

Ayurvedic Aspect of Embryological Implication and its Anatomical Variations - A Review

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ABSTRACT

Introduction: A congenital malformation or congenital anomalies are morphological abnormality which results from an abnormal developmental process during the embryo formation. Based on the type, size and location, malformations can cause structural, functional, psychological disorders. In modern era there are many drugs commonly used by pregnant ladies, which have huge influence on development of foetus and may continue in further life process after birth also.

Objective: To analyse *Ayurveda* & modern embryological implications in anatomical variations.

Materials & Methods: *Ayurveda* & Modern textbooks, publications were scrutinised in relation to embryological implications in anatomical variations.

Discussion: Diclofenac usage during pregnancy increases the chance of low-birth-weight babies as well as the risk of vaginal bleeding and spontaneous abortion. Most commonly prescribed antibiotics during pregnancy include Amikacin, gentamicin, streptomycin, and tobramycin. The serum half-life of these aminoglycosides is shorter and clearance is increased in pregnancy. In *Ayurveda*, significance of taking care of mother before, during, and after pregnancy is heavily emphasised throughout the intrauterine life, the foetus depends on mother for both nutrition and development. While explaining *Garbhini Paricharya*, concept of *Garbhopaghatakara Bhavas*-the things to avoid during pregnancy is also described.

Conclusion: The anatomical, physiological, psychosomatic disorders are explained in various classical texts. The effects which are seen in newborn child due to *Garbhopaghatakara Bhavas* are corelated with anomalies in contemporary science. Anatomical abnormalities come in many different forms and can be caused by a number of different things, including genetic, environmental, and other influence. The physician who knows the whole body from all aspects, can treat the illness effectively and restore health.

How to cite this paper: F. Hallemanavar Yashasvi | R Shenoy Deepthi | Kamath Nagaraj "Ayurvedic Aspect of Embryological Implication and its Anatomical Variations - A Review" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470,

Volume-8 | Issue-1, February 2024, pp.271-275, URL: www.ijtsrd.com/papers/ijtsrd62363.pdf

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KEYWORDS: *Garbha*, *Ayurveda*, *Garbhopaghatakara Bhavas*, *congenital malformation*



IJTSRD62363



INTRODUCTION

In modern era there are several drugs or medications which are used commonly by pregnant ladies, would be having huge influence on development of foetus during development and which may continue in further life process after birth also. Ayurveda is traditional medical practice focusing on prevention as well as curative aspect. The significance of taking care of mother before, during, and after pregnancy is heavily emphasised for healthy progeny.

Prevalence: A congenital malformation or congenital anomalies are morphological abnormality which results from an abnormal developmental process during the embryo formation. Based on the type, size and location, malformations can cause structural, functional, psychological disorders. According to the WHO about 50% of congenital anomalies lack a definite attributable cause. ^[1] A polymalformative syndrome was identified in 26.5% of cases, totaling 470 anomalies. The musculoskeletal anomalies were most prevalent at 33%, followed by neurological abnormalities at 18%, including hydrocephalus (31%), anencephaly (26.2%), and spina bifida (20.24%). Anomalies of the eye, ear, face and neck were reported in 12% of the cases, while genetic abnormalities were observed in 8.5%, with Down syndrome accounting for 87.5%. Congenital malformations constitute around 3% of live births and 20% of stillbirths. In industrialized nations they pose a significant cause of infant mortality, morbidity and disability. The overall prevalence of anomalies was 182 (95% CI: 173-191) per 10,000 live births with circulatory system malformations being the most common (28.0%) followed by musculoskeletal (18.6%) and urinary system (14.3%). ^[2]

Medications Frequently Used In Pregnancy:

Diclofenac has been used to treat the pain and swelling associated with rheumatic illnesses as a non-steroid anti-inflammatory medication. It is one among the world's most extensively used non-steroidal anti-inflammatory medications, which cause embryotoxicity and teratogenicity. Diclofenac exposure during pregnancy raises the chance of low birth weight in the foetus, as well as the risk of spontaneous abortion and vaginal bleeding in the mother. ^[3] Acetaminophen the drug is non-opioid analgesic & antipyretic agent. Use during pregnancy has been associated with a risk of still birth, preterm birth, in clinical practice regarding use of acetaminophen during pregnancy. The 50% increased risk of preterm birth in women with pre-eclampsia. ^[4] Amikacin, gentamicin, streptomycin, and tobramycin are the most commonly prescribed aminoglycosides. During pregnancy, the serum half-life of

aminoglycosides is shorter and clearance is increased. Due to this and a larger volume of distribution in pregnant women, aminoglycosides may have a lower serum peak concentration compared to nonpregnant women. Aminoglycosides cross the placenta and may result in toxicities, especially if administered in the first trimester of pregnancy ^[5]. Thalidomide was first synthesized in 1953 and became popular as a sedative prescribed for the morning sickness often associated with pregnancy, The abnormalities in structures developed from mesenchyme, the bones and musculature of the gut. Bony development seems to be affected in a very striking manner, resulting in polydactyly, syndactyly, and failure of development of long bones. ^[6]

Drugs: Alcohol consumption in pregnancy can produce a spectrum of abnormalities in the developing foetus, ranging from minor retardation of growth to the fully developed. 'Foetal alcohol syndrome'. This syndrome comprises a constellation of physical and mental defects associated with a characteristic facial appearance that is found in children born to chronic alcoholic women, several case studies have recently appeared in the literature, and its incidence is increasing. In moderately drinking pregnant women increased rates of spontaneous abortion, stillbirth and congenital malformation as well as growth retardation have been reported. ^[7] Smoking was found to be strongly associated with an elevated risk of placenta previa, abruptio placenta, ectopic pregnancy, and PPRM, and a decreased risk of pre-eclampsia. All pooled odds ratios were statistically significant. The literature provides examples of numerous studies that link tobacco use during pregnancy to an increased risk of low birthweight, perinatal mortality, and sudden infant death syndrome. ^[8] Cannabis use increases the risk of preterm birth, low birth weight, small-for-gestational age and major congenital anomalies in the new born. ^[9]

Ayurveda is traditional medical practice that emphasize both preventive and therapeutic care for a person's health. The significance of taking care of mother before, during and after pregnancy is heavily emphasized. The foetus is dependent on mother for nutrition and development throughout the intrauterine life. The acharyas has described the *Grabhopaghatakara Bhavas* the things to avoid during pregnancy, while describing *Garbhini Paricharya*. *Garbhopaghatakara Bhava* Sitting constantly on uneven, uncomfortable and hard seats. Suppression of natural urges like flatus, urine and feaces. Indulging in intensive and extreme type of physical exercises. Regular intake of hot and pungent

substances. Intake of excessive quantity of food or insufficient food.^[10] *Ayurveda* is traditional medical practice that emphasis both preventive and therapeutic care for a person's health. the significance of taking care of mother before, during, and after pregnancy is heavily emphasised. throughout the intrauterine life, the foetus depends on mother for both nutrition and development. The *Acharyas* has described the *Garbhopaghatakara Bhavas* the things to avoid during pregnancy, while describing *Garbhini Paricharya. Garbhopaghatakara Bhāva* Sitting constantly on uneven, uncomfortable and hard seats. Suppression of natural urges like flatus, urine and feces. Indulging in intensive and extreme type of physical exercises. Regular intake of hot and pungent substances. Intake of excessive quantity of food or

insufficient food.^[11] *Acharya Charaka* explains Anatomical, physiological, psychosomatic abnormalities in classical texts *Acharya Chakrapanidatta* explains embrillogical implications of anatomical deformities since and before the time of conception - Even before the conception if the woman is resorted to unwholesome food and activities causes the vitiation of *Artava* and results in foetal defects; similarly, if the male partner who is resorted to unwholesome food and activities causes the vitiation of *Shukra* and it also can lead to fetal defects. However, in mother these factors play their role both before and after conception also. Before conception, these factors cause defects in the foetus by vitiating ovum, but after conception these factors cause injury or deformity in the foetus directly.

Table no. 1 showing *Garbhopaghatakara Bhavas* and its effect on pregnancy

SN	Pregnant women consuming constantly	Effect on progeny
1	Woman sleeping is open place and moving out in night	Insane (<i>Unamtta</i>)
2	Indulges in quarrels and fights	Epileptic (<i>Apsmara</i>)
3	Indulged in sexual intercourse	Ill-physique, unashamed and devoted to female,
4	Always under grief	fearful, undeveloped or short-lived
5	Thinking of others to harmful	Envious or devoted to woman
6	Always think to thief	Exerting, wrathful or inactive
7	Always remain intolerant	Fierce, deceptive and jealous
8	Sleeps constantly unwise	Drowsy, and deficient in digestion power
9	Wine	Thirsty, poor in memory and unstable in mind
10	Iguana	Gravels, stone or <i>Shanermeha</i>
11	Pork	Red eyes, obstructed, respiration and very rough body hair
12	Fish	Delayed closure of eye or stiff eyes
13	<i>Madhura Rasa</i>	Diabetes (<i>Prameha</i>), Dumb (<i>Mooka</i>), or overobese (<i>Atishoulya</i>)
14	<i>Amla Rasa</i>	Internal haemorrhage (<i>Raktapitta</i>), eye disorder (<i>Akshiroga</i>) and skin disorder (<i>Twakroga</i>)
15	<i>Lavana Rasa</i>	Wrinkles and grey hairs (<i>Valita Palita</i>) and Baldness (<i>Khaliya</i>)
16	<i>Katu Rasa</i>	Weakness (<i>Durbala</i>), deficient in semen (<i>Alpashukra</i>) and infertile (<i>Anapatya</i>)
17	<i>Tikta Rasa</i>	Consumptive (<i>Shosha</i>), weak (<i>Abala</i>), under developed (<i>Anupchita</i>)
18	<i>Kashaya Rasa</i>	Blackish colour (<i>Shyava Varna</i>), <i>Udavarta</i> and <i>Anaha</i> .

DISCUSSION:

Anatomical abnormalities come in many different forms and can be induced by a number of different things, including genetic, environmental, and other influence. The drug Diclofenac might leads to embryotoxicity and teratogenicity. The drugs Amikacin, gentamicin, streptomycin, and tobramycin are the commonly prescribed aminoglycosides may result in toxicities by crossing the placenta. Acetaminophen has 50% raised risk of preterm birth in women with pre-eclampsia. Alcohol consumption in pregnancy can produce a spectrum of abnormalities

in the developing foetus, 'Foetal alcohol syndrome'. This syndrome comprises a constellation of physical and mental defects. Pregnant women who consumes *Madya* (wine) frequently will deliver the new born child with poor memory and unstable in mind according to classical texts of *Ayurveda*. In modern aspects, infants born to mothers who consumed alcohol during gestation can exhibit birth defects and developmental disabilities i.e. Foetal alcohol spectrum disorders (FASDs). Among this heart, bone, kidney, vision and hearing problems common. **It can**

also cause seizures and other neurologic problems, such as learning disabilities, and poor balance and coordination.^[12] Pregnant women who is addicted for fish meat causes delayed closure of eye or stiff eyes, which can be corelated to Lagophthalmos which results in thixotropy of the levator palpebrae muscle i.e., the development of strong cross bridges between the actin and myosin filaments of the muscle fibres resulting in stiffness of the muscle, this is seen in new born child. Pregnant women who consumes more *Lavana Rasa* causes wrinkles and grey hair (*Valita Palita*) and Baldness (*Khaliyta*) of a new born child. Hypotrichosis refers to congenital hair follicle deficiency; in contrast to alopecia disorders which cause loss of existing hair. Congenital Hypotrichosis is a group of disorders involving some form of hair follicle deficiency. Congenital Hypotrichosis arises due to genetic anomaly, or from an abnormality occurring in embryonic development.^[13] Pregnant women who consumes more *Katu Rasa* the new born child faces weakness (*Durbala*), deficient in semen (*Alpashukra*) and infertile (*Anapatya*). Teratozoospermia is a condition in which a man has a high amount of abnormal shaped sperm. Every sperm count has a large percentage of abnormally shaped sperm present, but when this percentage is over 96% of the sample, it is known as teratozoospermia, which results infertility in males.^[14]

CONCLUSION:

Ayurveda has a systematic explanation of anatomical and physiological variations which are to be scrutinized further for deeper understanding of anomalies in pregnancy. In garbhavastha anatomical changes mainly formed due to variations in *Panchamahabhuta* coglemeration with *Dhatus* and altered functions in *Panchamahabhuta* influenced by *Nidanas* leads to anatomical changes in foetus. Fusion of *Shukra*, *Shonita*, *Atma* in *Garbhashaya* forms *Garbha*. *Vayu Mahabhuta* divides the *Garbha* (cell division), *Teja Mahabhuta* helps in processing and tranformation, *Jala Mahabhuta* does *Kledana*, *Prithvi Mahabhuta* solidifies and gives shape and structure, *Akasaha Mahabhuta* does *Vivardhana* (Enlargement). The physician who knows the whole body from all aspects, can treat the illness effectively and restore health.

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