

A REVIEW ARTICLE ON ANATOMICAL STRUCTURES INVOLVED IN GARBHA
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ABSTRACT

The Basic principle of Ayurveda (science of life) is “swathasya swasthya rakshanam atursya vikar prashamanam ch”. Swasthya i. e. Physical, Social and mental well-being of individual dependent of prakruti which is been formed during garbhavastha (during gestation or intra uterine life). Well-being of grabha can be achieved only through proper basic principles of garbhiniparichrya (regimen for pregnant lady) from confirmation of pregnancy till the time when baby got delivered. The foetus totally devoid of hunger and thirst, depends upon mother for nourishment. Before formation of placenta the nourishment of the embryo occurs through Upsneha (attracting moisture). During this time the embryo gets its nourishments through upsneha from the fluid Present around it. And later on it is nourished by placental circulation. Ayurveda focuses over dependency and nourishing structures in details. Here the comparative study is done regarding fetal nutrition providing structures.

KEYWORDS: Foetal nutrition, *grabhaposhan*, *garbha grabhiniparicharya*, *Upsneha*, *Ayurveda*.**INTRODUCTION**

Embryology in Ayurveda described in terms of *garbhasharir*. Various concepts regarding *garbhotpatti* upto *nishkraman* (conception to expulsion) quoted by *Acharyas* along with applied views.

Acharyasushruta has explained *garbhaadhan* (fertilization), *garbhaavkranti - masnumasikvrudhi* (fetal development), *garbhaaposhan* (nourishment), *garbhadharanavdhi* etc. Chapters in Ayurvedic texts. *Acharya Charak* has also explained *masanumasikvrudhi*.^[1] (month wise development) according to Ayurveda. According to Ayurveda *garbhaposhan* is described in two stages One is before formation of *apara* (placenta) and second after *apara* formation. *Upsnehannyaya*,^[2] has described by *Sushruta* for the *garbhaposhan* and also different structures are described here. *Upsnehan* –Nutrition by process of diffusion of water of full lake nourishes the plants on the bank. *Rasa*,^[3] is responsible for proper growth of the *Garbha*.

According to Ayurveda, essence of food (*rasa*) taken by

mother is divided into three parts.^[4] First nourishes her body, the other promotes her breast milk and third nourishes the foetus. Modern science also mentioned that nutrition to foetus from mother occurs through two circulations namely–placental circulation and foetal circulation.^[5] Umbilical cord of foetus is attached *rasa carrying nadi* of mother which carries *veerya of aahar rasa* (nutritious parts) mother to the foetus by indirect nutrition (*Upsneha*) the foetus develops.^[6] So in this article we will study the structures involved in *garbhaposhan* and its correlation with the modern anatomical structures.

DISCUSSION

Embryology is the study of development from the fertilized egg through eighth week. From fertilization through eighth week of development, a stage called the embryonic period, the developing human is called an embryo.^[7]

Further development i. e. beyond eighth week is considered as foetal development.

In Ayurveda related to Grabha fertilization – foetal development nutrition“ all these aspects explained in sharir-sthan of Sushrut Samhita Garbha related chapter explained by Acharyasushruta Charaka, and Vagbhata in various treatises. The following Aadhyaare described: shukrashonitshudhhishariradhyaya, Grabhavkranthi, Grabhavyakransharir, Mhatigrabhavkrantisharir the foetus), apara, function of apara, grabhanabhinadi etc. these concepts of grabha are elaborated by Sushruta. Chapter of conception, care of product of conception and pregnant women, Month wise treatment of pregnant women, care of child just after delivery instruction to pregnant women, cutting of umbilical cord are described by Acharya Charaka thoroughly.

Ayurveda gives importance to the quality of seed (*beeja* i.e. sperm and ovum) and concept of conception is compared with planting of tree as for proper growth of tree which needs healthy nourishment. “*Garbha* is union of *shukra*, *shonit* & *aatma*”.^[9] after the union of these *garbha* started the *vrudhi* that is the *masanumasikvrudhi* which is from *prathma mas* to *navam mas*. In this duration of nine months, *garbha* require the essential nutrition that is as called the *poshan*.

In *sharirsthana* AcharyaSushrutadescribed the *poshan* of *garbha*. According to Ayurveda Maternal food with nutrients enters in maternal *rasvahininadya* through the *nabhinadi* of *garbha*. It circulates blood in *garbhasharir* and *sarvashariravayav*. This nutrient part provide through *Tiryak gat* and *Rasvadahamnya* to all over body of *garbhait* causes *Angpratyangposhan*.^[10]

AcharyaCharaka has mentioned *Matrupatantrata*,^[11] that is maternal food (nutritional part) absorbed by foetus and foetus get nourished by *Upsnehannyaya* *Kedarkulyanyaya*,^[12] also explained in Ayurveda for the *garbhaposhan*. According to modern science nutrients, oxygen and antibodies are provided to the foetus from the maternal circulation.

As per modern science, foetus is union of human egg and sperm that is called as the fertilization. This fertilized ovum get implanted in the endometrium with formation of germ layer of foetal development In modern science two stages are described in foetal nourishment before placenta formation and after placenta formation. Embryogets nourished with uterine secretion and yolk sac. After placenta formation get nourished through the circulation from placenta to foetus –foetal circulation. Circulatory system of mother is not directly connected to that foetus, so the placenta function as the respiratory centre for the foetus as well as site of filtration for the plasma nutrients and waste through the umbilical cord which contain- Two umbilical arteries and one umbilical vein .Arteries are return de- oxygenated blood, foetal waste, CO₂ to placenta. Oxygenated blood and nutrients provide foetus by umbilical vein.^[13]

Circulation after birth changes occurs in

- 1) Pulmonary circulation –lungs functional and
- 2) Systemic circulation –placenta removed

Three shunts present in foetal life.^[14]

1. Ductusvenosus-connect the umbilical vein to the inferior vena cava
2. Ductusarteriosus-connect the main pulmonary artery to theaorta
3. Foramenaovale -anatomical opening between the right and left atrium.

Development of healthy foetus and to prevent the nutritive anomalies of the foetus, Acharya mentioned *Garbhini Aharparichrya* and also importance of *GarbhiniAharrasa* in Ayurveda in terms of *masanumasik ahar*.^[15]

If we compare the concept of *grabhaposhan* and foetal nourishment explained in Ayurveda and modern science, similarity related to dependency found. Foetus gets nourished with maternal blood through placenta same as that of *grabha* acquires *poshan* through *Matru- ahar – ras*. Maternal heart is connected to foetus via channels. Here in Ayurveda channels are mentioned as *Rasvahinidhamnya*.

Ayurveda	Modern
<i>Matruhrdya</i>	Maternal blood from heart
<i>Rasvahininadya</i>	Vessels from mother heart
<i>Nabhi</i>	Foetal umbilicus
<i>Nabhinadi</i>	Umbilical cord
<i>Aapra</i>	Placenta
<i>Garbhaasharir</i>	Foetal circulation

These above mentioned anatomical structures involved in foetal circulation or*Garbhaposhan* according to Ayurveda.

CONCLUSION

Grabhaposhan is one of the important factors responsible for *grabhaparivruddhi*. *Matruhryday*, *Nabhinadi*, *Rasvahini* are the directly involved structures whereas *Aparaos* indirectly mentioned in process of *grabhposha*. Almost all structures found to be foetus this concept was elaborated with keen observation in Ayurveda save as that of modern science.

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