

## A PHYSIOLOGICAL STATUS OF APANA VATA IN GARBHA NISHKRAMANA (PARTURITION) – REVIEW ARTICLE

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### ABSTRACT

The aim of Ayurveda science is to keep healthy people well and heal sick people. Ayurveda, the science of life, is based on the fundamental theory called the *Tridosha* theory. *Tridosha* is derived from the Sanskrit word's *Tri* and *Dosha*, which mean three vitiated factors. These three *Doshas* operate on a variety of scales, including the cellular, individual system, and organisational levels. Given that it begins and controls all functions, *Vata* has the greatest influence on these three *Doshas*. It is also in charge of all kinds of movements. All *Dhatus* and *Malas*, including *Pitta* and *Kapha* are ineffective, like a lame person. When *Vata* is active, it moves regarding. They were transported away from their place by the active *Vata*. *Vata* stimulates the digestive fire, assists in the absorption of the *Doshas* and the removal of the excretory products, and is the cause of pleasure and fearlessness. *Vata* moves via all gross and microscopic pathways, determines how an embryo develops, and is a sign of persistent life. The five different kinds of *Vata Doshas* are *Prana*, *Udana*, *Samana*, *Vyana*, and *Apana*. The elimination of these substances - *Samirana* (flatus), *Sakrit* (faeces), *Mutra* (urine), *Sukra* (semen), *Garbha* (foetus) *Nishkramana* and *Artava* (menstrual fluid) *Nishkramana* is significantly influenced by *Apana Vata*. Pregnancy is a stunning segment of each woman's life. Parturition is the principal occasion in a woman's life. So, the higher information about its idea in Ayurveda as well as in modern science may be very essential.

**Key words:** Tridosha, Apana Vata, Mechanism of Labor, Garbha Nishkramana, Artava Nishkramana.

## INTRODUCTION

Vata is derived from the root word "Va" meaning movement<sup>1</sup>. Synonyms of Vata are *Mrutyu, Yama, Niyama, Prajapati, Aditi, Vishwakarma, Vishwaroopa, Sarvaga*<sup>2</sup>. *Panchabhoutikatva* of Vata is *Vayu* and *Akasha Mahabhoota*<sup>3</sup>. *Sthanas* of Vata are *Pakwashaya, Kati, Sakthi, Shrotham, Sparshanam,* and *Vishesha Sthana* is *Pakwashaya*<sup>4</sup>. The *Gunas* of Vata are *Rooksha, Laghu, Sheeta, Khara, Sookshma, and Chala*<sup>5</sup>. *Prana, Udana, Samana, Vyana,* and *Aapan* are the types of Vata. *Prana Vata* maintains proper functions of *Buddi, Indriya,* and *Chitta* performs functions such as sneezing, belching, respiration, and eating. The *Udana Vata* function includes speech, enthusiasm, energy, strength, complexion, and memory *Vyana Vata* function includes all body movements, such as rapid movements, flexion, extension, closure, and opening of eyelids. *Saman Vata* receives food from digestive tract, digests it, and separates the essence from excrements and liberates them to their respective pathways. *Apana Vata* is concerned with the expulsion of *Shukra, Aarthava, Shakruth, Mutra,* and *Garbha*<sup>6</sup>. The term *Garbha Nishkramana* is meant for parturition which means birth of baby. In the end of pregnancy, the uterus develops strong rhythmic contraction that the baby is expelled. There are two factors that cause uterine contraction.

A. Hormonal factor

B. Mechanical factor.

The enhanced uterine contractility is caused in part by an increase in the oestrogen to progesterone ratio at the conclusion of the pregnancy. Stimulation of the hypothalamic paraventricular nuclei induces the neurohypophysis to produce oxytocin hormone, which promotes uterine contraction. The pituitary gland of the foetus secretes oxytocin, which is vital in uterine stimulation. Adrenal gland of the foetus secretes a considerable amount of cortisol, which aids in uterine stimulation. Prostaglandins are released by the foetal membrane, which increases the intensity of uterine contraction. Smooth muscle organs' contractility rises

when they are stretched. Smooth muscle contraction can occur as a result of intermittent stretch caused by foetal movement. Stretching or irritation of the nerves in the uterine cervix induces a reflex to the uterine body, resulting in uterine contraction. As the pregnancy progresses, uterine contractions grow more intense. It promotes cervical stretching, which propels the baby into the birth canal, resulting in parturition. After the baby is born, the uterus continues to contract to a smaller size, prompting removal of the placenta from the uterine walls and separation of the placenta from its implantation site<sup>7</sup>.

## MATERIAL-METHOD

- To find references on *Apana Vata*, we studied *Samhita* like *Charaka Samhita, Sushrut Samhita, Kashyapa Samhita* etc. for this study.
- Related modern textbooks are also referred to understand some concepts like Stages of Labor, Parturition and Neuroendocrine system etc.

God's creation of women is the only one that is capable of giving birth and reviving the planet. Parturition is the principal occasion in a woman's life, where the journey of motherhood starts, and labor is the most critical stage in it. As per *Acharya Kashyapa* "when women in labor, at every moment there will be a fear of death to the mother, so it is mentioned that her one leg lies in this loka and one in Yamaloka"<sup>8</sup>. *Acharya Charaka* clearly mentions the "*Parivruttyavakshira*" (internal rotation) and "*Nishkramataphyapathena*," which means the expulsion of *Sirah* through the birth canal, which is the most critical part of labor, can't be succeeded without the influence of *Apana Vata*. The same *Apana Vata* helps in maintaining pregnancy by holding the foetus until term. *Vaikruthaapanavata* can lead to *Garbhasanga, Muda garbha,* and conditions like *Apara sanga*<sup>9</sup>. The lower part of the body, particularly the lower abdomen and pelvic cavity, is where *Apana Vata* is found. *Apana Vata* is the energy of the *Muladhara Chakra* and is related to *PrithviMahabhoota*. The foetal head twists and moves forward before being evacuated through the vaginal

canal when regular labor begins as a result of *Prasutimarutha*. Because *Apana Vata* actively participated in delivering the fetus during labor, *Apana Vata* is known as *Prasuthi Marutha* due to this involvement<sup>10</sup>.

A series of events taking 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<sup>11</sup>. *Garbha Nishkramana* also known as *Prasava*.

**Prasava Avasthas (Stages of Labor):**

All *Acharyas* explains different stages of labor in their own aspects. Probable stages of labor in modern science can be correlated with respect to stages of labor told by different *Acharyas* as given below<sup>12</sup>.

Table 1 *Prasava Avasthas* (Stages of Labor)

S.No.	Acharyas	Term mentioned in classics probable stage of labor	Probable stage of labor
01	<i>Sushruta &amp; Bhavprakasha</i>	<i>Prajayini / Prasavotsuka</i>	Prelabour stage or just beginning of 1st stage or Premonitory stage
02	<i>Charaka, Vagbhata, Kashyapa, Bhela</i>	<i>Prajananakalabhimata / Asannaprasava</i>	1st stage of labor
03	<i>Sushruta &amp; Bhavprakasha</i>	<i>Upasthitaprasava</i>	End of the 1st stage/ beginning of 2nd stage
04	<i>Charaka, Vagbhata, Kashyapa</i>	<i>Parivartithagarbha</i>	2nd stage of labor
05	All <i>Acharyas</i>	<i>Apara Pathana</i>	3rd stage of labor

Uterine contractions are powered by the uterine pacemaker. Uterine contractions are globally coordinated by synchronization of uterine pacemaker activities via bioelectrical-biomechanical (mechano transduction) signaling mechanism. During a contraction of human labor, many widely distributed pacemakers initiate local action potentials, which in turn locally recruit myometrium for participation in the contraction<sup>13</sup>.

**Dharana Karma:**

The fetus continuously grows in the womb up to full term and then, naturally, it is delivered. The *Dharana Karma* of *Apana Vata* is responsible for the normal retention of the fetus in the womb for a certain period, viz., as up to 10 months (minimum 9 months), while *Acharya Sushruta* is given a minimum time limit of 9 months and a maximum of up to 12 months. During this antenatal period, besides retaining the fetus, the balanced *Apana Vata* also results in the growth of division by cellular divisions and moulding the shape of divisions while an imbalanced one leads to morbidity of fetus, e.g., desiccation and reduced growth of fetus, leading to post maturity. Hence, balanced *Apana Vata* holds the fetus until it

becomes full term and during this period bestows the fetus with optimum growth and development.

**Nishkramana Karma (Parturition):**

Ancient *Acharya* a explained the expulsion or delivery of a fetus in due time through the *Nishkramana Karma* of balanced *Apana Vata*. When the descent of fetus occurs, pain in the pelvic region appears indicating the impending labor. At the time of delivery, there is pain all over the waist and back, frequent disappearance of faeces and urine and also discharge of mucus from the vagina. This pain along with bearing down efforts is mainly helpful in delivery of the fetus. *Acharya* has given tremendous importance to the labor pain so as to instruct the mother to strain to achieve uncomplicated delivery of the fetus. They have regarded this pain as *Prasutimaruta* as it aids the delivery of baby which is none other than *Apana Vata*. The precise mechanism of labor is obscure in modern literature. The theories of contemporary science supporting the ancient sage’s wisdom regarding the onset and progress of labor are here as under:

a. Uterine distension: - It explains the stretching effect on the myometrium because of the growing size of the fetus and the liquor amni triggers the estrogen induced  $\alpha$  receptors of the postganglionic nerve fibres

in and around the cervix and the lower part of the uterus.

b. Ferguson reflex: - Stretching or irritation of the cervix causes the entire body of the uterus to contract and these weak contractions trigger a neurogenic reflex through the paraventricular and supra optic nuclei of the hypothalamus that causes the posterior pituitary gland to secrete more oxytocin which intensifies the uterine contractions. As the fetus is moving towards the cervix by vigorous contractions of the uterus, stimuli from the cervix spontaneously secrete more quantities of oxytocin, which causes each succeeding contraction to be greater than the preceding contraction<sup>14</sup>. This positive feedback initiates a vicious cycle which proceeds to completion of labor. Uterine contractions are the mainstay for the onset, progress and completion of labor. The nature and course of these contractions resemble more or less the *Avi* caused by *Prasutimaruta* by the Ayurveda scholars. Throughout pregnancy there is a rhythmic involuntary spasmodic uterine contraction (Braxton Hicks contractions), which are painless and have no effect on dilatation of the cervix. This can be explained as the normal *Vata* activity (*Dharana* effect of *Vata*) on the uterus throughout pregnancy. The character of contractions changes with the onset of labor, i.e., become more powerful and intermittent and are associated with pain in hypogastrium, thighs and back (*Sashulajaghane*). The cause of pain is stretching of the structures adjacent to the uterus, including neighbouring ganglia or ischemia. Simultaneously, retraction of the uterine contractile system occurs. This contraction and retraction lead to formation of the lower uterine segment and dilatation and effacement of helps cervix, aids in the descent of helps part of fetus and thus helps in the ultimate expulsion of fetus. Thus, delivery of the fetus is accomplished by the downwards thrust offered by uterine contractions (*Avi*) supplemented by voluntary contraction of abdominal muscles called bearing down efforts features *Pravahana*) against the resistance offered by bony and soft features of the birth canal<sup>15</sup>.

## DISCUSSION

*Dharana Karma Apana Vata* is responsible for normal maintenance of the fetus in the womb for a certain period of time. *Acharya Charaka* limited this period to 10 months (minimum 9 months), while *Acharya Sushruta* gave a minimum time limit of 9 months and a maximum of 12 months. An abnormal state of *Apana Vata*, i.e., prolonged action of *Dharana* beyond the prescribed time limits, leads to post maturity of the fetus. A balanced *Apana Vata* maintains the foetus until it becomes full term and during this period provides the foetus with optimal growth and development. Labor pain initiated by *Apana Vata* along with downward effort (*Avi*) helps mainly in the delivery of the fetus. *Acharyas* attached great importance to labor pains to instruct the mother to exert herself to achieve an uncomplicated delivery of the fetus. They considered this pain as *Prasutimaruta* because it helps in childbirth, which is nothing but *Apana Vata*. Hypotheses regarding the causes of the initiation of labor include two theories, i.e. the uterine distension theory, in which the stretching effect on the myometrium by the increasing size of the fetus and amnion is triggered by estrogen-induced  $\alpha$  receptors of the postganglionic nerve fibres in and around the cervix and lower part of the uterus, and the Ferguson reflex theory, in which stretching or irritation of the cervix causes the entire body of the uterus to contract, and these weak contractions trigger a neurogenic reflex through the paraventricular and supraocular nuclei of the hypothalamus, which causes the posterior pituitary to secrete more oxytocin, which increases uterine contractions, supporting ancient sage wisdom regarding the onset and progression of labor. These contractions are the basis for the beginning, progress and completion of labor.

## CONCLUSION

A woman's life will change during labor, so it is important to take good care of her at this time. Because labor is now handled by conventional medicine with certain interventions like Yoga and Ayurveda in prenatal care, the common people are less familiar with the well-defined description of labor and its

management in Ayurveda. By assessing the whole understanding of *Prasava*, or the work described in the Ayurvedic shastra, the same may be included as an addition in future studies to make it evidence-based and also to support the science's veracity via study. *Apana Vata* does the *Garbha Nishkramanakriya*, and *Vyana vata* performs the *Garbha Dharana Karma*, according to Ayurveda. This research provides thorough information regarding labor and aids medical professionals in providing it.

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