A critical review on etiology of Vandhyatwa through Scientific approach

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Abstract:
Life style of present day’s women is very stressful, unhealthy and unhygienic due to unawareness, hectic and fast running schedule. So infertility is emerging as one of the major disorder affecting the social and psychological aspect of the life of the masses. Infertility is a failure of conceiving within 1 year of regular unprotected coitus. According to the Indian Society of Assisted Reproduction, infertility currently affects about 10 to 14 percent of the Indian population, with higher rates in urban areas where one out of six couples is impacted. Nearly 27.5 million couples actively trying to conceive suffer from infertility in India. According to sushruta, woman, in whom Artava has been destroyed, is termed as Vandhya. According to Acharya Sushruta four main factors required for the proper conception are Ritu (Ovulatory period), Kshetra (endometrium), Ambu (Hormones) and Beej (Ova and Sperm). As per Ayurveda, Nidan-parivarjana is the first line of treatment thus before treating any disorder we should have knowledge about causative factors and pathology of that condition. Vata is the prime causative factor of Vandhyatwa. In the given paper, there is elaboration of scientific approach towards the causes of vandhayatva on the basis of the various causative factors from different ancient texts.

Keywords: Infertility, Vandhyatwa, etiology, conception

Introduction:
God has blessed women with the ultimate gift of being a mother but if she could not be a mother, it is most disappointing. Life style of present day’s women is very stressful, unhealthy and unhygienic due to unawareness, hectic and fast running schedule so infertility is emerging as a major disorder affecting the social and psychological aspect of the life of the masses. The word Vandhya is derived from the root "Vandh" with "Yak" Suffix, which means barren, unproductive, fruitless and useless so the woman in whom there is hindrance of any kind to the normal process of conception is called Vandhya. According to sushruta, woman, in whom Artava has been destroyed, is termed as Vandhya1. 

Classification:
Charakasamhita: various references are togetherly classified in three types
1) Vandhya: refers to absolute inability to conceive due to serious innate problems like beejopaghata (absolute congenital chromosomal or mullerian agenesis abnormalities).2
2) Apraja: refer to infertility in which woman conceives after treatment (primary infertility) or a woman with unsuccessful pregnancies even after obtaining conception3.
3) **Sapraja:** refer to a condition in which a woman in her active reproductive age does not conceive with previous history of bearing successful pregnancies.

**HARITA SAMHITA:**

Acharya Harita has described six types of Vandhya with special clinical features.

1) **Kakavandhya:** unable to conceive after one child.

2) **Anapatya:** Primary sterility where the lady never conceives.

3) **Garbhasravi:** characterized by unsuccessful pregnancies due to repeated abortions.

4) **Mritavatsa:** characterized by unsuccessful pregnancies due to repeated intrauterine death, still births and perinatal deaths.

5) **Balakshaya:** Infertility due to loss of Bala (strength) or dhatukshaya.

6) **Unexplained:** If the coitus is done with a girl before her menarche it results in constriction of uterus and Bhaga and this woman does not conceive or conceives quite late with great difficulty.

**Etiology of Vandhyatwa:**

Vandhyatwa is a multifactorial disease. They are classified into two types -

[A] **Abnormalities in essential factors:**

To understand the pathology of conception, it is very fundamental to go through the physiology of conception i.e. the factor essential for conception.

**According to Acharya charaka:**

*Matrija and Pitrija:* Shonita (Stribeeja) and Shukra (Pumbeeja) should be normal.

*Aatmaja and Satvaja:* Aatma encircled with satva descents in the fertilized egg and forms garbha. Formation of garbha is not possible without aatma and satva.

*Satmyaja and Rasaja:* The normalcy of shonita and shukra greatly depend upon the use of Satmya Aahara and Vihara. The nourishment of mother and embryo depend upon the Rasa.

So, any abnormality of Garbhakarabhavas i.e. shadbhawas will cause failure to conceive.

**According to Acharya sushruta:**

According to Acharya Sushruta four main factors required for the proper conception are:

**Rutu:** Acharya Dalhana explained Rutu as Rajaha Samayaha i.e. ovulation period. When seeds are sown during Rutu (season), they are likely to bear fruit. So, Rutu is the most fertile period in which Garbhashya or Yonimukha opens for entry of sperm and facilitate conception. According to bhavprakash, Rutukala is the appropriate period for Beejotsarga and Garbhadhana. It is of 12 days or 16 days or if Yoni, Garbhasaya and Artava are healthy, it may be of whole month. Sometimes Rutukala may come up without menstruation. Acharya Dalhana has explained that in twelve day duration, the first three days and last one day constriction of yoni out of sixteen days duration are not counted. Since the seed (sperm) deposited during this period are likely to bear fruit (conception), hence it is termed as Rutukala.

Acharya Kashyapa has been mentioned its duration as 12 days for Brahmanis, 11 days for Kshatriya, 10 days for Vaishya and 9 days for Kshudra. Acharya Bhawamishra has been mentioned its duration as 12 days for Brahmanis,
10 days for Kshatriya, 8 days for Vaishya and 6 days for Kshudra\(^\text{13}\).

**Kshetra:** Acharya Dalhana explained Kshetra as Garbhasaya. Kshetra is also taken as female reproductive system. Vagina should be healthy. Cervix and cervical mucus must be penetrable to pass spermatozoa. The fallopian duct must be patent and sufficient ciliary movement should be present. The uterus must be capable to support implantation and foetal growth throughout pregnancy.

**Ambu:** Acharya Dalhana explained Ambu as Aharapakotpanna rasa dhatu. Proper nourishment of genital organs by Rasa and hormone levels must be adequate. According to Acharya Vagbhata\(^\text{14}\) as lotus flower closes after sunset, similarly after rutukala the yoni of woman gets constricted and does not accept shukra. The sun can be correlated with the ovary and the sun rays with the ovarian hormones and lotus flower with cervix. So at the end of Rutukala, level of ovarian hormone-estrogen decreases and cervical part of uterus get constricted and does not accept shukra or permit the entry of beeja (Sperm).

**Beeja:** Acharya Dalhana explained Beeja as Artava & Shukra. Ovum must be normal and there should be presence of ovulation. The male must produce an adequate number of motile and morphologically normal spermatozoa. Scientific explanation of physiology of beeja nirmana is given by Vishvamitra in Sushruta Sutra 14/14, Chakrapani commentary. He explained that rakta (the form achieved by the rasa after entering into the concerned strotas) enters into the minute channels (Suksamakesha pratikashah bijarakta vaha sirah) attaining the particular nuclear form which has the capacity to form beeja.

In the same context Acharya Sushruta described that rasa which attains raktatva through innumerable dhamanis gets upachita in the form of artava.

Acharya Kashyapa mentioned that garbha forming entity is exposed to the rajovaha shiras where the rajaha pravisarjana occurs. Then it takes the form of pushpa& its pravartana occurs every month\(^\text{15}\). Pravartana is governed by apana vayu mentioned by Acharyas in the prakrita karma of apanavata\(^\text{16}\). Similarly, parisarpana mentioned at the time of coitus requires presence of agni, which can correlate to pitta\(^\text{17}\).

Kapha is Prithvi and Jala Mahabhuta Pradhan aand these Mahabhutas play important role in Nirmana Prakriya. Acharya Charakahas mentioned Upachyas the Karma of Kapha\(^\text{18}\) and Acharya Sushruta states Kapha Karma as purantarpanabalasthairyakrit\(^\text{19}\). All these virtues help in formation of Beeja. Moreover Kapha and Rasa having Ashrayashrayi Bhava, it plays an important role in the formation of its Upadhauta artava.

So abnormality in any one of these essential factors can cause Vandhyatwa.

**Acharya Vagbhata** has emphasized that besides healthy Garbhashaya, Marga, Rakta, Shukra, properly functioning Vayu and normal psychological status are also essential\(^\text{20}\).

**[B] CAUSATIVE FACTORS:**

Yoni never gets spoilt without Vata, Vandhyatwa has also been described in eighty types of Vatikaroga\(^\text{21}\). So, Vata is the prime causative factor of Vandhyatwa.

Acharya Charaka has clearly described the Nidanas of Vandhyatwa\(^\text{22}\) which are almost similar to causes of infertility according to modern science.
1. **YONI PRADOSHA:**

The word "Yoni" refers to entire female reproductive system, thus, under this heading congenital or acquired diseases of anatomic components of reproductive system i.e. vagina, cervix, uterus, endometrium and fallopian tubes can be included. It can includes;

- **Yonivyapad:** All twenty Yonivyapad, if not treated properly, the woman is unable to conceive.

- **Injury to Artavavaha Strotas:** Acharya Sushruta has included Vandhyatwa under the clinical features of injury to Artavavaha Strotas along with other symptoms i.e. dyspareunia and amenorrhoea.

- **3) Yoniarsh -Yoniarsha in yoni cause infertility by destroying the Artava.**

- **Garbhakoshabhangas:** Word “Bhanga” considered as prolapse of uterus or its retro-displacement, which is the one of the cause of infertility.

- **Bhagasankocha:** During coitus with a girl before her menarche, deep lacerations or tear of vulva and vagina may take place. Healed scars of these ulcers may produce constriction of vagina, thus, hamper proper penetration of penis during coitus resulting into incomplete coitus, a cause of infertility.

- **Sphalita Mutratwa:** Sphalita mutratwa in girls is seen in strictures, partial obstruction or spasm of urethra, for which the most common cause is gonorrhoeal urethritis, because gonococci causes inflammation of reproductive system along with urinary system. Gonorrhoeal salpingitis is very common cause of infertility.

- **Utkshipta Yoni:** Upward displacement of cervix in cases of retroversion of uterus is the one cause of infertility.

- **Aticharana yoni vyapad:** Acharya Sushruta says that this disease is caused due to excessive coitus. The woman does not achieve conception. Charaka and Vagbhata describe it to be Vataja, while Sushruta due to Kapha. In initial stage due to intense sexual desire, woman may feel vaginal itching and due to repeated coitus may have excessive mucoid unctuous secretion from cervical and endometrial glands, which are clinical features of Kapha as explained by Sushruta.

- **Vamini yonivyapad:** Acharya Charaka says that in this condition shukra is expelled with or without pain within 6 or 7 days of its entry into the uterus. This condition can be found in obstruction of cervix or fallopian tubes in which sperm comes outside without fertilization. While as per Acharya Sushruta yoni excretes beeja admixed with raja and vata which can be compared with defect in implantation. Both the conditions are causes of infertility.

- **Putraghni yonivyapad:** The aggravated Vata due to predominance of Ruksha guna and dushta shonita, repeatedly destroy the foetus.

- **Shandhi yonivyapad:** Due to abnormalities of beeja the Ashaya (uterus) of the female fetus is influenced or afflicted with Vayu. The born child, in later had absence or very slight development of breasts, dislikes coitus and absence of menstruation.
2) MANSIKA ABHITAPA: Normal psychology of the couple is very important for achievement of pregnancy. Happiness of heart due to Bhaya, Distraught mind (Vimana), Shoka, Krodha etc., Vata will be vitiated and it is also said that Vishada further aggravates existing pathogenesis. Saumnasya is said to be important factor to achieve pregnancy.

3) SHUKRA DOSHA: All eight types of Shukra dusthi are incapable of producing progeny. Quantitative and qualitative abnormalities of sperms along with spermatic fluid cause infertility. Pitruja Bhawas described under six factors are carried to the embryo through sperms.

4) ARTAVA DOSHA: The word Artava refers to ovum, menstrual blood and ovarian hormones. Nashtarata is one of main cause of Vandhyatwa. Artava vitiated by different Doshas i.e. Ashtartava dushti produces infertility due to destruction of its Beeja of the ovum.

5) AHARA DOSHA: Dietetic abnormalities cause infertility in three ways:
   - By producing loss of Dhatus and that of Dhatvagni, thus they influence hormones.
   - By vitiating Doshas which cause various gynecological disorders, leading to infertility.
   - By hampering nourishment of fertilized egg or implantation of zygote.

6) VIHARA DOSHA: Abnormal mode of life and Vegavidharana (suppression of natural urges aggravate) Doshas, which produce various gynecological abnormalities. Coitus with woman in Nyubja or Parshvaavastha, discharge of semen on Samirana Nadi or outside the vagina comes under defective practice. In all these conditions probably semen is not properly deposited inside the vaginal canal. Thus sperm fail to enter uterus causing infertility.

Abnormalities of mode of life also cause infertility in two ways-
   1. By vitiating Doshas, thus causing gynecological disorder
   2. By preventing proper entry of sperms due to faulty deposition of seminal ejaculation.

7) AKALA YOGA: The word “Kala” considered as period of age and Rutukala both. In adolescent girls and old ladies due to premenarche and menopausal stage respectively and before or after Rutukala due to absence and destruction of ovum respectively, conception does not take place.

8) BALA KSHAYA: Bala refers to physical strength and capacity to become pregnant. Bala depends upon dhatus, So probably loss of Bala due to Dhatukshaya as a complication of diseases, premature aging and unknown cause refers to infertility.

9) ATMA DOSHA: It includes infertility due to influence of missdeeds done by the couple in their previous life as well as abnormality of Atma descending in this pregnancy. Missdeeds of previous life refer to idiopathic causes. Atma descending in fertilized egg is encircled by Satva, both these Atma and Satva are included under Shadbhawas of embryo, conception is the result of union of Shukra, Shonita and Atma, naturally its abnormality may cause infertility.

10) JATAHARINIS: Jataharinis destroys Bijaripaartava, destroys Vapu (body), destroys the Garbha (fetuses), destroys the Jata (born children), destroys Jayamana (being born) or Janishyamana (to be born). Acharya Kashyapa has also mentioned jataharinis characterized with repeated expulsions of foetuses of different gestational periods i.e Andaghni, Durdhara, Kalaratri, Nakini, Vashya etc.
11) **Daivaprakopa**: This refers to idiopathic cause of infertility

12) **Beejadushti**: When the gene concerned with uterus is damaged in ovum, the progeny becomes sterile.

13) **Samshodhana vyapad** If excessive medicines for *Vamana and Virechana* are given to a person of *Mridukoshtha* even after proper *Snehana and Swedana*, then due to Secretion of *Jeevrahta*, the *Vayu* gets vitiated and causes destruction of *beeja* (Sperm and Ovum) and *pushpa* (Menstruation).

According to modern science infertility is caused by vaginal factor, Cervical factor (5%), Uterine factors (10%), Tubal factors (25 to 30%), Ovarian factors (30 to 40%), Peritoneal factors: (5%) and Coital errors.

**CONCLUSION**:
The whole world is turning towards scientific approach. This being the age of reason everybody wants to measure the things on scientific parameters. In *Ayurveda*, it becomes necessary to study, understand and prove them particularly in light of modern scientific parameters in the present era. As per Ayurveda, *Nidan-parivarjana* is the first line of treatment thus before treating any disorder we should have knowledge about causative factors and pathology of that condition. From the above article, the scientific approach towards the etiological concept of Infertility in perspective of Ayurveda and its relevance as per modern science.

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