

THE CRITICAL ASPECTS OF INFERTILITY IN AYURVEDA W.S.R. TO RITU, KSHETRA, AMBU AND BEEJ

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ABSTRACT

Infertility is described as condition in which female is unable to conceive even after un-protective sexual conduct since one year. The infertility imparts social stress as well as psychological burden since not having joy of motherhood is very stressful conditions for any women. Ayurveda has termed infertility as *Vandhyatva*, ayurveda emphasizes specific role of *Ritu* (time of conception), *Kshetra* (reproductive organs), *Ambu* (nourishment) and *Beej* (seeds i.e; ovum and sperm) towards the healthy progeny and any vitiation in these factors leads to infertility. *Aratavvahstrotas*, *Yonidosha*, *Kshetra* or *Ashay Vikruti* (*Antarmukhi* uterus, *Mahayoni* and *Prasausini Yoni*), *Sahaj Vikruti* (congenital abnormalities) and *Yoni-roga* (*Arbuda*, *Arsha*

and *Granthi*, etc.) can cause infertility. Similarly modern medical science described various factors responsible for infertility such as; menstrual disturbances, hormonal imbalances, PCOS tubular blockage, injury to genital tissue and genetic factor etc. Ayurveda suggested many options related to the management of infertility like; good conduction of daily regimen, drugs like; *Satavari*, *Ashwagandha*, *Punarnava* and *Dasmoola*, etc. and various detoxifications techniques like; *Nasya*, *Vaman*, *Virechan* and *Vasti*. These four factors known as *Garbhsambhav samagri* which play key roles in understanding infertility in ayurvedic perspective and also provide new sights in better management of infertility as per Ayurveda.

KEYWORDS: *Ayurveda*, *Infertility*, *Vandhyatwa*, *Ritu*, *Kshetra*, *Ambu*, *Beej*.

INTRODUCTION

Infertility is a serious health issue worldwide, affecting approximately 8%–10% of couples worldwide, it is believed that 60–80 million couples suffering from infertility every year

globally, probably between 15 and 20 million (25%) belongs from Indian origin. The incidences increase due to the diversified daily routine and adapting modernization which affect the physiological factors causes irregular menstruation, ovulation disorders, polycystic ovary syndrome, fallopian tube blockage, endometriosis, hormonal disorders and uterine abnormalities, etc. The adverse effect of changing environment and pollution also induces cases of depression, stress and obesity which have adverse effect on fertility.^[1-4]

In ayurveda different term like *Vandhya*, *Apraja* and *Sapraja* are mentioned for different conditions of infertility. *Vandhya* means absolute sterility which is incurable, *Apraja* means curable infertility and *Sapraja* means secondary infertility even after history of earlier pregnancy. In modern science inability to conceive is termed as infertility, but ayurveda has a broad definition of infertility. *Vandhyatva* in ayurveda is defined not only as inability to conceive but to have a successful live birth so conditions like repeated abortion and still birth also comes under the umbrella of infertility. *Harita Samhita* mentioned some other terms associated with infertility; *Kakavandhya*, *Anapatya*, *Garbhasravi*, *Mritvatsa* and *Balakshaya*. *Kakavandhya* resembling condition of secondary infertility, *Anapatya* means conditions of complete sterility, *Garbhasravi* means condition of repeated abortion, *Mritvatsa* means repeated still births and *Balakshaya* means diminishes *Bala*.^[3-7] The classical texts of ayurveda presented specific descriptions related to the infertility as mentioned in **Table 1**.

Table 1: Ayurveda Samhita's Descriptions Related to the Vandhyatva.

S. No.	Ayurveda Samhita	Descriptions Related to the Vandhyatva
1	<i>Charaka Samhita</i>	Described <i>Vandhyatva</i> as consequence of <i>Pradusta Gabhasaya Bija Bhaga</i> of <i>Shonita</i>
2	<i>Susruta Samhita</i>	Described <i>Vandhyatva</i> as <i>Vimsati Yoni Vyapat</i>
3	<i>Kasyapa Samhita</i>	Described <i>Vandhyatva</i> amongst the <i>Vata</i> disorders

The condition of infertility (*Vandhyatva*) is associated with vitiation of *Dosha*, *Srotasa* and *Dhatu*, it is believed that amongst the *Tridosha Vata* predominantly involved in such condition along with *Artavavaha Srota* and *Rasa Dhatu* while *Yoni*, *Garbhashaya* & *Yoni Marga* are considered as *Adhishthana* of infertility.

Rajovaha Srota, *Artavaha Srota* and *Stanyavaha Srota* are main reproductive organs in female. *Rajovaha Srota* includes uterus, cervix and vagina; *Artavaha Srota* involves ovary and fallopian tube while *Stanyavaha Srota* involves breast tissue. Disturbed functioning of

these *Srotas* can lead to infertility therefore it is essential to understand vital factors responsible for fertilization and healthy progeny.

Ayurveda stated that *Ritu*, *Kshetra*, *Ambu* and *Beej* contribute towards the healthy progeny or delivering a healthy child. *Ritu* resembles appropriate time of ovulation & fertilization, the consideration of *Ritu Kala* enhances chances of conception after intercourse. *Kshetra* described place where fertilization and development of fetus take place therefore it is prerequisite to have proper size, shape and functioning of *Kshetra* for success of pregnancy. *Ambu* denotes process or elements through which fetus receive nutrients. The improper functioning of *Ambu (Ahar Rasa)* can cause deformities and improper growth of fetus. *Beej* means seeds which take part in process of fertilization and any abnormalities in *Beej* (sperm and ovum) can result in sterility.^[2-9]

ROLE OF RITU

The *Ritu (Kaala)* can be understood as age as well as fertile period. *Garbhadharana kaala* means appropriate period of conception at this stage woman acquires good quality of *Sampurna Veerya* thus chances of conception are higher during this reproductive age. Fertility is less in either extremes of life that is childhood as well as old age. Moreover probability of chromosomal abnormalities is higher at ageing. The current scenario witnesses the fact that women prefer marriage at later stage of life and at this stage *Ritukaala* may go off then cases of infertility rise. The period of *Ritukaala* considered best for conception in terms of fertile period it starts from day of menstruation to sixteenth day onwards. It is believed that association of *Shukra & Shonita* during *Ritukaala* can result in *Garbha*. Therefore consideration of *Ritukaala* is an important aspect for conception. Deficient ovarian reserve, anovulation, defects in menstrual phase and luteal phase defect, etc. are some conditions which can cause infertility due to the disturbance in *Ritukala*. The regularization of menstrual cycle is important for *Ritukala* and as per modern science proper functioning of endocrine system responsible for hormonal regulation and balancing state of menstrual phases. Any abnormalities in endocrine system or hormonal imbalances can disturb menstrual phases.

The following factors or conditions can disturb *Ritukaala*

- ❖ Irregular menstrual cycle leads to improper prediction of *Ritukaala*
- ❖ Hormonal imbalances affect menstrual cycle
- ❖ Stress, anger and disease conditions can extend or shorten menstrual period
- ❖ Obstruction in *Srotas* due to toxins/*Ama* can hamper menstrual flow

ROLE OF KSHETRA

Kshetra means *Yoni, Garbhashaya & Yoni Marga* (*Shthana* of fertilization and fetus development) where *Garbha* formation and development take places. Success of conception and development of *Garbha* depends upon health status of *Garbhashaya*.

Shuddha Garbhashaya is required for safe conception and development of fetus but it also protects the *Garbha* from external shock. Therefore abnormality to the uterus can leads infertility. The *Garbhashaya* abnormalities mainly affect power of implantation. *Garbhakoshabhanga* (prolapse of uterus or its displacement) can also cause infertility and pregnancy loss. Impairment in *Garbhashaya* can lead to improper implantation and loss of pregnancy.

Yoni as *Kshetra* is considered *Pratham Avarta* which takes parts in first stage of intercourse followed by conception any abnormalities like; *Sankuchit* and *Shithila* of *Yoni* can affects success of *Maithuna*. Cervical factors also contribute towards conception, abnormalities related to the cervical organs like; cervicitis, cervical enlargement and cervical polyp, etc. are some conditions which can leads infertility, cervical anomalies; *Suchimukhi* (cervical stenosis) or *Shithilamukha* can lead consequence like abortion. Similarly as mentioned above the vaginal canal obstruction due to the inflammation can leads infertility. Inflammatory conditions mainly arise due to the pathogenesis of Candidiasis, Trichomonas vaginitis and Chlymadial vaginitis, etc.

Fallopian tube is also considered as part of *Kshetra*, any inflammation and obstruction in tube can leads *Srotorodh*. Similarly tubular blockage and peritubular adhesion, etc. can leads infertility. *Sphalita-Mutratva* (partial obstruction of urethra) associated with urethritis and inflammatory condition can results symptoms of infertility.

Infertility & Kshetra

1. Anovulation/oligoovulation

Abnormality in release of mature egg causes infertility. Quality of egg decline with aging and causes infertility, disease like PCOS etc. and hormonal imbalances are responsible for infertility.

2. Uterine Abnormalities

Any kind of abnormal growth like cyst or fibroid leads to infertility. Endometriosis is a condition where the uterine lining when grows outside the uterus it causes infertility. Similarly other anatomical or functional defects in uterus and adenaxae come under *Kshetra Vikrati*.

3 Tubular blockage

Damage of fallopian tubes restrict entry of egg to the uterus and prevent fertilization thus causes infertility.

Congenital abnormality of *Khetra* responsible for infertility

- ❖ Improper formation mullerian ducts (Absence of vagina, uterus and fallopian tubes)
- ❖ Failure in mullerian ducts fusion (Bicornuate & didelphys uterus)
- ❖ Disappearance of fused septum (Septate & arcuate uterus)

Acquired deficiency of *Khetra* responsible for infertility

- ❖ Vaginal canal obstruction
- ❖ Fibroid uterus
- ❖ Endometriosis
- ❖ Elongated cervix

ROLE OF AMBU

Ambu resembles *Rasa dhatu* means nutritional elements that nourishes fetus. *Upasneha* and *Upasveda* are the process which nourishes fetus in early and later stage respectively. Fetus received nourishment through *Lomakoopa* and *Nabhinadi*. *Veerya* of *Aahar rasa* from mother to fetus transported by *Upasneha* process through *Rasavaha nadi* of mother to the *Nabhinadi* of *Garbha*. Improper nourishment to the implanted embryo can leads fetal deformities therefore *Ambu* play vital role towards the wellbeing of fetus. The lack of fetal nourishment cans causes consequences of miscarriages and still birth.

It is responsible for *Poshana* of *Garbha* and involves in supplying *Rasa* from the *Mata* to *Garbha*. It is associated with amniotic fluid at initial stage of first three months and that after it is supplied as *Matruja Ahaara Rasa* through umbilical cord. The fluid content from pregnant woman acts as cushion for fetus. These nutrients are helpful for the development of the fetus. Deficiency of *Rasa Rakta Samvahana* and *Garbhodaka* causes *Shosha* of fetus

which resulted premature abortion or still birth. The *Rasa Dhatu* circulated through the *Srotas* of the mother hence any obstruction of *Srotas* leads deficient functioning of *Ambu* which can affects fetus growth and successful completion of pregnancy period may get influenced.

ROLE OF BEEJA

Beeja means *Shukra* (sperm) of men and *Artava* (ovum) of women, union of sperm and ovum the results in *Garbha* and any vitiation in *Beeja* can affect conception and progeny. Conditions like oligospermia, azoospermia, macrozoospermia and aspermia, etc. are some conditions which causes infertility due to male factors. *Beeja* is the basis of progeny in female it pertains to ovum the sperm and ovum after fertilization forms *Garbha*, so great emphasis is given by *Acharyas* for *Shuddha Shukra* and *Artava* before conception.

According to *Acharya Charak* a male and a female from *Atulyagotra* should be married to each other. The term *Atulyagotra* means of unequal *Gotra*. *Gotra* means lineage, the term '*Gotra*' refers to people who are descendants in an unborn male line from a common male ancestor. All the members of a particular *Gotra* are believed to possess certain common characteristics by way of nature, behavior and genetic makeup. In breeding leads to a higher probability of congenital birth defects because the homozygous proportion of zygotes which in particular can be considered as deleterious receive alleles that produce such disorders. The studies have shown that consanguinity leads to death of infants during or immediately after birth, increased incidence of birth defects and genetic diseases including blindness deafness, mental retardation, asthma and leukemia, etc. The principle of *Atulya gotra* marriages and prenatal care can prevent many genetic disorders and help in producing an excellent progeny.^[2-4, 7-12]

AYURVEDA MANAGEMENT OF INFERTILITY

As *Acharaya Sushrut* has laid importance to four factors viz. *Ritu*, *Kshetra*, *Ambu* and *Beej* for reproduction. Ayurveda is ancient science but had a great vision believing in principles of eugenics and epigenetic. So even before conception, how the gametes should be made pure has been explained in ayurveda. Some code of conduct for couples, *Panchkarma* therapies and dietetic regimen has been advised to inculcate good qualities in *Beej* (sperm and ovum). *Beejadosh*a responsible for infertility can be treated with the help of *Panchkarma* techniques like *Vaman*, *Virechan*, *Vasti* and *Nasya*, etc.

Ayurveda detoxification techniques removes accumulated toxins from *Srotas* thus maintain menstrual flow and help to treat obstruction of *Arthava Srota*. Moreover it is also recommended that female should remain away from stress and anger to avoid anxiety induced hormonal disturbances. *Phalagrita*, *Shatavari* & *Shatapuspa*, etc. are good for improving *Arthava*. *Rasayana* and *Vajikarana* drugs also help to cure infertility.

It is required to take consideration of concept of *Ritu* for successful conception. It is advised to have coitus in between 10-20th day of menstrual cycle. Similarly climatic season also need to be consider in this regards it is recommended to select winter and spring seasons for copulation. Female of reproductive age groups should maintain balance daily and dietary regimen to normalize menstrual cycle. *Haridra*, *Agaru*, *Shilajatu rasayana*, *Bhrungraj*, *Pippali*, *Yashtimadhuk*, *Manjishtha* and *Rasna*, etc. can relieve infertility. *Nasya karma* maintains hormonal regulation since it stimulates pituitary and hypothalamus functioning and regulates endocrine functioning.

Arthava increasing drugs along with *Medhya rasayana* helps in condition of disused atrophy. Endometriosis can be managed by *Anulomana* treatment. *Drakshadi Kashaya*, *Varunadi Ksheera Kashaya* & *Kalyanakam Kashaya*, etc. are helpful to relives adipose tissue deposition over ovary. The inflammatory condition associated with *Trichomonas vaginitis* can be managed by *Maharasnadi Kashaya* and *Nirgundyadi Kashaya* along with *Basti*. *Sthanik chikitsa* (*in situ* treatments) like *Yoniprakshlan*, *Pichu* and *Yoni varti*, etc. can treat vaginal infections and abnormalities of cervix. *Panchakarma* therapy especially *Basti* pacifies *Vata Dosha* therefore offer therapeutic benefits in genital tract disorders associated with *Vata Dosha*. *Basti* removes obstructions of reproductive organs, *Uttarabasti* boost functioning of uterus since this therapy contributes towards *Kshetra Nirmana*. Similarly *Anuvasana Basti* and *Uttar Basti* provides relief in condition like; tubular blockage.^[2, 5, 12-15]

Specific Ayurveda Management

- ❖ *Guduchi*, *Brihati*, *Gokshura*, *Yashtimadhuk*, *Pippali*, *Rasna* and *Padmakashtha* helps to sustain pregnancy and help in growth and development of foetus.
- ❖ *Udumbara*, *Haridra*, *Yashtimadhuk*, *Manjishtha* and *Shirisha* offer therapeutic value in cervical mucus.
- ❖ *Shatavari*, *Ashwagandha*, *Samudrashok*, *Bala*, *Shrungatak*, *Yashtimadhuk* and *Nagbala* help to cure undeveloped uterus.

- ❖ *Chandraprabha Vati, Ashokarishta, Dashmoolarishta, Aloe vera, Hirabol and Yograj Guggulu* corrects ovulation disorder.
- ❖ *Kaishor Guggulu, Triphala Guggulu, Punarnava and Kutki* offer relief in fallopian tubes blockage and cure scar tissue.
- ❖ *Guduchi and Jeevanti* correct premature ovarian failure.

Probable Mode of Action of Ayurveda Drug in Vandhyatva

Sheeta Virya, Madhura Vipaka and *Tikta Rasa* of Ayurveda drugs provides *Vatapittashamaka* effects thus regularizes *Vata* and maintain physiology of reproductive system and initiates process of cell regeneration from the layer of endometrium. The *Shatavari, Bala, Yashtimadhuk* and *Ashwagandha* help to achieve minimal hormonal levels. Ayurveda drugs control follicular and luteal phase by regulating endometrium changes related to the proliferation and secretion. The uterus becomes suitable for implantation after the use of Ayurveda drugs. The intrinsic estrogen activity stimulates progesterone receptors in follicular phase thus normalizes menstrual cycle. Moreover *Deepan Pachan* effect of Ayurveda drugs improves *Jatharagni* which potentiates *Ahara Rasa* thus maintained nourishment of mother as well as fetus through *Ambu*.

Probable Mode of Action of Panchkarma in Vandhyatva

Vamn karma and *Virechan* helps to purify the body help in *Stroto shuddhi*. It has been mentioned in text that for permanent and prolonged effect of drugs, proper *Shodhana* is must especially in the case of *Rasayna* (Rejuvenate) and *Vajikarana* (Aphrodisiac) treatment. Hence, all the classics of Ayurveda advocates the use of *Shodhana* (cleansing procedures) prior to *Shamana* therapy especially *Rasayana* (Rejuvenate) and *Vajikarana* (Aphrodisiac) therapies. *Shodhana* (cleansing procedures) therapy not only increases the bioavailability of the drug, but also cures the ailments. *Shodhana* (cleansing procedures) procedures open the occluded channels in the body this help to regulate hormones and maintain homeostasis in the body. It has been said for *Virechan* '*Beejam Karmakum Bhavati*' that it enhances fertility.

Basti helps to normalizes *Apana Vayu* thus causes *Vatanulomana* and control functioning of *Vata* which results extrusion of ovum. *Basti* pacifies aggravated *Dosha* and balances *Vyana Vayu* leading to the *Samyaka Rasa Raktadi Dhatu Nirmana*. The *Beejotsarga* regularizes since *Sukshma Bhaga* of *Rasa* affects *Beejagranthi*. *Basti* stimulates CNS to activate hypothalamus and pituitary for stimulating GnRH and Follicle Stimulating Hormone respectively. It is believed that parasympathetic activity mainly control process associated

with *Apana Vayu*. *Basti* stimulate parasympathetic supply to release ovum from the follicle of ovary. *Vata* help in *Garbh* formation development of fetus (*Garbhakritikaranam*) as well as it can cause abortions (*Vinihanti garbha*) if it (*Vata*) get vitiated. *Basti* pacifies *Vata* thus helps to treat infertility.^[4, 6, 15]

CONCLUSION

Ayurvedic texts mentioned concept of *Ritu*, *Kshetra*, *Ambu* and *Beeja* for the success of conception and healthy pregnancy. The disturbance in ovulatory phase, unhealthy uterus, improper nourishment to the fetus and vitiation in ovum can leads infertility. Developmental anomalies of fetus may affect pregnancy tenure or leads still birth. *Ritu* means ovulation period and reproductive period, the conception during this period can generate good quality of ovum ultimately healthy progeny. So if proper *Ritu* i.e; appropriate age of couple and appropriate time of ovulation is advised to couple can help in getting healthy offspring.

Kshetra means reproductive organs or place where fetus development takes places, whole body of female is a *Kshetra* pathologic of uterus or abnormalities in genital organs or some systemic diseases can cause infertility. The general health as well as healthy reproductive organs could be achieved by ayurvedic interventions like; *Panchkarma* (*Uttarvasti*) and ayurvedic herbs.

The *Ambu* refers to fetus nourishment, improper nutrition results abortion, miscarriages and still birth. So proper intake of *Ahar* (food) as well as *Vihar* (environmental factors) affects the development of child. Nutritious food and congenial environment imparts epigenetic changes in fetus which can even overcome the effect of genetic diseases and produce an excellent progeny.

Bija represents sperm and ovum, the healthy state of *Bija* is essential for conception, the vitiated *Bija* causes infertility which is generally incurable. So *Acharays* have already advised to select the spouse cautiously from *Atulyagotra* (non consanguineous), so that can prevent genetic diseases. Purification of gametes should be done by *Panchkarma* to treat infertility and produce good quality of offspring. Thus it could be concluded that if all these four factors are in coordination with each other then not only treat infertility get cured but also help to achieve excellent progeny.

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