-Brain axis. In enteric nervous system, 30 neurotransmitters are found, which are identical to neurotransmitters found in CNS such as acetylcholine, dopamine, serotonin etc. As per Acharya Charak regulation of *Apan vata* is linked to the functioning of *Pran vata* which further influences functioning of *Vyan vata*. Here, *Prana vata* signifies the higher centres of brain which through neuroendocrinal stimulation controls neuromuscular coordination of target organs. So, *Basti dravya* administered in gut stimulates myentric plexus and submucosal plexus which further carry information through neurotransmitters to brain and from brain neuronal signals are transmitted to sensitize the myometrium for activation^[23]. *Pichu* therapy lubricates the whole vaginal canal and also makes perineal muscles soft and smooth. It also enhances *Bala* and *Tanutva* so that their stretchability increases. Daily insertion of *Pichu* in the ninth month of pregnancy causes stretching and irritation of cervix leading to production of prostaglandins which enhance gap junction formation and thereby initiates labour. The Ferguson Reflex i.e., mechanical stretching of cervix due to *Pichu* application initiates paracervical ganglion to carry the afferent impulses to the inferior mesenteric ganglion which synapses in the dorsal horn before ascending to brain in the anterolateral column. Then, via median forebrain bundle, the efferent reaches the paraventricular nuclei and supraoptic nuclei of hypothalamus which stimulates posterior pituitary to release oxytocin for further initiation of labour^[24]. In nutshell, whole ninth month regimen is playing important role in preparation of cervix and myometrium through a series of increasing paracrine interactions involving both contractile and immune pathways for culminating into easy and safe parturition.

CONCLUSION

Garbhini Paricharya (antenatal care) is one of the major pillars to reduce maternal and neonatal complications during pregnancy as well as during parturition. *Sukhprasav* has been mentioned as major goal of *Garbhini paricharya* in Ayurveda and specific drugs and therapies including *Anuvasana basti* and *Yoni Pichu* have been advocated to achieve this goal. As, now a days, due to poor Bishop's score, rate of cesarean section is increasing at greater pace and is

associated with short and long term potential health risks. Therapies advised in the form of *Anuvasana basti* and *Yoni pichu* have potential of inducing effective cervical ripening (favorable Bishop's score), efficient myometrial activation required for the onset of labour by virtue of its essential fatty acids, phytoestrogens and flavanoid content. So, it is high time to pave way towards Ayurveda and adopt holistic safe birth preparedness procedures for easy parturition and healthy obstetric outcome.

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