

**International Journal of** 

# Contemporary Research In Multidisciplinary

Research Article

# Critical Evaluation of Garbhasrava and Garbhapata with Reference to Spontaneous Abortion

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**DOI:** https://doi.org/10.5281/zenodo.15766266

#### Abstract

In Present day life style, nutritional deficiency, psychological stress, Telephonic habit, late night sleep, processed food or junk food, changing habits from rural culture to western culture, all these things disrupt physiology of reproduction and hinder the growth & development of foetus. Among other cases, abortion rate is drastically increased from last few decades, Modern lifestyle behaviours generate reactive oxygen radicals in the ovary and in testes in male, accumulation of these oxidative radicals, impaired the function of ovary and testes in male and reduces reproductive outcome. In present scenario psychological factor also could impact the physiology of female reproduction. The increased level of stress hormones such as cortisol reduces estradiol production in female and testosterone in male, in female it impaired granulosa cell function and in male leydig cell's function is disturbed which results deterioration in oocyte and sperm quantity and quality and insufficient endometrial growth in female. Unwholesome food and stress disrupt HPG axis (Hypothalamus, pituitary Gonadal axis) in male and female, and is responsible for low quantity and poor quality of ovum and sperm production. According to ayurvedic literature expulsion of foetus up to 4 months termed as garbhasrava due to its liquidity (द्रवरूपतया गर्भविद्रवो) In modern literature abortion term used up to 22 weeks of pregnancy i.e. approx. 4 month and from 5 to 6 month termed as garbhapata (स्थिर शरीरस्य पात) due to stability of foetus, after 6 months term used are, pre-term labour. About 70% abortion occur before 16 week (up to 4 month) and of these about 80% occur before 12 week (3 months) of pregnancy. In ayurveda term Sanjatsar (संजातसार) are used after 4 months of pregnancy because after 4 month all the organs and placenta are completely formed and stability of foetus occur, before 3 months garbha is called Asanjatsar (असंजातसार) due to still developing placenta and organs and its instability.

#### **Manuscript Information**

■ ISSN No: 2583-7397

Received: 19-06-2025

• **Accepted:** 28-06-2025

Published: 29-06-2025

■ **IJCRM:**4(3); 2025: 529-534

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Plagiarism Checked: YesPeer Review Process: Yes

#### **How to Cite this Article**

Jaiswal P, Gupta D. Critical Evaluation of Garbhasrava and Garbhapata with Reference to Spontaneous Abortion. Int J Contemp Res Multidiscip. 2025;4(3):529-534.

#### **Access this Article Online**



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KEYWORDS: Abortion, Garbha Shaya, aahar, susurta, shukra

#### INTRODUCTION

Abortion is defined as spontaneous or induced termination of pregnancy before foetal viability (20 -22week.) American society of reproductive medicine states that recurrent abortion is defined as the sequence of two or more spontaneous abortion as documented by either sonography or on histopathology before 20 weeks (approximate 4 month). In present article we will evaluate causes, pathogenesis, prevention and management of spontaneous abortion.

Uterine pregnancy that eventuates in spontaneous abortion are termed early pregnancy loss, later pregnancy losses include spontaneous abortion, inevitable abortion, incomplete abortion, complete and missed abortion, septic abortion.

**AIM AND OBJECTS** - To understand and evaluate the root cause of spontaneous abortion as per ayurvedic and modern view.

To understand etiopathology of spontaneous abortion so that an underlying factor can be treated to a viable newborn,

MATERIAL AND METHOD – materials are selected from mainly charka Samhita, susurta Samhita and other contents are compiled from, DC Dutta, William's text book, Sanskrit commentary, research journals and from articles.

#### Etiopathogenesis as per ayurvedic literature

Important factor for successful implantation and embryo development is (as per ayurvedic literature)

- 1- Matraja, Pitraja aadi bhava
- 2- Ritu, kshetra, ambu, beej
- 3- Krimi, vata and abhighata
- 4- Shukra, aartav aatma garbhashaya aahar vihar (charak sharira 2/6)
- 5- Mansika abhighata
- 6- Yonivyapad
- 7- Jatharini

Matraja bhava represents organs mainly developed from mesoderm and endoderm of three germinal layerlike blood, muscle, fat, heart, gastro-intestinal system, respiratory system, heart, liver.

Pitraja bhava represents organs mainly developed from ectoderm of three germ layer like hair, teeth, bones etc.

Matraja and Pitraja bhava due to vitiation of vatadi dosha causes organ defects. (either undeveloped or maldeveloped) vatadi dosha are responsible for growth and development of each organ, vata dosha controls cell division and differentiation, (বাযু বিभजति) vitiation of vata may leads to abnormal cell division and may cause hypoplasia or hyperplasia and abnormal number of chromosomes leads to aneuploidy, polyploidy or abnormal translocation of chromosomes, pitta dosha due to its agni (panchak agni) forms structure and shape of particular organs, vitiation of pitta dosha may develop structural deformities (तेज ऐन पचिते) and further growth and nourishment is provided by kapha dosha ( तर्पक कफ), vitiation of kapha dosha may lead to fluid overload in organ or excessive growth leads to organomegaly or hypertrophy of tissues.

Aatmaja and satvaj bhava influenced with previous life deeds, in ayurvedic literature it is considered that vikriti of garbh is affiliated by previous life deeds. These bhavas can be included in idiopathic cause of abortion.

Rasaja and satmaja bhava affiliates with mother diet and nutritional status. Garbh in mother womb is totally dependent on mother for nutrients.

These matraja aadi bhava are responsible for proper growth and development of foetus any abnormality in these factors can cause either intrauterine death of foetus or its expulsion before viability as mentioned by acharya charak. Any abnormality in shadbhav may lead to congenital anomaly and can cause abortion.

Shukra Acharya charak has mentioned. যুক্লার শর্ম, प्रसादजः (च০ चि० 15/16.) shukra is important factor for garbh formation. The quantity and quality both has equal importance for fertilization and for embryo formation. Viability of spermatozoon has important role in their retention and transport in the female reproductive tract as well as their ability to fertilize and sustain embryogenesis. Sperm morphology is considered to reflect physiological or pathological status of the male for sperm production and storage in extra gonadal ducts, motility, velocity, penetration of cervical mucus, metabolic activity, structural integrity, all are important factor for successful pregnancy. Acharya charak has mentioned that

# शुक्रस्य दोषात् । न चास्थ जायते गर्भः पतित प्रस्रवित। (च.. सू. 28/18)

शुक्रस्य सारमोज Acharya vagbhatta says that oja is essence of shukra and shukra is essence of rasa rakta aadi sapta dhatu means sudha sukra represents proper dhatu formation in body, sudha shukra is like sphatikabha, drava, snigdha, madhura, smells like honev & resembles like taila, (सु शा०-2/12.)

**Artav** represents both ovum and menstrual blood, normal HPO (hypothalamo-pituitary-ovarian) axis with 28 days rituchakra, maintains ovarian follicular growth, ovulation and endometrium changes, acharya susruta mentioned ritu as ritukala, indicates most favourable time for conception.

Any abnormality in Sperm or ovum or vitiation of dosha can leads to chromosomal abnormality or genetic abnormalities causes first trimester pregnancy loss, acharya susruta has mentioned aartav having similar character to rakta is responsible for garbh formation.

रक्तलक्षणमार्तवं गर्मकृच्च (सु॰सू॰15/1) according to acharya bhava prakash as shukra is sapta dhatu in male, in female artav is sapta dhatu.

From Rasa, Raja is formed, the hormones responsible for formation of artav (menstrual blood and ovum) carried out through rasavahi, raktavahi srotus to uterus and ovaries, the hormones (FSH, LH) present in rasa, rakta causes follicular growth and ovulation, under the influence of ovarian hormone estrogen in proliferative phase and progesterone in luteal phase causes endometrial changes required for garbh implantation and development.

Acharya vishwamitra stated that the lumen of fallopian tube and blood supply to endometrium looks like thin hair which is termed as rajovahi and beejvahi sira by which raja gets accumulated in garbhashaya in every month (garbhashya tarpayati) if fertilization not occur then these accumulated blood in form of raja comes out through vagina for 3 to 7 days.

Acharya kashyap says that "रजोवहाः सिरा यास्मिन रजः

# सूक्ष्मकेशप्रतीकाशा. वीजरक्तवहा. सिरा: गर्भाशयं तर्पयान्ति मासादवीजाय कल्पते (विश्वामित्र)

प्रविसुजन्त्यतः पृष्पभूतं हिं तर्देवान्मासि मासि प्रवर्तते । (का॰ खिल) Aatma along with man acharya charaka in sharira sthan 8/24 has mentioned that apart from physical and external factors, mansika bhava also involved in abortion, or premature delivery or in Intra-uterine death of foetus. The mansika bhava, are anger, grief, dissatisfaction or negative criticism, jealousy, fear, terror, leads to abortion, all these mansika bhava release several hormones including adrenaline, cortisol, and norepinephrine. Adrenaline increase blood pressure and pulse rate. Cortisol triggers the release of glucose from the liver. Thus, all these bhavas increase glucose level in blood which provide energy during stressful condition, which leads to energy loss and lethargy in body, chronic stress can lead to anxiety, depression, headache, heat (temperature) in the body so normal physiology get disturbed which may cause abortion or intra uterine death in severity.

All these factors disrupt HPO axis, hormones imbalance and luteal phase defects leads to insufficient secretion of progesteron may cause recurrent abortion or infertility.

Other factors are krimi vata and abhighata, some common viral, bacterial, and other infectious agents that invade the normal human can cause pregnancy loss.

After fourth month of pregnancy anger, grief, jealousy, fear, terror, excessive coitus exercise, suppression of natural urges sitting, standing and sleeping on uneven surface or suppression of thirst and hunger and use of stale food acts as predisposing factor in undiagnosed abruptio- placenta and placenta previa, due to lack of diagnostic tools in ancient times.

Garbhashaya is the site of implantation and foetal development, its appropriate size, (small size seen in infantile uterus and hypoplastic uterus) shape (developmental defects as in bicornuate, unicornuate, didylphys, arcuate) and its functions (endometrial changes) are crucial to the successful pregnancy.

A healthy uterus with normal receptive endometrium after menstruation in ritukala (ie proliferative phase) known as sudha garbhashaya. Acharya susruta has mentioned garbhashaya as khetra, kshetra is not only uterus here kshetra is women body, acharya charak says in atisthula women maithun-asahatwam (dyspareunia) is seen, for a live healthy birth, the overall health of women should be considered as kshetra because a healthy woman can give us a healthy progeny, if a woman has a normal ritukala but has systemic rituchakra. illness like endocrine/hormonal imbalance or infectious disease. autoimmune disease like SLE (systemic lupus disease) are more likely to abort.

According to acharya sharangdhara, garbhapata comes under eight disorders of garbhavyapada.

### गर्भस्य आशयः गर्भाशय । गर्भाशयों गर्भाधारो।

Garbhashaya is ashaya, of zygote/embryo.

In Ayurvedic Context, yoni is used to denote uterus, cervix, vagina (female genital tract) the disease related to female genital tract comes under yoniroga/yonivayapada.

Kala is important factor for ovulation, fertilization and implantation, premature ovulation may cause early abortion or infertility early hatching of zona pellucida is responsible for tubal pregnancy and late hatching may leads to failure of implantation, kala also represents age of women and men, age greater than 35 in women has risk of chromosomal abnormality and poor quality of ovum leads to abortion or congenital anomaly acharya susruta has mentioned the importance of kala in sutra sthan 6 chapter,

## "कालों हि नाम (भगवान) स्वयभुरादिमध्यनिधन"

**Krimi** represents infection /Infestation it may be bacterial, protozoal, Viral, bacterial infection may be due to E.Coli, klebsiella, pneumoniae, enterobactor, proteus, pseudomonas and staphylococcus aureus etc.

Etiopathology. The foetal effects are due to placental parasitization the intervillous space and spiral artery become block due to inflammatory mediators, there is marked accumulation of macrophages, pathogens and necrosed tissues at placental site due to this deprivation of oxygenated blood and nutrition occur leads to ischemic pain, bleeding and abortion, risk and severity of infection are high in immuno-compromised stag. There is increased rate of miscarriage, IUGR and stillbirth, affected foetus may develop hydrocephalus. Ventericulomegaly, ascites, hepato-spleenomegaly etc Parasite infestation with Malaria, Toxoplasmosis, Hook worm, round worm are commonly seen, viral infection e.g. rubella, measles, varicella, cytomegalovirus, parvovirus, mumps, herpes simplex virus, human immunodeficiency virus, many are systemic and infect the foeto-placental unit. Others may infect locally through genitourinary infection or colonization included under sexually transmitted disease. numerous infections acquired in pregnancy may cause early abortion.

Raktaj krimi (pathogens in blood) mentioned by acharya charak and susruta present in raktavahi siras are also responsible for Garbha patana like keshpatana (fall of hair), (shamshru patana) beared fall.

#### Importance of aahar

Aahar rasa of mother utilized for three purposes

1 Nourishment of her own body- a healthy woman can produce a healthy child as acharya charak says stree is root cause of apatya (child) and mentioned the importance of aahar in stree.

# आहारमाप्नोतिः यदा न गर्भ, शोषं समाप्नोति परिश्रुति वा।(च. 2/15)

2. stanya formation – Growth of mammary glands and proper lactation are necessary for child after birth.

3 Nourishment / Development of foetus - intrauterine, foetus is totally dependent on the mother aahar rasa, severe dietary deficiency is associated with increased miscarriage risk or maldevelopment of foetus. There are two concepts behind the foetal circulation, first before formation of complete placenta, foetus get it's nutrients by upsneha and upsweda by kedarikulya nyaya with the help of triyakgat rasavahi dhamni.

In very early stage the penetration of chorionic villi to the decidua basalis stablish a microcirculation to get nourishment of growing foetus, here Triyakgat rasavahi dhamni root is mother heart and branches of aorta by which rasa and rakta with all its nutrients and oxygenated blood reaches to endometrium by two main vessels, ovarian and uterine artery, here heart acts as kedar (large ponds or pool) ovarian and uterine artery along with its branches acts as kulya (artery, capillary and veins) here upsneha represents essence of aahar and oxygenated blood and upsweda represents waste products and deoxygenated blood. (Sweda term used as mal of meda dhatu) After development of placenta and formation of garbhnadi further nourishment and oxygenated blood carried by umbilical artery and vein present in umbilical cord.

Vihar exposure to some chemicals like arsenic, lead, formaldehyde, benzene and ethylene oxide, DDT may (dichlarodiphenyl trichloroethane) cause miscarriage. Incremental risk for spontaneous abortion is seen in women who worked with cytotoxic antineoplastic, chemotherapeutic agents. Other garbhupghatkara bhava are-

उत्कट विषम कठिन आशन, अतिमात्र सङझोभत्यानाहन means sitting in uneven surface acts as predisposing factor for detachment of chorionic villi from decidua basalis leads to abortion. Squatting position are also avoided during pregnancy. specially in low lying Placenta and in, abruptio- placenta and in recurrent abortion, to avoid squatting position western toilet could be used in such condition.

वातमूत्रपुरीषवेगरोध Suppression of Natural urges like defecation, micturition and flatus causes retention and growth of micro-organisms, apart from this vitiation of vata especially apana vayu may cause abortion as per ayurvedic literature. Over distention of bladder may stimulate uterus and may hinder utero placental flow in anterior, placed placenta & growth of developing foetus although it has minimal effect on abortion it mainly acts as predisposing factor for abortive causes.

तीक्ष्ण उष्ण अति मात्र सेवनात, Excessive use of pungent, like excessive use of fragrance, hot substances or taking very excessive quantity of food acts as aggravating factor for garbh pata or may cause sudden decidual spiral artery spasm leads to uteroplacental insufficiency.

प्रमित आशनात Taking very few meals are responsible for nutritional deficiencies, low sugar level, as it is clearly known micro and macro nutrient are required for normal organogenesis,

here vitiation of vata dosha and rasavahi and pranavahi srotodushti are mainly responsible for abortion.

अभिघात, "प्रपीड़न (Trauma & Compression) depends upon severity it may cause retro-placental hemorrhage or abortion.

कूप, प्रपातन, (falling in well, ponds, pit or gulf), in ancient day the source of water collection was pond, well, (mainly ground earth) falls in deep well or pits may cause separation of villi (Placental bed ) from decidua basalis. To go outside of home in early morning or late night in unknown place for toileting is leading cause for falling at that time.

अप्रिय अतिमात्र श्रवण (Listening to unpleasant wards), To hear passed away of someone close to her. During stress, body releases hormones like cortisol and adrenaline, and psychological factor affect, BP, Heart rate and blood sugar level, responsible for pregnancy complications. As per ayurvedic literature it affects hridya and man, hridya is one of the aaytan in 10 pranaayatan. It affects both mother as well as foetus.

#### Abortion as per modern aspect

WHO define Abortion as pregnancy termination before. 22 weeks gestation or with a foetus born weighing < 500gm.

With first-trimester losses, death of the embryo or foetus nearly always precedes spontaneous expulsion. Death is usually accompanied by haemorrhage into the decidua basalis. This is followed by adjacent tissue necrosis that stimulates uterine contractions and expulsion. An intact gestational sac is usually filled with fluid and may or may not contain an embryo or foetus thus the key to determining the cause of early miscarriage is to ascertain the cause of foetal death, in later pregnancy losses, the foetus usually does not die before expulsion, and thus other explanations are sought.

Approximately half of miscarriages are anembryonic that is with no identifiable embryonic elements. Less accurately, the term blighted ovum may be used. The other 50 percent are embryonic miscarriages, which commonly display a developmental abnormality of the zygote, embryo, foetus or at times the placenta. Half of these-25 percent of all abortuses have chromosomal anomalies and thus are aneuploid abortions. The remaining cases are euploid abortions, that is carrying a normal chromosomal complement.

#### Discussion

Abortive factor in first and second mid trimester.

**Pragyaapradha-** indulgence in contraindicated aahar and vihar knowingly.

Matraja aadi bhava may cause congenital deformity.

Vitiation of vata dosha leads to chromasomal & structural deformity.

**Aatma** affliated with previous deeds, we can say idiopathic factor included under this.

**Krimi** represents any type of infectious agents which may affect the implantation and growth of foetus can cause abortion.

#### Mansika abhighata

In ayurvedic literature it is considered that heart is place of man, hridya is root of pranvahi rasavahi and raktavahi srotus, excessive grief, anger, excessive thought can cause vitiation of prana vayu, rasa, rakta dhatu dusti leads to abortion.

**Abhighata**. May cause separation of placenta or rupture of membrane.

Yonivyapad acharya charak has mentioned स्तियाश्च अप्रदृष्ट्योनिशोणितगर्भाशया। (च०शा०३/३.) here yoni represents entire reproductive system of female, disease related to reproductive system comes under yoniroga, Repeated abortion is also seen in jataharini Andaghni, Durdhara, Kalaratri, etc. all these comes under idiopathic cause of abortion.

एवं योनिषु शुद्धासु गर्भ विंदित योषितः । (च चि 30/125) Maharsi Bhela explains that all the twenty yoniroga or yonivyapad can also cause garbha vyapad, so it should be treated accordingly for example putraghni, vamini. Asrika/apraja.

Acharya kashyap has mentioned about jataharini in kalpasthana, jataharini like andaghni, Durdhara, mohini etc. are responsible for recurrent abortion.

### Pathophysiology behind abortion

In abortion the main srotas involved are the rasa, rakta and artav vahi, chinta, shoka, bhaya, usna, tikshna, aahar vihar, causes rasa, rakta and artav vahi sroto dusti (रस,रक्त,आर्तवाही), as mentioned by acharya charak in nidan sthan, vitiated dosha due to sroto- dusti (ख वेगुण्यता) gets accumulated and obstruct the flow of dhatus (दोष— संधात) to developing foetus, so that essence of ahar means rasa dhatu and rakta dhatu,(nutrition and oxygenated blood) to foetus are hampered through placenta. These leads to anoxia and vasospasm at decidua basalis, vata causes ischemial pain & pitta causes lysis of decidual endothelial vessels, due to its pachak-property (पाचक पित), kapha causes formation of puya means pus (necrosis of decidual cells and villi), all these changes lead to separation of implanted embryo or in foetus. वाताहते नास्ति रुजा न पाक: पिताहते नास्ति कफच्च पुर: as mentioned by acharya susruta in sutra sthan.

#### **DISCUSSION**

In early week of first Trimester gastrulation occurs, establishing 3 distinct cell layer's ectoderm, mesoderm & endoderm these are primary germ cells layers from which organs arise during organogenesis. In Ayurvedic literature these layers represent Matraja, Pitraja-aadi bhayas,

Psychological factor can be managed by sattvavajah chikitsa, in which man is controlled and detached by unwholesale things by abhyasha (practice).

The Ectoderm is responsible for development of skin, nervous system and portion of sensory organs

Endoderm, forms gastro- intestinal system, respiratory system, thymus, parotid glands, bladder urethra.

Mesoderm forms circulatory system, lymphatic system, bone, cartilage.

Vagbhat write that due to excessive accumulation of dosha, non-avoidance of contraindicated articles, due to influence of deeds

of previous life of either the mother of the foetus, the foetus gets detached from its bands in the same way as a fruit gets separated from its branch.

We can say this stage is regulated by vatadi dosha,by adopting healthy diet and lifestyle we can regulates the vatadi dosha to its saumya awastha.

#### **CONCLUSION**

At the end of present article, we find that by adopting healthy diet, regular exercise (आहार-विहार) Yoga, breathing exercise and mental peace by Sattvavajaya chikitsa (सत्वावजय चिकित्सा) which is a self-control therapy of mind, सत्वावजय पुनः अहितेभ्यो अर्थेभ्यों मनोनिग्रहः in this therapy we control or distract our mind from unwholesome things by regular exercise. All these habits and its regularity helps to conceive, implantation and growth of foetus and for a delivery of healthy baby it is necessary to follow garbhiniparicharya (what we should do and don't during pregnancy) as mentioned by acharyas.

Chanting of Gayatri mantra or "Om" can stimulate our Hypothalamus, pituitary and Gonadal axis (HPG axis) this regulates our menstrual cycle, ovulation, by chanting we can regulates our stress hormones which is responsible for abnormal metabolism and by healthy diet, we could find good quality of ovum and sperm by affecting our rasa, rakta dhatu and aartav) by adopting sattvavajah we could control stress, Depression, anxiety, which enhances the ovum and sperm quality and quality.

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