

ETIOLOGY OF ABORTION- AN AYURVEDIC PROSPECTIVE WITH SCIENTIFIC APPROACH: A REVIEW ARTICLE**Meena Parmar¹, Ekta², Gaurav Parmar³**

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Article Received: 17/03/2023 - **Peer Reviewed:** 22/03/2023 - **Accepted for Publication:** 30/03/2023.**ABSTRACT**

The expulsion or extraction from the mother of an embryo or fetus weighing 500g or less when it is not capable of independent survival is known as Abortion (WHO). According to various *Aacharyas*, the expulsion of a fetus up to the fourth month of pregnancy is termed as *Garbha Srava*, thereafter in the fifth and sixth months it is termed as *Garbha Pata*. The causes of recurrent abortion are complex and most often obscure. This may be a cause for marital disharmony, and psychological and physical ill- health. In Ayurvedic classics, the etiology of abortion has been mentioned by various *Aacharyas* directly or indirectly. Certain *Jatharinis*, *Putraghani*, *Vamini*, *Asrija*, or *Apraja Yonivyapadas* which have been mentioned in Ayurvedic classics denote repeated abortion. The various causes mentioned by *Aacharyas* associated with abortion in different entities, imbalance in the essential factors and physiology responsible for conception has been considered. The numerous etiological factors mentioned in Ayurvedic texts have scientific relevance and which resemble the etiology mentioned in modern texts. To choose the appropriate treatment protocol careful evaluation of the patient and the etiological factors of the disease are essential.

Key words: Abortion, Etiological factors, *Garbha Srava*, *Garbha Pata*.

INTRODUCTION

The expulsion or extraction from its mother of an embryo or fetus weighing 500g or less when it is not capable of independent survival is known as Abortion (WHO). Approximately at 22 weeks (154 days) of gestation this 500g of fetal development is attained. The word miscarriage is the recommended terminology for spontaneous abortion. About 75% of miscarriages occur before the 16th week and of these, about 80% occur before the 12th week of pregnancy. Abortion can be Spontaneous or Induced. Spontaneous abortion is further classified as Isolated (sporadic) and Recurrent abortion which can be threatened, inevitable, complete, incomplete, missed, or septic abortion.¹ According to various *Acharyas* the expulsion of the fetus upto the fourth month of pregnancy is termed as *Garbha Srava*, thereafter in the fifth and sixth month it is termed as *Garbha Pata* because by this period the fetal parts have attained some stability and become solid². *Bhoja* opines quoted in *Madhukosh* commentary of *Madhava Nidana* that the period of *Garbha Srava* is upto three months³. Explanation of *Bhoja* appears more logical because upto third month i.e. before the complete formation of the placenta, amniotic membrane, and its fluid, the expulsion of products of conception usually occurs in pieces while after this period due to the complete formation of the amniotic bag, the mechanism of abortion resembles mini labour.⁴ Certain *Jatharinis*⁵, *Putraghani*⁶, *Vamini*⁷, and *Asrija* or *Apraja*⁸ *Yonivyapadas* which have been mentioned in Ayurvedic classics denote repeated abortion. Before attempting to know the etiopathogenesis of abortion, it is necessary to know about the factors essential for conception and the normal physiology of conception explained in Ayurveda.

ESSENTIAL FACTORS FOR CONCEPTION

Acharya Sushruta has described four essential factors for fertility⁹ which are:

Ritu (season/ fertile period): *Ritu* in relation to the conception, is the most fertile period governed by *Kapha*. Hence, it is a well-developed proliferative phase accompanied by ovulation.

Kshetra (healthy reproductive organs): Here, *Avyapanna* (un diseased) *Yoni-Garbhasaya* works as a field. Thus, according to various *Acharyas* healthy un diseased condition of the female genital tract is the second chief factor of conception and is mentioned

by modern science too. **Ambu (proper nutrient fluid):** It is present in the form of *Rasa*. It represents nutritional elements responsible for the growth of the fetus. Morula is surrounded by zona pellucida which is responsible for its nourishment through its secretions. As the embryo travels down the uterine tube and the uppermost part of the uterine cavity; at this time, it receives nutrition, partly from the substances stored within the ovum and partly by diffusion from the uterine secretions¹⁰. The nourishment in the blastocyst stage is provided by the endometrial fluid which is secreted by the endometrial glands rich in glycogen and mucin. Decidua supplies nutrition to the early stage of the growing ovum through its rich sources of glycogen and fat¹¹.

PHYSIOLOGY OF CONCEPTION:

According to *Acharya Charaka*, when normal semen is introduced into the healthy uterus through the vagina during a well-developed proliferative phase which is accompanied by ovulation, then coitus becomes fruitful and results in conception¹². *Kashyapa* opines that, as soon as the *Beeja* (fertilized ovum) enters, it is surrounded by *Rakta*¹³. Hence, the fulfillment of all the above essential factors ensures the fullness of motherhood and any shortcoming of the above factors impedes the conception.

AIM AND OBJECTIVES

1. To collect and analyze the etiological factors of Abortion mentioned in various ancient treatises
2. To understand and evaluate them scientifically in today's context

MATERIALS AND METHODS

Literature: *Brihatrayee*, all available Ayurvedic classics, Modern available texts, Magazines, Journals, and Research papers

Type of study: Conceptual study

AETIOPATHOGENESIS OF ABORTION

In Ayurvedic classics, the various *Acharyas* have mentioned the aetiology of abortion which is very much similar as mentioned in modern texts. The etiological factors mentioned by various *Acharyas* have been reflected below mentioned table:

			(Su. Ni.8/3)			(Bh.P. Chi.70)	(Ma. Ni.64/1, 3)	(Yo.Ra. Stri Garbha Rogadhikar)	
3.	Maansikaghat (psychological trauma): Krodh (anger), Shoka (grief), Irshya(jealous), Bhaya(fear), Sankshobha (irritation)	Psychogenic factors	+ (Su. Ni.8/3)	+ (Ch. Sh 8/24)		+ (Bh.P. Chi.70)	+ (Ma. Ni.64/1)	+ (Yo.Ra. Stri Garbha Rogadhikar)	
4.	Beeja Dosha	Ovo- fetal defects (Genetic or chromosomal abnormalities)		+ Ch.chi 30/7,8,1 25		+ (Bh.P. Chi 70/1)	+ (Ma.Ni. 62/1)	+ (Yo.Ra. Stri Garbha Rogadhikar)	
5.	Aartava Dosha (Hormonal imbalance)	Luteal Phase Defect		+ (Ch. Sh 2/6)					
6.	Kala Dosha <ul style="list-style-type: none"> Rituvyatita Kala (late secretory phase) Awastha Janya (too young or elderly women) 	Impregnation in late secretory phase and age factor (elderly-women)	+ (Su. Sh10/5 4)	+ (Ch. Sh 2/6)	+ (As.Hr. Sh.2/1) (Arundatt)				
7.	Krimi (infections)	Maternal or fetal infection	+ (Su.Ni. 8/11)						
8.	Vyadhiyan (Diseases) <ul style="list-style-type: none"> Atisara(diarrhoea) Ajirna(indigestion) Jwara Vinshati Yonidosha (twenty types of gynaecological disorders) 	Maternal diseases	+ + (Su. Ni.8/3)			+ + (Bh.P. Chi.70)		+ (Bhela Sh. 3/4)	
9.	Garbhasaya or Yonidosha (abnormalities in the reproductive system)	Abnormalities of the reproductive system		+ (Ch. Sh 2/6)					+ (Bhela Sh. 3/4)
10	Ati / Mithya Aushadhyoga: <ul style="list-style-type: none"> Vamana (excessive use of emet- 	Drugs	+ +			+ +			

	<ul style="list-style-type: none"> • <i>Virechana</i> (excessive use of purgatives) • <i>Garbhshatak, Atitikshna and Ushna Aushadh Sevana</i> (use of abortifacients drugs) 		+			+			
11	<i>Shukra Dosha</i> (abnormalities in sperm)	Paternal factor (Chromosomal translocations in sperm)		+	+				
12	<ul style="list-style-type: none"> • <i>Daiva Prakopa</i> (curses of God) • <i>Jataharni Pravesh</i> (infliction by <i>Jataharni</i>) (<i>Ka.S. Kalpa Sihana</i>) • <i>Poorvajanma-Krita Karma</i> (Effect of deeds of previous life) 	Idiopathic causes		+					

DISCUSSION

There are so many etiological factors held responsible for abortion but still, the etiology is often complex and obscure.

1. Ahara Doshaat (Non- congenial diet): Various *Aacharyas* has mentioned non- congenial diet like consumption of excessive dry, hot, or pungent diet, stale food, and fasting as responsible factors for abortion. Improper nutrition is considered one of the causative factors in modern science too. Mal or improper nutrition leads to a deficiency of minerals, vitamins, and proteins which may cause anemia and result in maternal hypoxia and abortion, and deficiency of folic acid leads to neural tube defect. (Silvestris E, et al. *Front Endocrinol (Laussane)*, 2019; 10:346)

2. Vihara Dosha (adverse lifestyle): *Vihara Dosha* includes the adverse life style of the patients which adversely affects conception or favors miscarriage. In *Sushruta Samhita* along with other *Samhitas*, the adverse factors are mentioned as:

- **Direct trauma (*Abhigata*):** Blow or fall increases the intraabdominal pressure which may lead to reflex stimulation of myometrium/hyperstimulation of the uterus which is responsible for abortion.
- **Minor trauma** in susceptible individuals as mentioned by *Aacharyas* like travelling on rough roads, riding on a horse, exercising, and coitus in early months is enough to excite abortion.
- **Indirect trauma: Psychogenic trauma (*Mansik Aghata*)** (emotional upset) which may occur through anger, grief, discontent, jealous, fear, and terror as mentioned in various Ayurvedic classics may lead to abortion by affecting uterine activity. (Palomba S, et al. *Reprod Biol Endocrinol* 2018; 16:113)
- 3. Beeja dosha (Abnormality in fertilized ovum/ ova/ sperm)**
According to various *Aacharyas*, the word *Beeja* is used to denote the fertilized ovum after conception i.e. ovum and sperm. *Beeja Dosha* can be considered as any abnormality in the fertilized ovum either ova

or sperm which can lead to the abnormal conceptus and is one of the causes of miscarriages.

Genetic factors: Chromosomal abnormality in the conceptus is responsible for the majority (50%) of early miscarriages. The commonest cytogenic abnormality is Autosomal trisomy (50%). Polyploidy has been observed in about 22% of abort uses. It was reported by Jacobs and Has sold (1980) that approximately one-fourth of chromosomal abnormalities were due to maternal gametogenesis errors and 5% to paternal errors¹⁶.

4. Artava Dosha (Hormonal imbalance)

According to *Bhela Samhita*, all the twenty *Yonivyapad* can cause abortion. Out of the various causes mentioned for *Yonivyapad Artavadosha* is one of them. In Ayurvedic classics, explicit description of hormones is not available. However, some references are there from where indirect inference can be drawn for *Artava* as hormones responsible for normal menstrual cycle¹⁹.

Luteal phase defect: In Luteal Phase Defect, there are insufficient progesterone secretions by the corpus luteum or placenta which results in unsatisfactory ovular growth and development. Ultimately, it results in early miscarriage as implantation and placentation are not supported adequately²⁰.

5. Kala Dosha/ Akalayogath: The *Kala* mentioned here refers to the time of copulation. The interpretation of time can be done in several dimensions as mentioned in Ayurvedic texts viz; the age of the couple, *Ritukala* (time in relation to menstruation), and time in relation to the season.

- **Age of couple:** According to *Acharya Sushruta* and *Vagbhata* the male is below 25 years and the female is below 16 years if copulate and conception occur in a female then chances of fetal loss will be there. It has been clearly quoted in *Samhitas* that *Bala* and *Vridha Stree* are not fit for marriage and *Garbhdharna* (conception)²¹. Stein and associates (1980) presented evidence that after the maternal age of 35 years, the incidence of euploid abortions increases dramatically²².

6. Krimi (Infections)

Transplacental fetal infections occur with most microorganisms and fetal losses could be caused by any of the infections²³.

7. Vyadhiyan (Diseases): *Acharya Sushruta* has mentioned *Atisara* and *Ajirna* as the causative factors of abortion. However, it is there in modern texts that severe gastroenteritis and cholera lead to malabsorption and resulted in reflex stimulation of the uterus due to increased intestinal motility and may be the cause of miscarriage.

- **Maternal Hypoxia and Shock:** due to acute or chronic Respiratory diseases, Heart failure, Severe Anemia.
- **Chronic debilitating diseases:** Even, hypertension before 20 weeks is seldom associated with abortion. Celiac sprue has been reported to cause recurrent abortions and both male and female infertility (Sher and colleagues, 1994)²⁴.
- **Endocrine abnormalities²⁵: Diabetes mellitus, Hypothyroidism, etc.**

8. Garbhasaya/ Yonidosha (abnormalities in the reproductive system)

As mentioned by *Aacharyas*, healthy *Kshetra* is an important factor for conception and its continuation. As the uterus is the *Kshetra* for the implantation, defects in the uterus will interfere with the continuation of the pregnancy. In modern science also the cervico-uterine factors are held responsible and related to second-trimester abortions. Anatomical abnormalities (3-38%) are causes of fetal loss²⁶. It includes:

- **Congenital malformation of the uterus, Cervical incompetence:** Especially Uterine septa, Bicornuate uterus, and cervical incompetence may be responsible for midtrimester recurrent abortions. Due to this the expansile property and intra-uterine volume of the uterus get reduced. If the implantation occurred on septa there will be reduced placental vascularity and moreover, increased uterine irritability and contractility may be responsible for fetal loss.

- **Uterine Synechiae (intrauterine adhesions) (Asherman's syndrome)** depending on their severity leads to abortion due to insufficient endometrium to support implantation.

9. **Ati / Mithya Dravya upyoga:** Acharya Sushruta has mentioned the use of emetics, purgatives, and abortifacient drugs (*Ushna, Teekshna Aushadh Upyog*) as one of the causes of fetal loss.

- **Tobacco & Alcohol:** Fetal anomalies and spontaneous abortion may result from frequent alcohol use during the first 8 weeks of pregnancy (Floyd and associates, 1999). Kline and co-workers (1980) reported that the abortion rate was doubled in women drinking twice weekly and trebled in women who consumed alcohol daily compared with nondrinkers.
- **Caffeine:** More than four cups of coffee consumption per day appears to slightly increase the risk of abortion (Armstrong and associates, 1992). The risk increases with increasing amounts. In a study done by Klebanoff and associates (1999), maternal paraxanthine which is a caffeine metabolite, its levels were associated with a significant two-fold risk of spontaneous abortion only if these are extremely high²⁷.

10. **Sukra Dosha (Defect in sperm):** According to Acharya Charak and Vagbhata aggravated *vayu* in *sukra* also causes abortion. However, little is known about paternal factors in the genesis of spontaneous abortion. Certainly, chromosomal translocations in sperm can lead to abortion. Adenovirus or herpes simplex virus was found in nearly 40% of semen samples obtained from sterile men. In 60% of the cells, the viruses were detected in latent form, and the same viruses were found in abort uses (Kulcsar and associates 1991)²⁹.

11. **Daiva Prakopa (curses of God), Jatharini, Poorvajanmakrita Karma (Deeds of previous life)**

According to the classics, when things are beyond one's explanation it can be said as *Daiva*. *Daiva Prakopa* (curses of God), infliction by *Jatharini*, and *Poorvajanmakrita Karma* (influence of deeds of previous life) as mentioned in Ayurvedic classics can be considered under idiopathic causes (unknown eti-

ology). Unexplained causes responsible for abortion are (40-60%). To specify the exact cause of fetal loss in the majority of cases is indeed difficult in spite of the numerous factors mentioned as too often, more than one factor is present³⁰.

CONCLUSION

Understanding the etiology of abortion is complex and still obscure as 40-60% of causative factors are unexplained. In ayurvedic classics also idiopathic causes can be considered as *Daiva Prakopa* (curses of God), infliction by *Jatharini*, and *Poorvajanmakrita Karma* (influence of deeds of previous life). Numerous aetiological factors of abortion mentioned by various Acharyas in Ayurvedic classics have scientific relevance which is very much similar to those mentioned in modern texts. To choose the appropriate treatment protocol careful evaluation of the patient and the etiological factors of the disease are essential.

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