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Shadgarbhakara Bhavas: Scientific Explanation and its Research Potential w.s.r to Matrija and Pitruj Bhavas

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Abstract: *Shadbhava Samudaya or the six procreative factors explained in Ayurveda gives evidences of the theory of inheritance and the importance of physical, mental, social and economic status of the mother as well as the father before conception i.e. during the pre-conceptual period as well as during the pregnancy time. Here the study emphasizes to see the importance of Matrija and Pitruj Bhavas in Garbho-tpathi along with the role of Vayu in the formation and development of Garbha as well as in the destruction of Garbha. Matrija Bhava not only provides shelter and nutrition to the offspring but also forms soft organs of the fetus. The intrauterine environment is a delicate phase for both mother and offspring. Actions of and around pregnant females can affect the offspring positively or negatively. These actions may be dietary, recreational, emotional, etc. The study also peeks in to the modern aspect of causes of miscarriages due to maternal and paternal factors and correlate with the involvement of vitiated Vata leading to miscarriage or pregnancy loss.*

Keywords: *Matrija Bhava, Pitruj Bhava, Vayu Mahabhuta, Shukra, Shonit, Epigenetics.*

I. INTRODUCTION

The systematic illustration of Garbha Sharir in Samhitas, is evidence of ancient science advancement. The embryogenesis described by Ayurvedacharya caters us to the knowledge that four factors i.e. Ritu, kshetra, Ambu and Bija are the essential raw ingredients for the formation of Garbha but afterward the organogenesis and the psychosomatic development occurs with the contribution of Shadgarbhakara Bhava. The Shadgarbhakara Bhava are mentioned by Acharya Charaka², Acharya Sushruta³ and Acharya Kashyap⁴ as- Matrija, Pitrija, Rasaja, Satmayaja, Atmaja and Satvaja. Each factor when combined results not only in organogenesis but also in the psychological built of the progeny. The very first glance at the somatic factors expressed by Matrija and Pitrija leads to the development of soft organs and hard structures respectively. In Ayurveda, each Bhava is assigned with a particular organogenesis/ functional/ psychological phenomenon to be developed in the Garbha. A lag on any part of any of these Bhavas may lead to physical, functional, or psychological abnormality, which can be contributed by the respective Bhava.⁵ During intrauterine development, the fetus is susceptible to different factors especially tormented by the maternal tissues.⁶ The intrauterine environment is dependent upon maternal nutrition status.⁷ Hence, it determines not only the risk of disease occurrence but, also the time and intensity of the disease and its pathological process. This fact is well supported by contemporary science that exposure to toxins, alcohol, etc. during the antenatal period may show teratogenic effects on the embryo. Garbhopaghatakara Bhava explained in classics are nothing but the factors that can affect the Stri and Purusha Beeja leading to Seheja Roga. In the present day, toxins to which every pregnant lady exposes unavoidably can be considered as Garbhopaghatakara Bhava. Ancient Acharyas had the immense knowledge about the branch of embryology, Kulaja Vritha, impurities that could be present in the Shukra (sperm) and Arthava (ovum), Acharya strictly prohibited marriage between Tulya Gotra i.e. within the same community or clan to reduce the risk of hereditary diseases and thus to avoid congenital anomalies.⁸ They were also specific about the age of conception and pre conceptual care for both the partners to ensure the health of the Beeja. In the modern era with busy life schedule, the incidence of abortion has also been increased. The causes of abortion are many ranging from genetic causes, endocrine and metabolic disorders, anatomic, infections, immunological, anti-fetal antibodies etc. Among these, chromosomal abnormalities contribute to 50% of the spontaneous miscarriages. ⁹ An embryo with a genetic problem has 95% probability of being aborted.¹⁰ Chromosomal problems due to parent's gene are however a possibility. Literature gives evidence of sperm chromosomal anomaly causing miscarriage as Vata Vikara in Shukra leading to Garbha Naasha. Here comes the importance of care to be given to the male part before conception because if there is any abnormality in the male part it can lead to terrific effect in the development of the embryo and fetal parts originated from the paternal side can also become effected.

II. AIMS & OBJECTIVES

- 1) To study the importance of *Matrija Bhava* in *Garbhotpathi*.
- 2) To study the importance of *Pitruj Bhava* in *Garbhotpathi*.
- 3) To analyze the role of *Vata* in fetal development and abortion.
- 4) To see the importance of pre conceptional care.

III. METHODOLOGY

Classical literature of *Ayurveda* as well as modern medical science on the subject of anatomy, embryology, gynecology and genetics from library as well as from internet were collected, analyzed and presented.

IV. REVIEW OF LITERATURE

A. Inheritance as per *Ayurveda*

Acharya Charaka in *Sharirsthana* clearly explains *Shad Bhava Samudaaya* which are collectively responsible for proper development of an embryo including hereditary factors. They are:

- 1) *Matruj* - Maternal factors
- 2) *Pitruj* - Paternal factors
- 3) *Atmaj* - Soul
- 4) *Satmyaj* - Tolerant factors
- 5) *Rasaj* - Nutritional factors
- 6) *Satwaj* - Psychological factors

Ayurveda believe that growth process of every organ is initiated at one and the same time. The theory of *Yugapat Vikas Krama* was finally accepted by Lord *Dhanwanthari*. For the growth process each bhava mentioned here has equal importance in the development of respective tissues which derives from the concerned *Bhaava*. The entities which are particularly developed from the paternal factor or derived from paternal genes are according to *Charaka*, in *Charaka Samhitha Sharirsthana*, the anatomical and congenital anomalies develop in those parts of the body whose *Beejabhaga* is defective.

B. Research Potential

Healthy Progeny According to *Ayurvedic* principles, proper preparation of the parents is an essential prerequisite for a healthy progeny.¹¹ Pre-conception care includes both prevention and management, emphasizing health issues that require action before conception for its maximal impact. For this, ancient text possesses abundant concepts- *Ritukala Paricharya*,⁹ *Garbhadhana vidhi*,¹² *Douhrida*, *Mamsanumasika garbhini paricharya*¹³ *Garbha poshan*¹⁴ etc. Proper growth and development of the fetus are dependent on all these factors and regimes. Maternal physical condition, external environment to which she is exposed, physical activities, mental status, and dietary habits may permanently affect the health of the growing child.

Ayurveda has thought upon the deformities occurring in *Garbha* during its intra-uterine life. Such as anomalous changes in respect of different body organs along with the causes precipitating the differences in sex, twins of male and female child separately and together and multiple pregnancies, etc. have been dealt with. *Acharya Charaka* further said that if the woman conceived when her *Shonita* and *Garbhashaya* (uterus) were not completely vitiated but simply afflicted by the circulating *Doshas* aggravated because of her indulgence in *Dosha* aggravating regimens, one or many of the organs of the *Garbha* (fetus) derived from the maternal source (ovum) get deformed. These vitiated *Dosha* may afflict the *Beeja* or the *Beejabhaga* by which the corresponding organs derived from these *Beeja* and *Beejbhaga* get deformed¹⁵. As per *Acharya Vagbhata* I when the *Doshas* vitiate the *Shonita* and the *Garbhashaya* (uterus) of the woman slightly, the *Garbha* (fetus) that formed will be having disorders in those *Avayavya* (organs) which are *Matrija* (maternal) in origin. This is due to the (effects of the abnormal) *Doshas* causing *Prakopa* (vitiating) of the *Beeja* or *Beejamasha* (seed or parts) of it, which produce such *Avayavya* (organs).¹⁶ *Acharya Bhela* has enumerated *Beeja -Dosha* of mother and father, absence of use of *Pathya Rasa*, suppression of *Vega* and *Yoni-Dosha* as causative factors for both infertility and *Vikrita Garbha*. The woman not using *Samyoga Rasa* during *Ritukala* delivers *Vikrita* child.¹⁷ *Acharya Sushruta* has described that any disease may be produced by anyone or combined with the following seven causes like *Adibala Pravritta*, *Janmabala Pravritta*, *Doshabala Pravritta*, *Samghatabala Pravritta*, *Kalabala Pravritta*, *Daivabala Pravritta*, and *Svabhavabala Pravritta*¹⁸. Out of these, congenital malformations are caused by *Adibala Pravritta* and *Janmabala Pravritta* factors.¹⁹ *Shwittra*, *Apasmara*, *Madhumeha*, *Vatarakta* and *Arbuda* are congenital as per traditional and modern world.

The previously enumerated *Matrija*, *Pitrija*, and *Atmaja Bhava* cannot be changed as they derived from the parents and *Poorvajanma Samskaras* (as a result of the code of conduct) respectively. However, the remaining three *Bhava*, namely, *Satmyaja*, *Rasaja*, and *Satvaja Bhava*, when practiced judiciously can modify the intrauterine environment and psychosomatic health of the pregnant woman, thereby, generating a healthy impact on the *Garbha*²⁰.

C. Role of Vayu in Development of Garbha

S.NO.	Acharya NAME	Role of Vayu in development of Garbha
1.	<i>Charaka Suthrasthana</i>	describing the proper bodily functions of <i>Vayu</i> , it is the <i>Vayu</i> which is responsible for giving shape to the embryo or having specialized action in embryonic development of fetus. ²¹
2.	<i>Acharya Sushruta</i>	explains about two factors for development of <i>Garbha</i> as <i>Rasanimita</i> and <i>Maruthaadhmaanamimita</i> i.e. the fetus develops through the nutritional factors and infusion of <i>Vata</i> . ²²
3.	<i>Kashyapa</i>	<i>Vayu</i> is responsible for the cell division. <i>Kashyapa</i> also opines that the finest particles of <i>Vayu</i> are responsible for the union, division and activity like flexion, extension etc., as well as division of major and minor body parts, <i>Dhatu</i> , <i>Chetana</i> (consciousness) and <i>Srotas</i> (channels) due to their specific nature. ²³
4.	<i>Acharya Harita</i>	opines that <i>Bija</i> (sperms and ovum) both together attains the shape of <i>Kalala</i> by the action of <i>Agni</i> situated in all the five <i>Mahabhutas</i> . ²⁴
5.	<i>Ashtanga Hridaya Sharirsthana</i>	the normalcy of anila is an inevitable factor for the formation of <i>Garbha</i> .

But he has emphasized the role of *Vayu Mahabhuta* along with the role of *Agnimahabhuta* which helps in onward conversion of zygote in to blastocyst (*kalal*) and blastocyst solidifies into a formative mass. The formative mass proceeds to solidify. Now all the five *Mahabhuthas* in association of *Vyan Vayu* converts the formative mass into *Pancha Pindikavastha* (five bud stage). There are two *Pinda* (buds) for upper and two *pinda* for lower limbs and fifth is for *Shiras* (head and neck). Thus, in every future events of development of the embryonic growth finally looks like a fetus having all the body parts. *Udan Vayu* helps to develop pharyngeal pouches, lung buds and primitive heart. *Apan Vayu* helps to open the outlets for excreta or payu (vaginal, urethral and anal openings in females whereas only two in males i.e. urethral and anal in male). Therefore, it can be concluded that different types of *Vayu* help to develop all the nine outlets (*Navadwara* or *Randra*) having their separate entity. They are stomodeal openings, two nasal openings, two openings for ear, two eyes, anal opening, urethral opening and vaginal opening in females. As per *Acharya Sushruth*, in *Sharirsthana*, in the formation of *Garbha*, *Vayu Mahabhuta* does the role of *Vibhajana*. The division of *Dosha*, *Dhatu*, *Mala*, *Anga* and *Pratyanga* i.e. major and minor body parts is done by *Vayu*. This we can correlate with the process of cleavage in the first stage of cell division.

D. Role of Vayu in Garbha Naasha

S.NO.	Acharya NAME	Role of Vayu in Garbha Naasha
1.	<i>Charaka in Charak Samhita Chikitsasthana</i>	the aggravated <i>Vata</i> situated in the <i>Shukra</i> is responsible for abortion.
2.	<i>Acharya Susrutha</i>	enumerating the causes of <i>Moodagarbha</i> and <i>Garbhasraava</i> , has enlisted <i>Krimi</i> , <i>Vata</i> and <i>Aghaata</i> (trauma).
3.	<i>Acharya Harita</i>	explains vitiated doshas especially <i>Vata Dosha</i> leading to abortion.
4.	<i>Bhavaprakasha</i>	enumerated as one of the 80 disorders of <i>Vata</i> i.e. <i>Vata</i> is responsible for abortion.

V. OBSERVATION

Acharya Charaka has explained the concept of inheritance by *Anuvamshiki Sidhantha* and has described about different body parts has been evolved from specific *Bhaava* each. Here we have analyzed the importance of *Matrija* and *Pitruj Bhaava* in *Garbhotpathi* and the necessary for proper pre conceptual care for each partner as each and every structure is specific to be evolved from different *Bhaava*. *Shonit* and *Shukra* (sperm) both are one among the *Matrija* and *Pithruj Bhaava* as well as it is responsible for carrying the inheritance as genes. Different *Acharyas* has explained the role of *Vayu* in *Shukradushti* as *Vayu* is responsible for giving shape to an embryo and the flow of *Vayu* or infusion of *Vayu* along with the nutritional factors are the two main factors responsible for the development of *Garbha*. The cell division soon after union of sperm and ovum is done by *Vayu* and the differentiation is initiated by *Vata* itself. Thus, for a normal embryonic development, an unaffected or unvitiated *Vayu* is an inevitable factor. While we look into the causes of abortion, *Vayu* itself plays the major role. The *Vata Dushti* present in the *Shonit* and *Shshukra* is responsible for *Garbhanaasha*. As per modern concepts, various studies had taken place on causes of unexplained recurrent miscarriages. Among these main paternal factors contributing for miscarriages could be ruled out are advanced paternal age, psychological stress, excess use of alcohols, smoking, excess competitive sports etc.²⁵ These can lead to oxidative stress changes in the sperm DNA and can also influence the length of telomeres.²⁶ Studies shows that this oxidative stress changes lead to DNA fragmentation.²⁷ While we analyze the causes of abortion due to paternal factor all these causes mentioned are *Vata* aggravating in nature which can lead to poor quality of *Shukra*, the normal function of *Vata* in formation of *Garbha*, i.e. *Vibhajana* gets impaired and excess *Vibhajana* may takes place and can result into DNA fragmentation. Thus, formed *Garbha*'s development gets hampered in the first stage itself and can lead to miscarriage.

VI. DISCUSSION

Matrija Bhava leads to the formation of four *Dhatu* and major organs of the body. The *Dhatu* forming these organs are the ones that are enumerated in *Matrija Bhava*. Hence, there is a need to promote a healthy environment to build strong bhava that are to be "passed on" to the progeny so that healthy genes are transmitted and the occurrence of disorders can be prevented. The present knowledge on embryology including its entire aspects, gross as well as at the electron microscopic level, deserves a great sense of appraisal and it is a result of deep devotions of the scientists, in the field. The treasure of knowledge of embryology, present in the ancient literature, though retaining behind the roots of its all the branches, could not have the attraction of the deserved workers and was left neglected so far. It is high time when the hidden truths in these classics may get explored and proved with the advance and highly sophisticated technology of the present era

Acharya has explained the theory of inheritance elaborately in the concept of *Shad Bhava Samudaya* in which each physical and anatomical structure in human body is said to be derived from paternal as well as maternal genes. As per *Ayurveda* three genetics units have been mentioned by *Acharya Charaka*; 1. *Beeja* 2. *Beejabhaaga* 3. *Beejabhaagaavayava* The anatomical anomalies develop in those parts of the body whose part of the chromosome or gene is defective. The Genes are located on chromosomes and it is the chromosomes that segregate and independently assorted. Alleles are various forms of genes. Therefore, dominant and recessive factors are alleles of gene. A pair of alleles exist for each trait in kalal (zygote) of a fertilized ovum and in every cell of the body there after. According to *Chakrapani*; The smallest unit found in *Shukra* (sperm) and *Shonita* (ovum) which can be considered as *Beeja* of male and female respectively. The *Beejabhaaga* is the component lying inside the *Beeja* and holding responsibility of development of different body organs. The *beejabhaaga avayava* is the more subtle stage of *Beeja Bhaaga* carrying hereditary characters. While considering about miscarriage or *Garbhanaasha*, sperm anomalies can also lead to *Garbhanaasha*. *Shukra*, as it is considered as itself derived from the *Pitruj Bhaava*, the *Shukra* and *Shonit* are responsible for carrying the hereditary factors of the father and mother to the upcoming fetus through fertilization. Various research works has shown that there are various paternal reasons for miscarriage, such as, the sperm transcript dysregulation and oxidative DNA damage can be "carried over" after implantation thus effecting embryogenesis and health of the future progeny. Around half of the spontaneous miscarriages occurring in the first trimester are likely to be due to chromosomal abnormality. The chromosomal abnormality in the zygote may result from errors during gametogenesis, during fertilization or during first cellular division. Thus, any such abnormality in the sperm could be a cause of spontaneous miscarriage. The male factors other than advanced paternal age, such as excessive stress, competitive sports, infection, alcohol, smoking, nicotine and drug abuse may result in production of reactive oxygen species and in sperm DNA fragmentation. Here, we can see that advanced paternal age, as per *Ashtanga Hridaya*, the latent period of age that is in *Vridhaavastha* the body will be of *Vata Dosha* predominant constitution (*Vayo Aho Ratri Bhuktaanam te Antah Madhyaadika Kramat*). Excessive stress is one among the *Manasika Nidana* for *Vata Kopa*. The competitive sports can be compared with *Ativyayama* that leads to *Vataprakopa*.

The use of alcohols in excess leads to *Vata* aggravation in the body and *Dhatu Shosha* as the properties of *Madya* is opposite to that of *Ojas*.²⁸ Smoking or *Dhoomapana* if it is not practiced according to *Dhoompana Vidhi* mentioned by *Acharyas* or excessive *Dhoomapana* can also lead to *Vata Kopa*. As it is proved that all these factors lead to sperm anomalies, we can correlate that the aggravated *Vata* with its impaired function can lead to DNA fragmentation and difference in length of telomere that can lead to defective cleavage, that is the first stage of cell division. The process of cell division itself is the property of *vata* i.e. *Vibhajana* is affected and all these ultimately can result in miscarriage or *Garbhanaasha*. Here comes the importance of *Beejashudheekarana Samskaras* explained by *Acharya*. Proper preconceptual care for both the parents should be given before preparation for a *Shreyasi Praja*, for improving the qualities of *Beeja*, *Beejabhaaga* and *Beejabhaaga Avayava*. *Acharyas* had explained various methods to be followed as preconceptual care starting from proper *Sneha Sweda*, then undergoing *Shodana Karma* as *Vamana and Virechana* to eliminate the vitiated doshas present in our body and after that to undergo *Asthapana* and *Anuvasana Vasthi* to normalize the remaining vitiated *Vata* in the body.²⁹ After these *Shodhana Karma* both the male and the female partners should undergo specific diet to make the body healthy and to improve the quality of *Beeja* in both the parents. For a disease free and healthy infant endowed with excellence in the contributing factors mentioned in *Shadbhava Samudaya* i.e. the factors derived from each *Bhaava* should be of good quality and thus each factor in *Garbhakara Bhaava* has equal importance for the formation of *Supraja*.³⁰

VII. CONCLUSION

In spite of advance in technologies, we can see that there are some unknown causes responsible for defective development of fetus or that causes abortion. *Ayurveda* suggests various approaches like considering *Shad Garbhakara Bhaavas* which plays a vital role towards the development of normal fetus. A lag on any part of these procreative factors may lead to structural and psychological defects to the body. Just like maternal care, pre conceptional care for the male part is also necessary as unhealthy *Shukra* and *Shonit* also leads to miscarriage. Proper management should be taken care to normalize the *Doshas* in the body especially *Vata Dosha* as *Vata* influence other *Doshas* to get vitiated among the *Tridoshas*. As well as we can see each *Panchabhootha* has its own influence in the formation of *Garbha* and we should maintain a wholesome atmosphere for the action of these factors without disturbance, in the formation of *Garbha*. In short being *Swastha*, that is with equilibrium in *Dosha, Agni, Dhatu, Mala* etc is necessary to maintain good health²⁸. As each anatomical structure and even psychological status of the fetus has been derived from each *Shadbhaava*, utmost importance should be given to each factor for a healthy progeny. We can see that the basic principles established by *Acharyas* ancient years ago in the field of *Rachana Sharir* about the formation of an embryo stand true in the light of modern science also.

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