

TO STUDY MONTH-WISE FOETAL DEVELOPMENT IN AYURVEDA VIS-A-VIS MODERN EMBRYOLOGY

Darokar Shrikant Bhaurao

M.D. Sharir Rachana, Professor, Sunil Ramsinh Chunawale Ayurved Mahavidyalaya, Deendayal Nagar, Chikhli, Buldhana, 'Kalptaru' Girls Hostel, Cement Road, Chikhli, Buldhana, Maharashtra- 443201, India

Email: shrikantdarokar@gmail.com

Published online: May, 2017

© International Ayurvedic Medical Journal, India 2017

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, development of the *garbha*. Similarly some components of *garbha* (embryo) originate from the parents which are called as *Matrija* and *Pitrija bhava*. *Atma* and *Sattva* also have their roles in the development of the foetus as some of the qualities like memory, determination, knowledge, longevity and pride, birth in specific species, happiness are found to be arising from it. There are some differences between the opinion of *Acharya charaka* and *shushruta* but the basic principles underlying the foetal development are similar. The whole process of development of the foetus from two cells to mature foetus is called *Garbhavakranti*. *Garbhavakranti* includes the basis of the earliest embryology which was known to the human being. In the Ayurvedic texts the process of monthly development of the foetus is explained clearly. The explanation of the month wise development of the foetus as per modern embryology can correlate with the Ayurveda view at some extent as the principles of Ayurveda are unique.

Keywords: *Shukra, Shonita, Atma, Panchamahabhuta, Garbha, Matrija, Pitrija, Sattvaja.*

INTRODUCTION

Ayurvedic concepts are very ancient and unique. These concepts are found to be true on the basis of modern science now a days. *Shukra* and *Shonita* get united in the uterus and with the entry of *atma* (soul) now it is called as *garbha* or embryo. Later after the cell division it progresses towards clear

differentiation of body parts. At this stage it will be called foetus. The process of formation of embryo into the mature foetus takes place in a very slow manner and takes almost nine months.

Masa-anumasika garbha vridhhi krama-

First month:-

Tatra prathame masi kalalam jayate È¹

Charaka and *Shushruta* say 'Kalal' is formed. *Kalal* resembles with the mucus of nose. Likewise the *kalal* is semisolid, slimy and sticky in nature. *kalal* possesses all *anga*, *pratyanga* and all the systems that are going to form in the future. It has all the characteristics of *Panchamahabhuta* in different proportions. For the normal development of the foetus *shukra* and *shonita* must be in its pure form.

Sa sarvagunavana garbhatvamapannah prathame masi sammurcchitah sarvadhatukalushikritah khetbhuto bhavatyavyaktavigrah sadsadbhutanga-vayavah È²

Acharya charaka described *Garbha* in the first month having all the *guna* of future body. He also described it as *avyakta vighraha* means consisting of all the body parts in *avyakta* (obscure) form. He further says *garbha* in the first month as *asat* meaning all body parts are not seen in the definite form. *Charaka* in its *sharirsthana* described *garbha swarupa* in the first month as 'Khetbhuta' meaning the same as *kalala*. We can say that *kalal* is nothing but the mass of cells, stained with blood. In short in the first month, the embryo is not in clear shape. *Atma* or Soul gets mixed up and attains a phlegm appearance. The fertilized ovum becomes *Kalala* (morula), *budbuda* (blastocyst), *pinda* respectively and becomes solid in one month. *Vagbhata* also supports *shushruta* as far as development of the embryo in first month is concerned.³

Second month:-

Dvitiye sitosmanilairabhiprapachyamananam mahabhutanam sanghato ghana sanjayate, yadi pindah puman, stri cet pesi, napunsakam cedarbudamiti È⁴

In the second month of development the embryo with the help of *sheeta* (*kapha*), *ushma* (*pitta*) and

anila (*vayu*), the *panchabhautik* embryo forms/turns into a compact mass i.e. *ghana*. *Dvitiye masi ghanah sampadyate pindah pecyarbudam va* È *Tatra ghanah purushah, peci stri, arbudam nampusakam* ÈÈ⁵ *Charaka* and *Vagbhata* also supports the above view of *sushruta*.⁵

According to *sushruta* sex of the foetus is also identified in the second month of pregnancy itself. Depending upon the shape of the *Ghana sanghata* (compact mass), the sex of the foetus is identified. If the *ghana sanghata* resembles with the shape of *pinda* (bolus), circular, It would be a *pumaan* (male) child. If *ghana sanghata* resembles with the shape of a *peshi* (muscle) i.e. elongated, It would be a *stree* (female) child. If *ghana sanghata* resembles with the shape of *arbuda* (semispherical), it would be a child with neuter gender possessing both male and female characteristics i.e. hermaphrodite.

Third month:-

Tritiye hastpadasirasam panchapindaka nirvartante angapratyangavibhagasca sukshmobhavati ;⁶

Anga means *shadargas* or 6 parts i.e. two upper limbs, two lower limbs, trunk (Thorax and abdomen) and head. *Pratyanga* means the organs located in these six *angas*. In the third month of pregnancy five buds (*pindaka*) are formed. These buds represent the formation of 4 limbs (two upper limbs and two lower limbs) and head respectively. The *anga-pratyanga* begins to form but all these are in miniature form. The foetus takes the shape of human outline. It is also an important phase in development of heart. Diet factor is essential in this month.

Vyaktibhavati masesya tritiye gatrpanchakam È murdha dve sakhini bahu sarvasukshmanjanma ca È⁷

Sarvendriyani garbhasya sarvangavayavastatha È Tritiye masi yugapannirvartante yathakramam ÈÈ⁸

Vagbhata and Kashyapa also support this view. In modern science also this opinion is found to be true.⁹

*Tritiye masi sarvendriyani sarvangavayavacca yougapadyenabhinirvartante*¹⁰

Charaka describes manifestation of all the sense organs (i.e. Eye, Ear, Nose, Tongue, and Skin) in the third month.

Fourth month:-

*Caturthe sarvangapratyangavibhagah pravyakto bhavati, garbhahridayaprvyaktibhavaccetanadhaturabhivvyakto bhavati, kasmat? Tatsthanatvat È tasmadgarbhascaturthe masyabhiprayamindriyathesu karoti, dvihridayam ca narim dauhrdinimacaksate È*¹¹

All the organs are clearly formed. Manifestation of the heart-*chetna* (foetal movements) is evident. In the fourth month of pregnancy organs and their structures are distinctly developed. The *sukshma* (minute) forms of all body parts acquire certain form and shape. Due to the actions of the foetal heart, it can be said that *chetna dhatu* (presence of soul) becomes evident, as Ayurveda consider *hridaya* (heart) is a *sthana* (place) of *chetna dhatu* (soul). As soon as the *chetna dhatu* is manifested, the *garbha* starts movements and responds to sensory stimuli. In this month pregnant woman have cravings. The woman is called *Douhridini* (with two hearts). It is essential to fulfill, satisfy such wishes as these are the wishes of the child manifested through mother. These wishes should not be taken lightly since these are the demands of the child. If these cravings of *dauhridini* are not satisfied, the newborn child will be having defect like *kubja* (dwarf), *kuni* (short upper limbs), *khanja* (limp), *vamana* (short), *vikrutaksha* (deformity in eyes), *anakshya* (blind) etc.¹² The wishes of the *dauhridini* must be get fulfilled so that the newborn baby will be healthy and with long span of life.

*Chaturthe masi sthiratvamapadyate garbhah tasmat tada garbhini gurugatratvamdhikamapadyate visheshena È*¹³

Charaka says, in the fourth month the foetus becomes stable and dense. As the mass increases, pregnant woman develop the feeling of heaviness. Fifth month:-

*Pancame manah pratibuddhataram bhavati,*¹⁴

In the fifth month of pregnancy mind becomes more active and alert. Charaka says, the blood and muscle tissue of the foetus increases, grows comparatively.

*Pancame masi garbhasya mansashonitopacayo bhavatyadhikamanyebhyo masebhyah, tasmat tada garbhini karshamapadyate visheshena È*¹⁵

As most of the nutrition of the mother goes to the foetus to nourish its blood and muscles, the mother feels weak and looks emaciated. The *mana* of foetus becomes enlightened and consciousness develops and it becomes more *sajiva* (capable of living independently).

*Mansshonitavidhishu pancame masi jeevaka Garbhini pancame masi tasmat karshen yujyate È*¹⁶

Kashyapa also describes the same thing as per the development of the foetus in the fifth month is concerned.

Sixth month:- *Sashthe Buddhih,*¹⁷

The development of intellect or *buddhi* is seen. Intellect with the power of grasping and retaining progresses.

*Shashthe masi balavarnopacayo bhavatyadhikamanyebhyo masebhyah, tasmat tada garbhini balavarnahanimapadyate visheshena È*¹⁸

Charaka says, in this month the *bala* (strength), *Varna* (complexion) of the foetus improves. Complexion, Body hairs, nails, bones, tendons, vessels, skin, mouth, nose, eyes, and ears develop. Seven month:-

Saptame sarvangapratyangavibhagah pravyaktatarah È¹⁹

In the seventh month of pregnancy, all the body parts of foetus develop completely. All the *angapratyangas* becomes more mature and evident.

Saptame masi garbhah sarverbharapyayate, tasmata tada garbhini sarvakaraih klantatama bhavati È²⁰

Charaka describes foetus attains well developed form in view of physical and mental development. The mother looks extremely tired.

Eighth month:-

Astame sthiribhavatyojah, tatra jatascenna jivenirojastavannairrtabhatvancca, tato balim mamsaudanamasmai dapayet, ²¹

In the 8th month of pregnancy the *ojas* which is considered to be the purest and finest form of all *dhatu*s, which will decide the vitality, immunity and strength of the body and without which there would not be any life, becomes unstable. The *oja* moves from mother to the foetus and vice versa through the placenta and umbilical cord. As the *oja* in this month is unstable, childbirth in this month may lead to complications for both the mother and foetus. If the mother sustains *oja*, she would survive and if foetus sustains *oja* it will survive. Due to the cyclic transformation of *ojas* between the mother and foetus, both can go in happy or sad mood. *Charaka* also describes the movement of *oja* from mother to the foetus and vice-versa through the nutritional system for the foetus. So sometimes the mother looks happy and energetic

when the *oja* is in her body and in the absence of *oja* she looks weak tired. The mother must be kept away from all stressful or overwhelming stimuli to avoid the labour in the eighth month. ²²

9th month:-

Navamadasamaikadasadvadasanamanyatamas-minjayate, atonyatha vikari bhavati È ²³

The process of complete development of foetus and child birth may take place between 9th and 12th month of pregnancy. The ninth month onward is a favorable period for childbirth. All the physical and mental qualities are refined and complete for the baby to deliver. *Charaka* says after this period if *garbha* (foetus) still remains in the uterus, it is called as *Garbhavikriti* (*Vikari Garbha*) i.e. foetus with abnormality. In ayurved *samhita*s normal gestational period is said to be 9 to 12 months. ²⁴

MATERIAL & METHODS

Classical literature of Ayurveda as well as modern medical science on the subject of Gynaecology/obstetrics and embryology from the library of the S.R.C. Ayurved Mahavidyalaya, Chikhli, Dist-Buldana, Maharashtra, India were explored and analyzed for this study. The internet services of the S.R.C Ayurved Mahavidyalaya library IT centre were also used. Various references is taken from *Charaka, sushruta, vaghbhata, Harita samhita* to elaborate concept of month wise development of the foetus.

DISCUSSION

Ayurveda has explained month wise foetal development comprehensively, with its own principles. There are some differences between the opinion of *Charaka* and *Sushruta* but their basic principles are same underlying the foetal development .It is interesting fact that the details regarding month wise foetal development were noted in a period when the instruments, equipments, technology of the modern science were not present. Ayurveda

compares human conception to the germination and sprouting of a seed and its transformation into a plant. 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. For building a healthy progeny thereby building a healthy nation the woman less than eighteen years and male under twenty one should not bear the children. As *Charaka* describes, In the first month *shukra* (sperm) and *shonita* (ovum) unite and form a seed (*zygote*). This seed divides and redefines and form a rounded mass. This seed mass has the capacity to manifest all types of tissues and organs. Three days after fertilization embryo divide again to form a 16-cell morula. Embryo turns in the form of a three layered disc i.e. three germ layers which is called embryonic disc. All the structures and different organs are going to manifest from these three layers.²⁵

In the beginning the foetus obtains its nourishment from *rasa* which is supplied by mother. That clearly means nourishment and development of the foetus depends upon all the *Shadbhava* (six factors of conception). Ayurvedic Acharya 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), *Pitrija* (paternal), *Sattvaja* (mind), *rasaja* (nutritional), *Satmyaja* (wholesomeness) and *Atmaja* (soul). Out of these six *shadgarbhakara bhavas* *Matrija*, *Pitrija* and *Atmaja bhavas* cannot be changed as they come from the parents. But the other three i.e. *Rasaja*, *Satmyaja* and *sattvaja bhavas* if practiced properly can produce healthy impact on the foetus.

Components that are going to build foetus in the uterus originates from *panchmahabhutas* (the five elements). Components originating from *Akasha* are sense of sound, auditory system, lightness, minuteness, division, channels of circulation and ori-

fices. Components originating from *Vayu* are sense of touch, an activity of the body, synthesis and transportation of the tissues and expiration. Components originating from *Agni* are brightness, eye, catabolism and anabolism, complexion, temperature, enzymes and sharpness. Components originating from *Jala* are taste perception, coldness, moisture, softness, body fluids, blood, seminal fluid and urine. Components originating from *Prithvi* are smell perception, stability, heaviness, bones and air. We can differentiate different *bhavas* (components) that are originating from *panchamahabhuta*. Different sonographic studies also reveal that maternal lifestyle, drug addiction have the great impact on the foetal development.

In Ayurveda, it is said that a woman needs to have sound mind and be in good physical condition during pregnancy as the foetal development is directly affected by her. The stress, sorrow, anxieties of the mother is unknowingly passed onto the unborn child. So, all the feelings of a pregnant woman should not be ignored.

As in the second and third month of foetal development, stability of the foetus is important or it becomes comparatively more stable, the pregnant woman should involve herself in gentle activities for relaxation and calmness. She should avoid anger, fright, frustration, stress and tension situations. She should avoid unhealthy habits also that directly affects the growth of child.

Sushruta also emphasizes the role of *panchamahabhuta* in the foetal development especially in the second month of pregnancy. *Shabda*, *sparsha*, *rupa*, *rasa*, *gandha* which are the virtues of *panchamahabhuta* become evident in the fourth month. The division into the five *pinda* take place by *akashamahabhuta* in the third month. In the 8-9 weeks of foetal development sonographic study reveals that limb bud appear, Head can be seen as separate from the body.²⁶

Charaka says, In the third month, all sprouting parts become evident. In this period of foetal development all the systems of the body gets estab-

lished. The head is still large in size. Using ultrasonography the sex of the foetus can be determined by examination. The heart of the foetus makes relation to the mother by vessels. Foetal heart chambers are formed. Umbilical vein conveys oxygenated blood from mother to foetus through placenta. FHS can be heard with the help of the stethoscope.

Describing the development of the foetus in the fourth month *Charaka* says, the foetus looks like human being. The shape and all the parts of the body is almost formed. As per the modern science palpation of the foetal body parts can be made. Foetal movements can be felt by placing the hand over uterus.²⁷ *Sushruta* called the pregnant woman as *dauhradini* (with two hearts). Cravings of the pregnant woman should get fulfilled. According to my opinion, as foetus gets its nutrition from mother's body, she feels the deficiency of certain things and she wishes to eat them. I think cravings of pregnant woman can be explained by it. In the fifth month, increase in the body mass and blood of the foetus. FHS can be clearly heard. Foetal movements can be clearly felt by mother. The FHS varies 140-160 per min. but decreases to 120-140 per min. afterwards. In the sixth month, Foetus acquires well developed form in physical and mental aspect. Mother looks radiant. The skin of the foetus becomes reddish and wrinkled due to the lack of underlying connective tissue. In the seventh month, the testies descend downwards. A foetus born during this period (i.e. sixth or the early seventh month) has survived with great care. In the eighth month, Deposition of fat under the skin and wrinkles disappear. As per modern science skin becomes stretched and tight due to the more deposition of underlying fat. If the birth of a child takes place in this month, it is very difficult to survive. *Charaka* describes gestation period of 9-12 months. As per modern science, the duration of the gestation is considered as 9 months. At the time of birth the crown heel length is about 50 cms.

Considering each month of foetal development as per Ayurveda, many facts that Ayurveda scholars have described in their *samhitas* are found to be true on the basis of sonographic studies.

CONCLUSION

At this stage, the fruitful conclusions which have emerged through the discussion of the available concept are being presented as follows-

Ayurvedic embryology explains month wise foetal development along with the antenatal care of the pregnant woman which is found to be true on the basis of modern science.

By adopting various methods described in Ayurvedic embryology, smooth pregnancy can be ensured. Similarly good health can be given to mother and child.

While studying the foetal development in Ayurveda, we are surprised to know the span of their intellect. Though there is no mention of their research methods or any equipments, still they have described minute details of embryology long ago. If we can understand their line of thinking and follow their path we will be able to understand Ayurveda thoroughly and go ahead following their footprints.

Mother supplies the *seed* (ovum), *bhumi* (uterus) as well as nutrition through blood (*rasaja* and *sattvaja bhava*) to foetus so ayurved gives utmost importance to mother's physical and mental health. Ayurved has described in detail how a pregnant mother should be happy. One should nurture a pregnant woman like a precious flower.

REFERENCES

1. Sushruta Samhita, Sharira sthana, 3/15, edited & translated by Kaviraja Ambikadutta Shastri, Chaukhamba Sanskrit Sansthan, Part-I, Edition & Reprint 2005, Page 24
2. Charak Samhita, Sharira sthana, 4/9, Edited & Translated by Dr. Bramhanand Tripathi,

- Chaukhamba Surbharati Prakashan, 2009, Page 878
3. Ashtang Hridayam, Sharir sthana,1/37,Vaidya Lalchandra, Published by Motilal Banarasidas Private Limited, New Delhi, Edited & Reprint 1990
 4. Sushruta Samhita, Sharira sthana,3/15 ,edited & translated by Kaviraja Ambikadutta Shastri, Chaukhamba Sanskrit Sansthan, Part-I, Edition & Reprint 2005, Page 24
 5. Charak Samhita, Sharira sthana, 4/10 ,Edited & Translated by Dr. Bramhanand Tripathi, Chaukhamba Surbharati Prakashan, 2009, Page 878
 6. Sushruta Samhita,Sharira sthana, 3/15 ,edited & translated by Kaviraja Ambikadutta Shastri, Chaukhamba Sanskrit Sansthan, Part-I, Edition & Reprint 2005, Page 24
 7. Ashtang Hridayam, Sharir sthana,1/54,Vaidya Lalchandra, Published by Motilal Banarasidas Private Limited, New Delhi, Edited & Reprint 1990
 8. Kashyapa Saamhita, Sharira sthana,by Pt. Hemaraja Sarma and translated by Sri Satyapala Bhisagacharya, Chaukhamba Sanskrit Sansthan, Eighth Edition 2002,Page 70
 9. Text Book of Obstetrics including perianatology and contraception, D.C. Dutta, Edited by Hiralal Konar, New Central Book Agency (p) Ltd.,8/1 Chintamoni Das Lane, Calcutta (India), Sixth Edition, Page 645.
 10. Charak Samhita, Sharira sthana, 4/11 ,Edited & Translated by Dr.Bramhanand Tripathi, Chaukhamba Surbharati Prakashan, 2009, Page 878
 11. Sushruta Samhita, Sharira sthana,3/15 ,edited & translated by Kaviraja Ambikadutta Shastri, Chaukhamba Sanskrit Sansthan, Part-I, Edition & Reprint 2005, Page 24
 12. Sushruta Samhita, Sharira sthana,3/15 ,edited & translated by Kaviraja Ambikadutta Shastri, Chaukhamba Sanskrit Sansthan, Part-I, Edition & Reprint 2005,Page 24
 13. Charak Samhita, Sharira sthana, 4/20, Edited & Translated by Dr. Bramhanand Tripathi, Chaukhamba Surbharati Prakashan, 2009, Page 885
 14. Sushruta Samhita, Sharira sthana, 3/28 , edited & translated by Kaviraja Ambikadutta Shastri, Chaukhamba Sanskrit Sansthan,Part-I, Edition & Reprint 2005,Page 25
 15. Charak Samhita, Sharira sthana, 4/21 ,Edited & Translated by Dr.B ramhanand Tripathi, Chaukhamba Surbharati Prakashan, 2009, Page 885
 16. Kashyapa Saamhita, Sharira sthana,by Pt. Hemaraja Sarma and translated by Sri Satyapala Bhisagacharya, Chaukhamba Sanskrit Sansthan, Eighth Edition 2002, Page 71
 17. Sushruta Samhita,Sharira sthana,3/28 ,edited & translated by Kaviraja Ambikadutta Shastri, Chaukhamba Sanskrit Sansthan,Part-I, Edition & Reprint 2005,Page 25
 18. Charak Samhita, Sharira Sthana, 4/22 ,Edited & Translated by Dr. Bramhanand Tripathi, Chaukhamba Surbharati Prakashan, 2009, Page 885
 19. Sushruta Samhita, Sharira sthana, 3/28, edited & translated by Kaviraja Ambikadutta Shastri,Chaukhamba Sanskrit Sansthan, Part-I, Edition & Reprint 2005, Page 25
 20. Charak Samhita, Sharira sthana, 4/23 ,Edited & Translated by Dr. Bramhanand Tripathi, Chaukhamba Surbharati Prakashan,2009, Page 886
 21. Sushruta Samhita, Sharira sthana, 3/28 ,edited & translated by Kaviraja Ambikadutta Shastri, Chaukhamba Sanskrit Sansthan, Part-I, Edition & Reprint 2005,Page 25
 22. Charak Samhita, Sharira sthana, 4/24 ,Edited & Translated by Dr. Bramhanand Tripathi, Chaukhamba Surbharati Prakashan, 2009,Page 886
 23. Sushruta Samhita, Sharira sthana,3/28 ,edited & translated by Kaviraja Ambikadutta Shastri,

- Chaukhamba Sanskrit Sansthan, Part-I, Edition & Reprint 2005,Page 25
24. Charak Samhita, Sharira sthana, 4/25 ,Edited & Translated by Dr. Bramhanand Tripathi, Chaukhamba Surbharati Prakashan,2009,Page 886
 25. Embryology for Medical Students, Sudhir Sant, Japee Brothers Medical Publishers (p) Ltd., New Delhi, First Edition 2002, Page 39.
 26. Text Book of Obstetrics including perianatology and contraception, D.C. Dutta, Edited by Hiralal Konar, New Central Book Agency(p) Ltd.,8/1 Chintamoni Das Lane, Calcutta(India) ,Sixth Edition, Page 645.
 27. Text Book of Obstetrics including perianatology and contraception, D.C. Dutta, Edited by Hiralal Konar, New Central Book Agency(p) Ltd.,8/1 Chintamoni Das Lane, Calcutta(India) ,Sixth Edition, Page 69.
-

Source of Support: Nil

Conflict Of Interest: None Declared

How to cite this URL: Darokar Shrikant Bhaurao: To Study Month-Wise Foetal Development In Ayurveda Vis - A-Vis Modern Embryology. International Ayurvedic Medical Journal {online} 2017 {cited May, 2017} Available from:
http://www.iamj.in/posts/images/upload/472_479.pdf