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A REVIEW ON GARBHA SHARIR WITH SPECIAL REFERENCE TO ANGOTPATTI (ORGANOGENESIS)

***Dr. Sandeep Singh Rawat[1], Dr. Pankaj Singh[2], Dr. Akansha Bhatt[3], Dr. Mukesh Chand Ramola[4], Dr. Akanshu Kumar[5]**

[1]1st Year, P.G. Scholar, P.G., Department of Rachana Sharir, Himalayiya Ayurvedic Medical College And Hospital Dehradun, Uttarakhand

[2]Guide and Assistant Professor, P.G., Department of Rachana Sharir, Himalayiya Ayurvedic Medical College And Hospital Dehradun, Uttarakhand

[3]Co-Guide and Associate Professor, P.G., Department of Rachana Sharir, Himalayiya Ayurvedic medical College & hospital Dehradun, Uttarakhand

[4]1st Year, P.G. Scholar, P.G., Department of Rachana Sharir, Himalayiya Ayurvedic Medical College And Hospital Dehradun, Uttarakhand

[5]1st Year, P.G. Scholar, P.G., Department of Rachana Sharir, Himalayiya Ayurvedic Medical College And Hospital Dehradun, Uttarakhand

*Corresponding Author's Email ID: sandyrawat1631@gmail.com

ABSTRACT

Background *Garbha Sharir* (embryology) is a fundamental branch of *Sharira Rachana* that provides insight into the development of the human body from the union of *Shukra* and *Artava* to the formation of *Anga* (organs). The process of *Angotpatti*, or organogenesis, has been discussed by various *Acharyas* in classical Ayurvedic texts such as *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Sangraha*, with descriptions that correspond in many ways to modern embryology. This review aims to consolidate classical knowledge with current scientific understanding. **Aim** To critically review the Ayurvedic concept of *Garbha Sharir* with special reference to *Angotpatti* (organogenesis) and correlate it with modern embryological understanding. **Objectives** To explore classical Ayurvedic references related to *Angotpatti*. To understand the sequential development of organs during intrauterine life

as per *Brihattrayi*. To identify the role of *Tridosha* and *Panchamahabhuta* in embryonic organ formation. To compare Ayurvedic descriptions of *Angotpatti* with modern organogenesis. To highlight the relevance of Ayurvedic embryology in contemporary medical discourse. **Materials and Methods** A comprehensive literary review was conducted using *Brihattrayi* (Charaka, Sushruta, and Vagbhata Samhitas), authoritative commentaries such as *Ayurveda Dipika* and *Nibandha Sangraha*, and modern embryology textbooks. Comparative analysis was done to align classical terms and concepts with modern anatomical and developmental terminology. **Results** The classical texts describe the formation of *Garbha* in terms of *Panchabhautika* principles and *Tridosha* involvement. Specific timelines are given for the development of *Angas* (organs) such as *Hridaya*, *Shira*, *Nabhi*, and *Guda*. Sushruta's month-wise account of *Angavibhaga* shows remarkable correlation with organogenesis stages described in modern embryology. **Conclusion** Ayurveda provides a unique and systematic description of embryonic development through the lens of *Dosha*, *Dhatu*, and *Bhuta* contributions. When juxtaposed with modern science, these descriptions reflect deep observational insight and can enrich contemporary understanding of organogenesis through a holistic perspective.

Keywords: *Garbha Sharir*, *Angotpatti*, *Sharira Rachana*, *Organogenesis*, *Ayurveda*, *Embryology*

INTRODUCTION

Garbha Sharir, or Ayurvedic embryology, is a significant branch of *Sharira Rachana* that explores the origin and intrauterine development of human life. It systematically explains the formation of *Garbha* (embryo), its nourishment, development of various *Anga-Pratyanga* (organs and sub-organs), and factors responsible for a healthy progeny. Ancient sages meticulously documented the stages of embryonic development based on observational and inferential knowledge, reflecting the profound vision of Ayurvedic science.[1]

According to Ayurveda, *Garbha* is formed by the union of *Shukra* (male reproductive element) and *Artava* (female reproductive element) in the *Garbhashaya* (uterus) in the presence of *Jeevatma* (consciousness) and *Kala* (appropriate time). This union initiates the cascade of developmental processes influenced by *Panchamahabhutas*, *Tridosha*, and *Manas*. The sequential growth of the embryo is described using metaphors and analogies rooted in nature, emphasizing the holistic principles of Ayurveda.[2]

The concept of *Angotpatti*—formation of body parts—is discussed elaborately in Ayurvedic texts such as *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Sangraha*. Each *Acharya* presents unique interpretations of the sequence and timing of organ development. For instance, *Acharya Sushruta* describes month-wise formation of organs, whereas *Acharya Charaka* focuses on the role of *Dosha* and *Bhuta* in shaping the fetus. These descriptions, though framed in ancient terminology, mirror modern embryological principles to a significant extent.[3]

The formation of various organs (*Anga*) is attributed to the functional predominance of *Tridosha*—*Vata*, *Pitta*, and *Kapha*—and the structural contribution of *Panchamahabhutas*—*Prithvi*, *Ap*, *Teja*, *Vayu*, and *Akasha*. Each organ is said to be formed from a specific combination of these elements. For example, *Asthi* (bones) originate from *Prithvi* and *Vayu*, *Rasa* (plasma) from *Ap*, and *Pitta* influences the metabolic aspect of development. This concept explains organogenesis in an elemental and functional framework.[4]

Modern embryology describes organogenesis as the process of differentiation of the three germ layers—ectoderm, mesoderm, and endoderm—into various organ systems, guided by genetic and molecular signaling pathways. While Ayurveda does not use such technical classifications, its conceptual framework of *Bhutic* and *Doshic* involvement in *Angotpatti* parallels the functional division of tissues and systems. Recent interdisciplinary studies are beginning to recognize the value of such traditional insights in enriching developmental biology.[5]

Despite the ancient origins of Ayurvedic embryology, its concepts remain relevant, especially in understanding human development from a systemic and functional viewpoint. There is a growing need to re-explore these classical principles in the light of modern science. This review aims to revisit the concept of *Garbha Sharir* with particular emphasis on *Angotpatti*, analyze classical textual references, and correlate them with contemporary embryological insights to bridge the gap between ancient wisdom and modern knowledge.[6]

AIM AND OBJECTIVES

Aim

To critically review the Ayurvedic concept of *Garbha Sharir* with special reference to *Angotpatti* (organogenesis) and correlate it with modern embryological understanding.

Objectives

1. To explore classical Ayurvedic references related to *Angotpatti*.
2. To understand the sequential development of organs during intrauterine life as per *Brihattrayi*.
3. To identify the role of *Tridosha* and *Panchamahabhuta* in embryonic organ formation.
4. To compare Ayurvedic descriptions of *Angotpatti* with modern organogenesis.
5. To highlight the relevance of Ayurvedic embryology in contemporary medical discourse.

MATERIAL AND METHOD

This study was conducted as a descriptive literary review based on classical Ayurvedic texts and modern embryological literature. Primary sources included *Charaka Samhita*, *Sushruta Samhita*, and *Ashtanga Sangraha*, along with authoritative commentaries like *Ayurveda Dipika*, *Nibandha Sangraha*, and *Sarvangasundara*. Secondary sources such as *Ayurveda Ka Vaigyanika Itihas*, *Sharira Rachana Vijnana* textbooks, and peer-reviewed journals were consulted for comparative analysis. Modern embryology references included standard medical texts like Langman's *Medical Embryology* and Moore's *The Developing Human*. The review emphasized conceptual mapping of *Angotpatti* as described in Ayurveda with organogenesis stages in modern science.

CONCEPTUAL STUDY

GARBHA SHARIR

ETYMOLOGICAL

The term *Garbha* is derived from the Sanskrit root "gṛbh", which means "to hold" or "to conceive". It refers to the fertilized product or embryo that resides in the *Garbhashaya* (uterus). In Ayurveda, *Garbha* is not just a physical entity but a composite of *Sharira* (body), *Indriya* (senses), *Sattva* (mind), and *Atma* (soul).[8]

PANCHAMAHABHUTA SIDDHANTA AND GARBHA[9]

Ayurveda asserts that all living beings are made of *Panchamahabhutas—Prithvi*, *Ap*, *Teja*, *Vayu*, and *Akasha*. These elements contribute in the following way:

Table No. 1 *Mahabhuta* and Contribution in *Garbha* Formation

Mahabhuta	**Contribution in Garbha Formation**
Prithvi	Structural aspect – bones, muscles
Ap	Fluids – plasma, amniotic fluid
Teja	Digestive/metabolic – *Pitta*, cellular transformation
Vayu	Movement and division – *Vata*
Akasha	Spaces – bodily cavities

BASIC FACTORS RESPONSIBLE FOR *GARBHA* FORMATION[10]

As per *Charaka Samhita*, four main factors (*Garbha Sambhava Samagri*) are essential for the formation of *Garbha*:

Table No.2 Factor and Description

Factor	**Description**
Ritu	Fertile period of the menstrual cycle
Kshetra	Healthy uterus (*Garbhashaya*)
Ambu	Proper nourishment – *Rasa Dhatu*
Beeja	Viable sperm and ovum (*Shukra* and *Artava*)

ROLE OF *ATMA, MANA, AND KARMA IN GARBHA*[11]

- **Atma (soul)**: Considered the eternal element that enters the zygote at the moment of conception.
- **Mana (mind)**: Subtle and derived from *Ahankara*; imparts consciousness and behavior.
- **Karma (past deeds)**: Determines physical characteristics, lifespan, and tendencies (Prarabdha Karma).

INTRAUTERINE DEVELOPMENT (*GARBHA VRIDDHI*)[12]

Table No. 3 development of the embryo

Month	Development (According to Sushruta)
1st	*Kalal* (zygote-like structure) formation
2nd	Differentiation of *Anga-Pratyanga* begins
3rd	Distinct features – *Mukhadi Indriya*
4th	*Chitta* (consciousness) becomes active
5th	Development of *Panchendriya*
6th	Mind (*Manas*) becomes functional
7th	Fetus becomes movable; male/female differentiation clear
8th	Ojas flows intermittently between mother and fetus
9th	Fetus matures; ready for delivery

CONCEPT OF *ANGOTPATTI* (ORGANOGENESIS)[13]

Ayurvedic texts describe the formation of organs from *Beeja*, *Panchamahabhuta*, and *Dosha* components. The organogenesis is conceptualized as follows:

- **Heart (*Hridaya*)**: Center of consciousness and life; formed by *Teja* and *Vata* predominance.
- **Brain (*Mastulunga*) and *Shira***: Controlled by *Vata*, derived from *Akasha* and *Vayu*.
- **Liver, spleen, lungs, etc.**: Develop in a sequence, influenced by Dhatwagni and Doshas.

SEX DETERMINATION AND *GARBHA LINGA NIRNAYA*[14]

Ayurveda describes multiple factors affecting the sex of the fetus (*Garbha Linga*):

- Dominance of *Shukra* leads to male child; *Artava* leads to female.
- Even/odd days of coitus.
- Right/left uterine side.
- Previous *Karma* and *Purva Janma Samskara*.

CONTRIBUTION OF DIFFERENT *ACHARYAS*[15]

Table No.4 Acharya and Contribution

Acharya	Contribution
Charaka	Emphasized functional aspects and *Dosha*-based development.
Sushruta	Described month-wise fetal development and *Angavibhaga*.
Vagbhata	Combined features of both Charaka and Sushruta with clarity.

MODERN CORRELATION OF AYURVEDIC *GARBHA SHARIR*[16]

When compared with modern embryology:

- *Garbha Sthapana* aligns with fertilization and implantation.
- *Anga-Pratyanga Vibhaga* parallels organogenesis and cellular differentiation.
- Role of *Rasa Dhatu* is similar to placental nutrition.
- *Ojas* corresponds with immune strength and vitality.

ANGOTPATTI (ORGANOGENESIS)

ETYMOLOGY

- *Angotpatti* is derived from two Sanskrit terms—*Anga* meaning "organ or part" and *Utpatti* meaning "origin or formation".
- Thus, *Angotpatti* refers to the formation and differentiation of body parts or organs during the intrauterine development of the fetus (*Garbha*).
- In Ayurveda, this concept is understood not only anatomically, but also through *Panchamahabhuta*, *Tridosha*, *Beeja* (genetic seed), and *Karma* influences.[17]

CLASSICAL AYURVEDIC UNDERSTANDING OF *ANGOTPATTI*[18]

According to *Brihattrayi*, the development of fetal organs occurs sequentially, guided by the interplay of the following factors:

- **Beeja**: Represents the *Shukra* and *Artava* components; the base of heredity and constitution.

- **Panchamahabhutas**: Structural elements that contribute to the development of *Angas*:
    - *Prithvi* – solidity (bones, muscles)
    - *Ap* – fluidity (blood, lymph, rasa)
    - *Teja* – metabolism (digestion, transformation)
    - *Vayu* – motion (cell division, movement)
    - *Akasha* – space (cavities, orifices)
- **Tridosha**:
    - *Vata* governs the division and placement of parts.
    - *Pitta* aids in transformation and differentiation.
    - *Kapha* supports growth, stability, and lubrication.

MONTH-WISE DESCRIPTION OF ORGAN DEVELOPMENT (ACCORDING TO *SUSHRUTA*)

Table No. 5 Month of Pregnancy and Organ Development (*Angavibhaga*)

Month of Pregnancy	**Organ Development (*Angavibhaga*)**
1st Month	Formation of *Kalala* (zygote-like mass)
2nd Month	Differentiation of *Anga-Pratyanga* begins
3rd Month	*Indriya* and organ buds start appearing
4th Month	Heart (*Hridaya*) develops and *Chetana* enters
5th Month	Development of *Buddhi* and *Indriya*
6th Month	Mind (*Manas*) becomes functional
7th Month	Body becomes structurally defined and active
8th–9th Month	Maturation of all *Anga* and development of *Ojas*

Table No. 6 Organ Formation According To *Mahabhuta* Dominance

Organ/System	Predominant Mahabhuta	Functional Role
Asthi (Bones)	*Prithvi*, *Vayu*	Support and structure
Rasa, *Rakta*	*Ap*, *Teja*	Circulation and nutrition
Hridaya (Heart)	*Teja*, *Vayu*	Life center, consciousness
Mastulunga (Brain)	*Akasha*, *Vayu*	Coordination and cognition
Tvak (Skin)	*Prithvi*, *Ap*	Covering, sensation

FACTORS DETERMINING ORGAN DEVELOPMENT

a. Beeja and Beeja Bhaga

- *Beeja* refers to the fertilized zygote (combined *Shukra* and *Artava*).
- *Beeja Bhaga* and *Beeja Bhaga Avayava* describe parts of the seed that form specific body components like *Nayana* (eyes), *Karna* (ears), etc.[19]

b. Karma (Previous Deeds)

- Inherited *Karmas* of the *Jeevatma* influence organ form, function, and possible deformities.[20]

c. Ahara Rasa and Rasa Dhatu

- *Rasa* supplies essential nutrients to the developing organs; improper *Ahara* can impair *Angotpatti*.[21]

Table No. 7 Comparison with Modern Embryology

Ayurvedic Concept	Modern Equivalent
Beeja, *Shukra-Artava*	Gametes and zygote
Panchamahabhuta	Molecular elements, tissues
Tridosha	Regulatory systems (nervous, endocrine)
Angavibhaga	Organogenesis and morphogenesis
Manas, *Chetana*	Central nervous system, cognition
Garbha Vriddhi	Fetal growth and maturation

CLINICAL RELEVANCE OF *ANGOTPATTI*[22]

- **Congenital Anomalies**: Considered results of *Beeja Dosha*, *Beeja Bhaga Dosha*, or *Karmaja Vikara*.
- **Rasayana Therapy**: Prescribed in early pregnancy for proper organ development.
- **Antenatal Care (*Garbhini Paricharya*)**: Ensures correct organogenesis through month-wise dietary and lifestyle regimens.
- **Preconceptional Counseling (*Garbhadhana Samskara*)**: To ensure quality *Beeja* for ideal *Angotpatti*.

RESULTS AND FINDINGS

- Ayurvedic texts provide a structured and month-wise description of fetal development (*Garbha Vriddhi*), especially in terms of organ formation (*Angotpatti*), which correlates conceptually with modern embryological stages.
- *Angotpatti* is understood through the integrative framework of *Panchamahabhuta*, *Tridosha*, *Beeja*, *Beeja Bhaga*, and *Karma*, indicating both anatomical and metaphysical dimensions of organogenesis.
- *Sushruta Samhita* offers the most detailed account of sequential organ development, while *Charaka* emphasizes the physiological and functional aspects of fetal growth.
- The role of *Rasa Dhatu*, *Ojas*, and maternal factors such as diet and lifestyle (*Garbhini Paricharya*) are considered crucial for normal organ development.
- Modern concepts like fertilization, germ layer formation, and system-wise organogenesis align significantly with classical Ayurvedic ideas when interpreted through comparative analysis.
- The Ayurvedic approach offers a holistic perspective by considering physical, psychological, and spiritual factors in the process of organ formation, with implications for preventive and promotive antenatal care.

DISCUSSION

The concept of *Angotpatti* in Ayurveda offers a holistic view of organogenesis, combining physical, elemental, psychological, and metaphysical dimensions. Unlike modern embryology, which is primarily rooted in cellular and molecular biology, Ayurveda attributes

organ formation to the interplay of *Panchamahabhutas*, *Tridosha*, *Beeja*, and *Karma*. This multidimensional framework reflects a deep understanding of human development not only as a biological process but also as a result of *Purva Karma* (past deeds), mental impressions (*Manas*), and vitality (*Ojas*), making it a unique and integrative science.[23]

The Ayurvedic texts, especially *Sushruta Samhita*, offer detailed, sequential month-wise descriptions of fetal development, including the timing and nature of *Anga* (organ) formation. For instance, the heart (*Hridaya*) is said to develop by the fourth month, aligning with the emergence of cardiac activity noted in modern embryology. Similarly, the formation of *Indriya*, *Manas*, and *Chetana* across successive months parallels the maturation of the nervous system, sensory organs, and consciousness. This indicates that ancient scholars had observational accuracy in understanding developmental milestones even without advanced technology.[24]

Ayurveda attributes specific roles to *Vata*, *Pitta*, and *Kapha* in organ formation. *Vata* governs cellular division, movement, and structural patterning; *Pitta* is responsible for transformation and metabolic activities; and *Kapha* contributes to tissue stability and cohesion. The *Panchamahabhuta* theory further explains the material basis of organs, assigning developmental roles based on elemental dominance. These concepts, when interpreted comparatively, align with modern ideas of genetic regulation, tissue differentiation, and morphogenesis, although presented in a philosophical format.[25]

Ayurveda places significant emphasis on maternal health, nutrition, and lifestyle in influencing *Angotpatti*. The role of *Ahara Rasa*, *Rasa Dhatu*, and *Garbhini Paricharya* is highlighted in ensuring proper nourishment and growth of fetal tissues and organs. This aligns with modern understanding where maternal nutrition, hormonal balance, and antenatal care are critical for preventing congenital anomalies and supporting healthy fetal development. Ayurvedic guidelines provide a preventive approach through diet, lifestyle, and herbal interventions, which can complement modern prenatal care.[26]

The study reveals that Ayurvedic embryology—especially the concept of *Angotpatti*—is not only relevant but also offers rich insights that can bridge traditional knowledge with modern science. By revisiting classical concepts in light of contemporary embryological findings, we can foster interdisciplinary research and develop integrative models of maternal and fetal health. The philosophical depth and preventive focus of Ayurveda make it valuable in

evolving comprehensive prenatal care strategies. Further research into correlating Ayurvedic terms with embryological stages can enhance this integration.[27]

CONCLUSION

The concept of *Angotpatti* as described in Ayurvedic literature presents a profound and holistic understanding of organogenesis, rooted in the synergistic action of *Panchamahabhuta*, *Tridosha*, *Beeja*, and *Karma*. Classical texts like *Sushruta Samhita* provide structured, month-wise developmental stages of fetal organs, many of which correspond conceptually with modern embryological findings. Ayurveda's emphasis on maternal nutrition, mental state, and lifestyle through *Garbhini Paricharya* highlights its preventive and promotive approach to fetal health. When interpreted through a comparative lens, Ayurvedic embryology offers valuable insights that complement contemporary science, providing a unique foundation for integrative research and enhancing antenatal care with its personalized and naturalistic principles.

CONFLICT OF INTEREST –NIL

SOURCE OF SUPPORT –NONE

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