

AN INSIGHT INTO EMBRYOLOGY IN SUSHRUTA: THE OTHER SIDE OF THE EQUATION

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ABSTRACT

According to Ayurveda, the union of *Shukra* (spermatozoa), *Shonita* (ovum) and *Atma* (soul) inside the uterus is known as *Garbha* (embryo). The linkage of *Prakriti* (nature) and *Vikaras* (variations) have the important impact besides the soul in the development of the foetus. Different components originating from *Panchamahabhuta* (Five Elements) takes part in the formation and development of the *Garbha*. *Sushruta* mentioned six procreative factors (*Shadgarbhakarabhavas*) also have their roles on the process of fertilization and development of the foetus. Physical as well as mental features of embryological development are according to law of nature. But, this are affected by action (*Karma*) of prior existence. Ayurveda embryology ensured smooth pregnancy and birth of child capable to

fulfil *Dharma Artha Kama Moksha* axis.

INTRODUCTION

Embryology is branch of biology that studies prenatal development of gametes, fertilization and development of embryos and foetus. The explanation of *Ayurvedic* principles of embryology are unique. *Garbha Sharira* is a term coined for embryology in *Ayurveda*. We can find some specific chapters in treatises like *Brihatrayi*, *Kashyap* etc. focusing on fundamentals of embryology. Material related to embryology scattered at different contexts. As *Sushruta Sharir* is prior among *Sharir Sthana* will thoroughly go through *Sushruta*, compiling extracts and reference related *Garbha Sharira*. It would give a good gist of embryological basics explained in *Ayurveda*.

Prior Existence Traits And Temperament- An honest, pious, erudite man, who has acquired a vast knowledge of the *Shastras* in his prior existence, becomes largely possessed of mental traits of the *Satvika* nature in this life too and also remembers his prior births (*Jatismara*). Acts similar to those, which a man performs in a prior existence, overtake him also in the next. Similarly, the traits and the temperament which he had developed in a previous existence are likewise sure to be patent in the next.^[1]

Age, Seeds And Organ: Menstrual period (*Ritu*), healthy womb (*Kshetra*), nutrient liquid i.e. chyle of digested food (*Ambu*), healthy semen (*Bija*) and the proper observance of the rules is necessary for the conception and development of a healthy child.^[2]

Conduct Of Husband Before Conception: Explaining mental characteristics of women wants to conceive. After this period, on the fourth day she should take a ceremonial ablution, put on a new garments and ornaments and then visit her husband after having uttered the words of necessary benediction. A child conceived after the period resembles the man whom she first sees after ablution on the fourth day of her menses; hence she should see none but her husband at that time, so that the child may resemble his father. After that the priest shall perform the *Garbhadhana* ceremony.^[3]

Abnormalities In Foetus: Fecundation may take place in the womb of a woman, dreaming of sexual intercourse in the night of her menstrual ablution. The local Vayu carries the dislodged ovum into the uterus and exhibits symptoms of pregnancy, which develop month after month till the full period of gestation. The offspring of such a conception is a *Kalala* (a thin boneless jelly-like mass) on account of the absence of the paternal elements (Hair, beard, nails, teeth, arteries, veins, ligaments and semen as these are said to be inherited by the child from its father) in its development.^[4] The malformation of a child in the womb should be described to the atheism of its parents, or to the effects of their misdeeds in a prior existence, or to the aggravated condition of the *Vayu, Pitta And Kapha*.^[5]

Male/Female Theory: The husband then having uttered the appropriate *Veda Mantras* and having awakened confidence in the wife, should go unto her on the fourth, sixth, eighth, tenth or on the twelfth night of her menses for the procreation of a male child. A visit to the wife on any of these nights leads to the continual increase of the wealth, progeny, and the duration of the husband's life. On the other hand, a visit to one's wife on the fifth, seventh, ninth, or eleventh day of her flow leads to the conception of a female child.^[6]

Qualities of Shukra And Artava: The male reproductive element (*Shukra*) is endowed with *Soma-Guna* the female element (*Artava*) presents the opposite property and is therefore *Agni-Guna*. The principles of five elements are also present in men in their subtle forms and contribute to the formation of the material parts by their molecular adjustment in the way of supplying nutrition and in way of the adding to their bulk. As a lump of condensed clarified butter melts and expands if placed by the side of a fire, so the ovum (*Artava*) of a woman is dislodged and glides away in contact with an adult male.^[7]

Garbhavranti: The local *Vayu* heightens or aggravates the heat generated by the friction of the sexual organs in an act of copulation. The *Vayu* and heat thus aggravated tend to dislodge the semen from its sac or receptacle in a man which enters into the uterus of a woman through the vaginal canal and there it mixes with the ovum (*Artava*) dislodged and secreted by similar causes. The combined ovum and semen are subsequently confined in the uterus (*Garbhashaya*). Foetus begins to form only when *Jiva* (life element) descends in the combination of *Shukra* and *Artava*. *Jiva* is called *Kshetraja* and owing to its predestined union with gross elements and three qualities of *Satva*, *Rajas* And *Tamas*, and lead away by the *Vayu*, lies confined in the uterus to be subsequently evolved out in the character of a fully divine or partly or demonic, as determined by his acts in the former existence.^[8]

Garbha: The combined semen and ovum (*Shukra* And *Shonita*) in the womb, mixed with the eight categories known as the *Prakriti* and her sixteen modifications known as *Vikara*, and ridden in by the *Jiva* (life element) is called the foetus. There is consciousness in the embryo. The *Vayu* divides it into *Dosha*, *Dhatu*, *Mala* etc., limbs and organs etc. The *Teja* gives rise to the metabolism of the tissues; the *Aap* keeps it in a liquid state; the *Prithvi* is embodied in the shape of its species; and the *Akasha* contributes to its growth and development. A fully developed foetus with all its parts, such as the hands, feet, tongue, nose, ears, buttocks etc. and the sense-organs, is called *Shariram* or body. The body is composed of six main parts, namely, the four extremities (upper and lower), the trunk or middle body, and the head.^[9] *Sushruta* described monthly development of *Garbha* in each month.^[10]

Progression of Pregnancy: The nipples of the breasts become dark in colour; breasts develop and grow larger in size, the rising appearance of a row of hair (as far as the umbilicus), contractions of the eye-wings, sudden vomiting, nausea which does not abate even on smelling perfumes, salivation, and a sense of general lassitude are the indications of pregnancy.^[11]

Nutrition And Development: The growth of a foetus in the womb is affected by the serum (*Rasa*) prepared out of the food (assimilated by its mother) incarcerated by the *Vayu* in the internal passage of its body. The umbilical cord (*Nadi*) of the foetus is found to be attached to the cavity of the vein or artery of its maternal part through which the essence of lymph-chyle (*Rasa*) produced from the assimilated food of the mother, enters into its organism and fastens its growth and development. Immediately after the completion of the process of fecundation, the vessels (*Dhamani*) of its maternal body which carry the lymph-chyle (*Rasa*) and run laterally and longitudinally in all directions through it, tend to foster the foetus with their own transudation all through its continuance in the womb. The orifices of the *Artava*—carrying channels (vessels of the uterine mucosa) of a pregnant woman are obstructed by the foetus during pregnancy and hence there is no show of menses during gestation. The menstrual blood thus obstructed in its downward course ascends upwards; a part of it accumulates and goes to the formation of placenta (*Apara*), while the rest ascends higher up and reaches the breasts; this is the reason why the breasts of a pregnant woman become full and plump.^[12]

Foetus Respiration, Excretion and Crying: A foetus in uterus does not excrete faeces or urine, owing to the scantiness of the faecal matter in its intestines and also to the obstruction and consequently lessened entry of the *Vayu* into its lower bowels. A child in the womb does not crying as its mouth remains covered with the sheath of the placenta i.e. foetal membrane and its throat is stuffed with *Kapha*. The processes of respiration, sleeping and movement of the foetus in the womb are affected through those of its mother.^[13]

Causes of Different Colours Of The Child: *Teja*-dhatu of the organism, which is the originator of all colours of the skin (complexion), happening to mix largely with the watery principle of the body at the time of conception, serves to make the child a fair complexioned one (*Gaura-Varna*); mixed with a large quantity of the earth principle (*Kshiti*) of the body, it makes the child a dark complexioned one (*Krishna-Varna*). In combination with a large quantity of earth and ethereal principles of the organism, it imparts a *Krishna-Shyama* complexion. A similar combination of watery and ethereal principles serves to make the child *Gaura-Shyama*.^[14]

Factors Which Determine Sex: The birth of a male-child marks the preponderance of semen over the ovum in its conception; the birth of a daughter shows the preponderance of the

maternal element. A child of no-sex (hermaphrodite) is the product when ovum and sperm are equal in their quality and quantity.^[15]

Position: Foetus lies in a crouched or doubled up posture in the uterus and thus naturally at the time of parturition its head is presented at the entrance to the vagina.^[16]

Signs Of Male And Female Conception: An enciente, in whose right mammae the milk is first detected, who first lifts up her right foot forward, whose right eye looks larger, or who evinces a longing largely for things of masculine names, dreams of having received lotus flowers (red and white), *Utpala*, *Kumuda*, *Amrataka*, or flowers of such masculine denomination in her sleep, or the glow of face becomes brighter during pregnancy, may be expected to give birth to a male child; whereas the birth of a daughter or a female child should be pre-assumed from the opposite of the foregoing indications. When the middle part of the abdomen sinks inwards like a saucer, twins may be present.^[17]

DISCUSSION

In Ayurveda, mental characteristics of women who conceives is important. A woman needs to have sound mind and be in good physical condition during pregnancy as the foetal development is directly affected by her.

Ayurveda gives great importance to the quality of the seed i.e. ovum and sperm. The mother also provides soil (uterus), nutrition and the right season for seed to grow. So, more emphasis should be given to the nutrition of the woman to keep her vital and pure.

Sushruta mentioned six procreative factors (*Shadgarbhakarabhavas*) which have an important impact on the process of fertilization and development of the foetus. These factors are *Matrija* (maternal), *Pitruja* (paternal), *Satvaja* (mind), *Rasaja* (nutritional), *Satmyaja* (wholesomeness) and *Atmaja* (soul).^[18] Out of these six *Shadgarbhakara Bhavas* *Rasaja*, *Satmyaja* and *Satvaja Bhavas* if practiced properly in intra uterine life can produce healthy impact on the foetus. *Matrija*, *Pitruja* and *Atmaja* bhavas cannot be changed during intra uterine life. But, can be changed before planning to conceive. It can improve by following *Achar Rasayan* mentioned in *Ayurveda*.

While *Garbha* i.e. fetus is developing in mother's womb, five elements of nature basically participate in various aspects of formation, maturation and development of fetus. When we see development of some organs explained in Ayurvedic treatises, we can see involvement of

Doshas in formation of these organs during foetal development. *Kapha* is seen to form tongue, testes, white portion of eye and heart. *Samana* type of *Vata* along with heat of body is said to form liver and spleen. *Vata* is also seen to be involved in formation of visceral organs and gall bladder. All three *Doshas* are involved in formation of intestines, anus, rectum and urinary bladder. *Vata* and *Pitta* are involved in formation of channels and muscles of body. Apertures of body are formed by *Vata*.

Components that are going to build foetus in the uterus originates from *Panchmahabhutas* (the five elements). The properties of *Akasha* are sound, the sense of hearing, porosity and lightness etc. into their characterised spaces (*Viviktata*). The properties *Vayu* are touch, the skin, all functional activities of the organism, throbbing of the whole body and lightness. The properties of *Agni* are form the eyes, colours, heat, illumination, digestion, anger, generation of instantaneous energy and valour. The properties of *Jala* are taste, the tongue, fluidity, heaviness, coldness, moisture, seminal fluid and urine. The properties or modifications of *Prithvi* are smell, the nose, embodiment and heaviness. We can differentiate different bhavas (components) that are originating from *Panchamahabhuta*.^[19]

Sushruta illustrate physical as well as mental features of embryological development. The adjustment of the different limbs, normal or abnormal organs of the body, intelligence of a child in the womb are according to laws of nature for particular species. But, this are affected by action (*Karma*) of prior existence due to regular practice and habit of particular feature in prior existence. Regular practice and habit of particular feature will decide path(*Gati*) of *Jiva*(life element).^[20] Even *Sushruta* relate multiple pregnancy to karma. A seed divided into two by the deranged *Vayu* within the (cavity of the) uterus (*Kukshi*) gives rise to the birth of twins, conditioned by the good or evil deeds of their prior existence.^[21]

CONCLUSION

Ayurvedic embryology explains foetal development along with the antenatal care of the pregnant woman. *Ayurveda* has the in depth thinking about embryological aspects. Embryology is link between *Janma* and *Moksha*. In *Ayurvedic* embryology, smooth pregnancy can be ensured. All they tried to explain birth of generous, virtuous, healthy child. For the sake of liberation of *Jiva*(life element) from the cycle of death and rebirth; A capable child who will fulfil *Dharma Artha Kama Moksha*.

Foetus begins to form only when *Jiva*(life element) descends in the combination of *Shukra* and *Artava*. The development of the foetus in the womb is natural and spontaneous but the qualities and conditions which mark these organs(*Anga-Pratyanga*)are determined by the acts done prior to its genesis and were done in its prior existence.

Also, quality of *Jiva* descending i.e. *Satva*, *Rajas*, *Tamas* will depend on karma of prior existence. This will decide its path towards liberation in this birth. Atonement will be there according to laws of nature and will decide mental and physical embryological development.

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