ABSTRACTS

Infertility affects a significance proportion of humanity. Despite the high burden couples, who desires but are not able to achieve and maintain a desired pregnancy, have needs which are not being addressed, especially in lower resource setting worldwide. There are many reasons for infertility such as – obesity, smoking, alcohol, improper diet, lifestyle disorders, environmental pollutants, stress, family history etc. The burden of infertility includes psychological, social and physical suffering. Ayurveda provides some principles about treatment and ample information regarding the drugs, panchkarma, no. of ayushadhi yog, Yoga for infertility. It not only offers ample scope for effective treatment in infertility but also improves overall physical and mental health also.

INTRODUCTION

Today, Vandhyatava (Infertility) is long standing problem. Ayurveda, states that, conception is the result of healthy sperm, ovum, healthy status of reproductive system & healthy nutritional status. Ayurveda, provides some principles about treatment and ample information regarding the drugs, panchkarma, no. Of ayushadhi yog, Yoga for infertility. It not only offers ample scope for effective treatment in infertility but also improves overall physical and mental health also.

General Concept of Vandhyatava

It is an independent disease rather than a cardinal feature of so many diseases.
In *Sushrut samhita*, the vandhyatava has been included in twenty yoni vyapada.[1] He described characteristic features of vandhyatav as “vandhyam Nastartavam Vidyat”. The word nastartava may represent anovulatory menstrual cycle.

*Kashypa* mentioned Vandhyatava as one of the eighty disorders of vata.[2] Under the description of Jataharini Kashyapa has mentioned puspagni having absence of pushpa (absence of ovulation).[3]

*Charaka* directly quotes the Vandhyatav is a result of Pradusha garbhashaya Bija Bhaga dhushti of female and male respectively.[4]

According to *Ashangsaanghraha*, Vandhyatwa occurs due to abnormality of “Bija “(abnormality in sperm, menstrual cycle, ovum).[5]

Untreated yoni Vyapad also ultimate result in “Vandhyatav“. Putragni and Jatagni yoni vyapad may causes Vandhyatava.

*Madhav nidan* mentioned Vandhyatav as Nashta artava - absence of artava without pregnancy is known as Vandhya.[6]

According to *Bhavaprakasha*, Udavarta Yoni, Vandhya Yoni, Vipulta Yoni, Paripluta Yoni & Vatala Yani roga these five are produce by aggravation of Vata.[7]

*Harita* has defined Vandhyatava as, failure to achieve a child rather than pregnancy because he has included Garbhsaravi and Mritvastha under the classification of vandhya.

**Classification of Vandhya**

1) **Vandhya**

It is due to congenital absence of uterus or Artava. Chakrpani explains “Vandhya refers to incurable congenital or acquired abnormalities resulting into absoulat sterility.

2) **Apraja**

Infertility in which women conceives after treatment. This conditions comes under primary infertility.
3) Avandhya
This word has been described by Chakrapani. The word Avandhya is used for a childless women but capacity to conceives with quite delay. This condition may comes under unexplained infertility.

4) Sapraja
Sapraja is condition in which a women in her active reproductive age does not conceives after giving a birth to a children and it may refers to secondary infertility.

According to WHO
Infertility is a “disease of reproductive system defined by the failure to achive a clinical pregnancy after 12 month or regular unprotected sexual intercourse (and there is no reason such as breast feeding, postpartum ammenorrhoea).[8]

Primary infertility - is defined as the absence of a live birth for women who desire a child and have been a union at least 12 month, during which they have not used any contraceptive.

The WHO also adds that women whose pregnancy spontaneously miscarries or whose pregnancy result in a still born child without ever having have a live birth with present with primary infertility.

Secondary Infertility
It is defined as the absence of a live birth for women who desire a child and have been in a union for at lest 12 month since their last live birth, during which they didn’t use any contraceptives.

B) Sterility
It implies that absolute inability to conceive because of congenital anomalies or surgical procedure either in male or female or both leads to sterility.

General Causative Factors for Infertility
A) Abnormality or improper function of-
Rutu
Kshetra
Ambu
Beeja
Vayu

Here Ambu maybe considered as Dhatukashay / Bala Kashaya.[9]

B) The women suffering from viated vata dosha when copulates with husband then also she doesn’t conceive.[10]

C) According to Charka
- Due to abnormality in Matrudhadi Shadbhava, conception doesn’t occur.[11]
- Due to vitiation of Doshas in mother when garbhashaya and Artava are slightly vitiated there is chances of conception but child will be born with congenital anomalies.
- Yoni Pradosha

Manobhighata
Shukra –Artava Dhushti
Ahar – Vihar dosha
Akala Samyoga
Balkshaya[12]

D) Bhela says that
- Vandhyatava occurs due to
  Abnormality of Beeja
  non consumption of proper diet
  Suppression of natural urges
  Disorders of Yoni.[13]

He further mentioned that, causes of failure to become pregnant is when -
  a) aggravated vayu expels the Shukra from the uterus and destroys the rajah then women become infertile.

E) untreated yoni vyapada
According to modern science
- Factors that causes male as well as female infertility are –
  - DNA damage
    - General Factors – Diabetes mellitus
    - Thyroid disorders Adrenal disease
    - Hypothalamic –pituitary Factors - Hyperprolactemia
Hypppituitarism presence of anti-thyroid antibodies
- Environmental Factor Obesity
- Low weight

Female – The following causes of infertility may only be found in Females:
- Ovulation problem -
PCOS, PCOD Tubal blockage
PID
Age related factors Uterine problems
Endometriosis Immune infertility.
Male – Low sperm count

**Essential Factors For the Formation Of Garbh**

Proper time of menstrual cycle and ovulation (Rutu)
Healthy status of reproductive organs (kshetra)
Nutritional status of mother (Ambu)
Healthy status sperm – ovum (Beeja) are considered as prime requisites for conception and healthy progeny.[14]

Between these two version of Sushruta seems to be more practical from treatment and investigation point of view so according to this version factors are described here.

1) **Rutu**

The stage is governed by Kapha dhatu mainly. The beeja part (ovum) is a chief source for the formation of Garbha. After withdrawal of following fraction of Artava, It lasts for next 12 days of period of Ritukala named as “Drishtaartava”. According to Ashatang sangrha it may be considered at 16th days.

The duration may may vary according to prakruti, Bala of Stree.
It also indicates that after artavpravruti Navraja gets well arranged for Garbhadharna. This is essential factor foe conception.

Since the seeds deposited during this period are likely to bear fruits hence it is ideal period for fertilization.

If coitus is done in late period of rutukala and it is somehow conception take place, certain complications like still birth, abortion etc. will arise.

2) Kshetra

The word Kshetra in garbhasambhava samgri refers to entire reproductive system.

The word Yoni described the whole female reproductive system.

The structure of Yoni is like a conch shell. It is described to be composed of three Avarta. Pratham avarta comprises of Vagina and accompanying structures. Dwitiya avartha comprises of cervix and accompanying structures. Thritiya-avrata consist of uterus along with accompanying structures.[16]

Garbhashaya consists of two words Garbha and Ashaya, means the organ that holds and nourishes the Garbha called as Garbhashaya.

Aratvaha srotas in physio-anatomical structures present in female pelvic cavity having garbhashaya and artavaha dhamani Any injury to the Artavaha srotas or its moolsthan leads into symptoms like menstrual disorders (nashta-artava), Dysparaunia or even Infertility.[17]

Anatomical defect of the reproductive system could be one of the commonest causes for recurrent abortion. It may leads into infertility.

3) Beeja Vichar

While considering Beeja we should considered both the constituents of it i.e. Arthava and Shukra.

Shukra is essential factor for conception.

Shuddha Shukra Lakshane

Spatikabham indicates the white color. Dravam indicates the liquid state of Shukra. Snighdha indicates the viscosity. The Gandha resembles madhu. The Pichhil indicates slippery in nature. It is Avidhahi means no Burning sensation at the time of ejaculation.[18]
This is the Shukra Shuddha lakshane essential for conception.

Eight types of Shukra dhushti are described by Ayurveda, In Ayurveda, Shukra dhushti is considered to be a main cause for male infertility. Absence or production of less quantity of semen is the main features described in eight types of Shukra dhushti.[19]

Artava

Artava have Agneya pradhan nature as a source of Agneytattva which is a essential for formation of Garbha. Both Artava and Rakta are formed from Ras Dhatu by dhatwagni (Rajankriya). This process converts the saumyabhava to Agneybhava.

Shuddha artava is essential factor for conception.[20]

Shuddha Artava lakshane

Acharya Charka says the colour of artava is same as fruit of gunja, resembling colour of lotus, a small creature of indragopa.

According to Sushruta the colour of artava is similar to liquid laksha. The discharge has a typical odour and it does not stain to clothes.

Amount of Discharge according to Sushruta

4 Anjali According to Charka: amount varies from person to person. Desh, Kala, Prakruti have their effects on amount of discharge.

All this plays significant role in assessment of artava dhushti. Any disturbance of menstrual cycle viz. its formation, duration, frequency, quantity etc. can leads into Artavadhushti/Artav-vyapad.

Arjaska yoni vyapad, Raktaja Yoni Vyapad, Vandhya Yoni, rakta Yoni, Lohitkshaya, Raktgulma, Granthibhutartava, Raktpadoshaj vikar may leads indiractly into infertility.

D) Ambu Vichar

Ambu means nutritive fluids.
Ambu means adya rasdhatu which is derived from ahar. Pachakagni digests the Ahar and Sar dhatu in the from of ras –dhatu is produced.

Ras Karya - Snehan, Jeevan, Tarpan and Dharna and also poshan of “Garbha” It is Sar of Ahar – ras And Saumya in nature. Garbha – Poshan -

maatustu Klau rsavahayaama naaDyaaM gaBa-naaBaInaaDI p’itbaQda syaaṣya maaturaharsavaIya-iBavahit È
tonaaosnoahasyaiBavaRiQdBa-it È
³sau.Saa.3Â31⁴[21]

**Raswaha srotas**

Rasvaha srotas are two in number, the mula is heart and rasvahi dhamani. Rasvaha srotas of mother is connect with Garbhnaahi nadi. The same raswaha srotas brings the ahar- rasa (Prasad rupa) to the garbha take place just like **Upsnehabvat**.

Garbha nabhi nadi is connected with mothers “Hrudaya-nadi”. This gives poshana to Garbha just like **“Kedarkulyvata”**[22] This type of poshana is just like in second trimester after formation of umbilical chord.

Therefore Rasa should be prakrut for the conception and

**E) Vata**

Most of disorders in female reproductive system are due to vitiation of Vata.[23] Apana vayu in its prakrut avastha produce regular menstrual cycle. Any hindrance in its activity leads to artvadhushti. According to Acharya Vagbhatta Vyanvayudhushti leads to punshatvanshati i.e. infertility.

Vata has prime importance in the formation of ovum by virtues of its division and providing structural differentiation to tissue properties. Vitation of vata can leads to anovulation, ammenrrhea and malformation.

The above mentioned factors are absolutely essential for garbhotapatti but in practice we find many couples suffering from infertility who have all above mentioned factors normal, still if
the atmosphere and circumstances are not favorable both are mentally disturbed, the conception doesn’t take place.

Ayurveda has given vital importance for this factor – vidhipurvak sannidhya, which mainly deals with shuddhi of Body and Mind both.

**Principles of Treatment**

1) To find out root cause of infertility.
2) Agnideepan and Aampachan
3) Shodhan
4) Proper production of Dhatu
5) to initiate proper function of Vata.
6) Diet and Modern life style management.
7) Stress Management.

* Role of Panchkarma

The application of panchkarma is a broad spectrum in clinical modality and well known purification process of Doshas, Srotoshuddhi and is achieved by its virtue of Shodhana and thus it improves the Dhatu poshana karma.

Acharya Charka mentioned that – Doshavatha, Matra, Kala should be keeping in mind during application of Panchkarma. [i.e. according to need of Patients].[^24]

1. **Basti**

Probable mode of action of Basti in infertility -
Female reproductive organs present in katisthan which is predominant part of Apana vayu.
–Apana vayu has prime role in normal Artava-chakra, formation of ovum, Garbhdharna.[^25]
- Garbhashaya is made up of Vayu and Akashmahabhuta.

As action of Basti is predominantly vata dosha which is indirectly help in infertility.
- Acharya Charka said that basti is propounded as best line of treatment for vitiated Vata.[^26]

Basti also plays an important role to relives strotavarodh and uterine purification. Basti chikista also act by its prabhava which increases aagni.
- Sneha used in basti also act as Balya for Garbhashaya.
- In cervical factor, drugs administrated locally in the cervix and absorbed by cervical epithelium due to Sukshma, laghu guna of ghruta and drugs. The lipid soluble drugs is passively diffused across the membrane in the direction of its concentration. In this way ultered cervical PH can be corrected by Uttar-basti.\textsuperscript{[27]}
- Basti normalized the Apana vata through both local and systematic effect as anal area is considered as root of body.

According to Modern Science\textsuperscript{[28,29]}
1) Enteric and nervous system controls the motility, exocrine –endocrine secretion and microcirculation of G. I track. ENS closely resembles CNS.
2) Endogenous opioids are mainly present in G.I. track and in brain. Endocrine plays important role in normal menstrual cycle.
3) As sneha is important part of Basti drvaya, the lipid soluble drugs are passively diffused in the membrane of G.I. track which is considered as ENS.
4) The essence of Bastidrvaya stimulates Endogenous opioids which are usually present in G.I. track. These Endogenous opioids may stimulates the ENS – CNS and helps for regular menstrual cycle through endocrine system.

Yapan basti is specially mentioned in Shukra dosha and Klaibya.

Matra Basti – it is one type of Anuvasana Basti which is commonly indicated during infertility.\textsuperscript{[30]}
Yapan Basti - It work as nirooha as well as Snehan basti . It is aalso indicated in Infertility.\textsuperscript{[31]}

Various bastis described in Granthas are –
Kashmaryadi Basti [Ch. Ch. 30/]
Shatpushpa Taila
Lashun Taila [Ka, Sam. Kalp.]
Bala Taila [Su. Ch 38/39]

2) Virechan
Virechana is one of the Panchkarma therapies aims as the elimination of excessive vitiated Doshas particularly Pitta Dosha.\textsuperscript{[32]}
Virechana has direct effect on Aagni. As it improves the dhatu poshana Karma through Dhatvagni, it result into proper production of Artava. and Shukra dhatu also. It does the quality of srotovishodhana, so it will helps in destroying the diseases from its root rather than temporary relief.

Acharya Kashypa describes wonderful benefits of Virechana in infertility. And very precisely states that the effect of virechana enhances the structural and functional capability on reproductive system,[33]

Probable Mode Of Action Of Virechana Specifically in Shukradhushti
The active principles of Virechana drvaya are considered to be Soma and Pruthavi dominant, as Shukra is described “ Saumya pradhan “ hence virechana may helps for production of Shuddha Shukra.

Virechana may be responsible for rectifying the pittadhara Kala as it is the main procedure for pitta shodhana. According to Achrya Dalhana Pittadhra Kala and Majjadhara Kala resembles each others. There may also be some relation between Pittadhara Kala and Shukradhra Kala as sequence of descrption according o Sushruta.

It may leads into formation of Shuddha Shukra. The whole process may helps to relives Shukravaha srotavarodh by Yogvahi guna which may increases the motility of sperm.

3) Nasya
Nasya karma is one of the Karma in Panchkarma. In this process, the drug is administered through nose either in the form of ghee, oil, liquid etc. Nasa is said to be door of Shirasa.

Nasyaushadhi reaches to brain via nasal route act on higher center of brain controlling different neurological, endocrinal and circulatory function and thus showing local as well as systematic effect.

In Ashtang sangrah, It is explained that Nasa being a door way to shira, the drug administered through nostrils, reaches shringataka. achrya Sushruta has clarified Shrigantaka marma as a sira marma formed by the union of Sira (blood supply).
According to Modern view
Nasal route is easily accessible, convenient with a porous endothelial membrane and highly vascularised epithelium membrane that provides rapid absorption of compound into systematic circulation.

It may act through\textsuperscript{[35,36]}

1) Vascular pathway
- The nasal tissue is highly vasulerised making it an attractive site for rapid and efficient systematic absorption.

2) Neurological Pathway
- Olfactory nerve is chemoreceptor in nature. It is known that through olfactory pathway this nerve is connected with limbic system and Hypothalamus which have control over endocrine secretion. As it is indirectly helps in production of normal menstrual cycle.  
  – Naryan Taila nasya plays important role in anovulatory cycle.\textsuperscript{[37]}

Probable mode of action
- Naryana Taila Nasya may stimulates olfactory nerve and limbic system which turns stimulates hypothalamus leading to stimulation of GnRH - regulating ovulation.
- Phytoestrogens are plant derived substances whose chemical nature is similar to endogenous estrogen. They are beneficial in both hypo estrogenic and hyper estrogenic activity in human body.
  – As phytooestrogenic or eesrogenic property of different components of Naryana Taila, Shatavri Taila, Tila Taila, Shtpushpa Taila may regulates neuropeptides activity, which in turn regulates the activity of gonadotropines secretion .Which in turns regulates ovarian cycle.\textsuperscript{[38]}

General line Of Treatment Acording To Different Acharya
1) In the treatment Acharya Charka has mentioned the use of Basti in infertility.
Ex.
- Shatvaryadi Anuvasana basti – in women having repeated still birth.
- Jivaniya Garbha stapana group of drug in the form of Basi In “Putriya“.
- Shatavari, Shatavari ghruat, Ghruat prepared wih Jivaniya ganna are also mentioned in the treatment of Vandhya.
Vandhyatav which occurs due to abnormality of both partners are able to conceive after treating with Anuvasan Basti.\textsuperscript{[39]}

2) Regarding to Sushruta he indicates both Shodhan and Saman therapies in the treatment of yoni vyapada ultimately in infertility.
- Bala Taila is mentioned in women desiring pregnancy.\textsuperscript{[40]}

3) Asthang Sangraha
Regarding the treatment Sanghrha mentioned that, the causes of gynecological disorders should be treated first. He mentioned that pregnancy occurs only in healthy reproductive organs.\textsuperscript{[41]}

Sahacharadi Taila, Mustadi Taila are mentioned in women having repeated stillbirth.
- Bala Taila is also beneficial in vandhyatava.
- Oral use of Phala Ghruata during rutu kala result in achievement of pregnancy.

4) Astanga Hradya
In treatment aspect, Astanga Hrudaya mentioned the use of Laxshmana or leaf buds of Vata with milk prescribed under Punsavana is also beneficial for vandhya. The same drugs also helpful in the women having repeated abortion or child with short life.

5) Kashyapa Samhita
Vandhyatva is cured by Virchana.\textsuperscript{[42]} Anuvasan basti is advocated to the infertile women having nasta pushpa, Alpa pushpa.\textsuperscript{[43]} The Basti is also beneficial in women having history of repeated abortion.

Shatpushpa Taila in the form of nasya, Basti is also beneficial in infertility. Lasun Taila or Ghruta also beneficial in Vandhya.\textsuperscript{[44]}

6) Harita- Samhita
Harita mentioned use of Usira, Manjishta, Girikarni with dughda result in achievement of conception.\textsuperscript{[45]}

Afer relief from menstrual disorder due to Vata - Sweta Girikarni, Sweta Gunja, Sweta Punarnava should be used with milk result in achievement of pregnancy.
After relief from menstrual disorder due to Pitta - Arka, Sweta Girikarni should be used with milk.

Also in case of Kapha – Triphala, Girikarni, Aragvada, Payasa with milk helps in achievement of pregnancy.[46]

6) In Bhela Samhita
Niruhbasti, Gudduchyadii Rasayana basti was mentioned in infertility.[47]
In Vandhya - Jaya sundara Rasa, Devdali proyga, Sarapunkha Yoga, Rudraksadi Yog, Swetakantakari Vishnukantaka Proyga are also beneficial.

Dietary Manegement
Diet plays a vital role in the maintance of good health. As per Ayurveda, Food affects mind also by affecting three guna of mind- Satvo, Rajo and Tamo guna. Concept of Ahar according to Prakruti, Desh, Kala, Bala helps in build up dhatus which leads into formation of Shuddha Shukra and Artava also.

Foods such as Ghee, milk, Dates, sesame seeds, Pumkin seeds, Saffron, Honey may helps replenish and build up Ojas.

Fresh organic fruits, Vegetables, whole grains, proteins from beans, peas, fruits such as mango, Plums, Pears etc., Spices such as Ajwain, Cumine, Turmeric Black cumines may boost up fertility.

Lasuna is beneficial in infertility.

CONCLUSION
Today, Infertility is leading promblem in society and this is due to the result of combination of social, environmental, psychological & neutralional factors.

Ayurveda focuses on the treatment of infertility holistically with an aim improving the overall health and quality of life of the indivisual.

Ayurveda provides a non-invasive, low cost & non iatrogenic treatment.
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