BASTI – A HOPE FOR FEMALE INFERTILITY.

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ABSTRACT

Infertility is the inability to conceive even after one year of regular sex without using birth control. Female infertility is a challenging topic in the society today as it not only leads to distress and depression but also may lead to disturbed family life. Premature ovarian insufficiency, polycystic ovarian syndrome, endometriosis, uterine fibroids and endometrial polyps may play a role in female infertility, ovulatory problems being the most common. Many factors like certain genetic factors, increasing age, improper nutrition, environmental pollution and increasing stress in daily life may contribute to female infertility. In Ayurvedic literature, infertility has been described under Bandhyatva. Treatment offered by Modern Science mainly includes the use of hormonal medicines or injections and Assisted Reproductive Technologies (ART). On the other hand Ayurvedic treatment includes Nidana Parivarjana (removal of the cause), Dietary management, Samshamana (pacificatory therapy) and Samshodhana (purification and cleansing). Basti (medicated enema) is one of the most important Samshodhana procedures which can be used in the management of female infertility as it not only balances the vitiated Dosha (Vata, Pitta, Kapha) but also provides nutrition hence correcting the overall condition of the patient.

INTRODUCTION

Infertility is the inability of a sexually active couple, not using any birth control, to get pregnant after one year of trying [1]. Many couples experience involuntary childlessness for at least one year: estimates range from 12% to 28% [2]. About 40% of cases are due to female factors, 30% are due to male factors, 20% are a combination of both, and in about 10% the cause is unknown [3]. The most common cause of female infertility is ovulatory problems, which generally manifest themselves by sparse or absent menstrual periods [4]. Certain factors like changed lifestyle, nutrition, disease, malformation of uterus, increased stress, age, genetic factors and environmental pollution also contribute to the rise of infertility.

In this modern era, females are becoming more career oriented due to which in most of the cases leads to undue delay in marriage. Advanced maternal age may be a risk factor for infertility [5]. It is a social stigma where the female partner is blamed leading to marital disharmony [6].
Disease Review Modern

According to the WHO, infertility can be described as the inability to become pregnant, maintain a pregnancy, or carry a pregnancy to live birth [7]. A clinical definition of infertility by the WHO and ICMART (The International Committee for Monitoring Assisted Reproductive Technology) is “a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse” [8]. Infertility can lead to distress and depression, as well as discrimination and ostracism [9]. It can be divided into two types – primary and secondary infertility.

A) Primary Infertility: It refers to the inability to give birth either because of not being able to become pregnant, or carry a child to live birth, which may include miscarriage or a stillborn child [10, 11].

B) Secondary Infertility: It refers to the inability to conceive or give birth when there was a previous pregnancy or live birth [10, 11].

Management [12]

Depending on the cause it falls into two main categories:

A) Medications or Surgery
Fertility drugs (clomiphene citrate or FSH and LH hormone injections) for women with ovulation disorders. These treatments may also be used with an intrauterine sperm injection (IUI), which is when sperm is injected directly into the uterus. Surgery may also be an option when the cause of infertility is blocked fallopian tubes or endometriosis.

B) Use Assisted Reproductive Technologies (ART)
These technologies include egg and embryo donation, in vitro fertilization, and intracytoplasmic sperm injection (the direct injection of a sperm into an egg).

Ayurvedic Review

a) In Ayurveda, Bandhyatva (infertility) is also an independent disease, rather a cardinal feature of so many diseases. In Sushruta Samhita, Bandhyatva has been included in twenty Yoni Vyapada (gynaecological disorders). Acharya Charaka and Vagabhatta have referred Bandhyatva due to abnormality of Beejamsa (gametes). Kasyapa has mentioned Jataharini (group of potentially fatal diseases responsible for perinatal death and female infertility) or other Pushpaghni Jataharini with repeated expulsion of foetuses of different gestational periods. First time Acharya Harita has classified Bandhyatva in detail.
Classification

Classification of Bandhyatva or Bandhya has not been given in any classics except Harita Samhita, Rasa Ratna Sammuchya and Vandhya Kalpadruma. Harita classified Bandhyatva into 6 types [13]:

- Kakavandhya (one child sterility)
- Anapatya (no child)
- Garbhasravi (repeated abortion)
- Mritavatsa (repeated stillbirth)
- Balakshaya (loss of strength)
- Vandhya due to Balyabastha (childhood), Garbhakoshabhanga (injury to uterus) and Dhatukshaya (destruction of tissues)

Rasa Ratna Sammuchchaya classified Bandhya (infertile woman) into nine types- Adi Bandhya, Vataja, Pittaja, Kaphaja, Sannipataja, Bhutaja, Daivaja, Raktaja and Abhicharaja. In Vandhya Kalpadruma: eight types of Bandhya are described [14].

Acharya Sushruta has explained the importance of four factors necessary for conception namely- Ritu (season), Kshetra (land), Ambu (water), Beeja (seed). Ritu can be compared to ovulatory period, Kshetra to female reproductive system, Ambu to nutrition and Beeja to sperm and ova. Defect in any of the four factors may lead to non-conception [22].

Due to Nidana Sevana (causative factors), Dosha and Agni get vitiated resulting into Ama formation. The Ama formed adheres to Srotasa and causes Avarodhatmaka Dushti (improper functioning due to obstruction of channels). Ama spreads throughout the body, propelled by the vitiated Vata along the Rasavaha Srotasa. Due to hypo functioning of Jatharagni, Dhatvagni Mandya also occurs. Due to Mandagni and Nidana sevana, Rasa (plasma), Rakta (blood) Dhatus (tissue) gets vitiated. Also, the Dhatvagni mandya causes the Kshayatmaka effect on the Artava (ovum) i.e., the production of Artava, Updhatu of Rasa dhatu or Rakta dhatu becomes less. Thus, it is the Upadhatvatmaka Dushti. The vitiated Apanavayu and Kapha when get mix can cause Avaranatmaka Dushti [25]. The vitiated Vata along with Pitta causes the Artava kshaya i.e., Kshayatmaka Dushti. All these factors may cause Abeejotsarga (anovulation) which may lead to infertility [26].
Ayurvedic Management

A) *Nidana Parivarjana* - (Removal of the causative factors like unhealthy diet and lifestyle, smoking, alcohol, stressful environment, environmental pollution etc.

B) Dietary management - *Ojas* enhancing foods like milk, ghee, nuts, fresh organic fruits, vegetables, proteins etc.

C) *Samshamana Chikitsa* -
   - *Agni Deepana* and *Ama Pachana*
   - *Vatanulomana* (correcting the functions of Vata)
   - Use of herbs like Ashoka, Dashmoola, Shatavari etc.

D) *Shodhana Chikitsa - Snehana, Swedana, Vamana, Virechana, Basti-Anuvasana and Niruha, Uttar basti* [27]

**DISCUSSION**

Many works have been done on the role of *Basti* in female infertility. Some of them are being mentioned here.

- Kamini Dhiman, Shachi Pandya, L.P.Dei, Anup Thakkar and K.S.Dhiman conducted a randomized clinical trial on 11 patients entitled: “Role of *Madhutailik Basti* in Infertility w.s.r. anovulatory factor”. *Madhutailik Basti* (rectal enema with honey and oil as main content) was given for 15 days for two consecutive menstrual cycles. They concluded that *Madhutailik Basti* is an effective treatment modality in infertility owing to anovulatory factor [28].

- Krupa R. Donga, Shilpa B. Donga and Laxmi Priya Dei conducted a randomized clinical trial on 24 patients entitled “Role of *Nasya* and *Matra Basti* with *Narayana Tail* on Anovulatory factor”. Patients were randomly divided into two groups—Group A: (*Narayan tail Nasya* (Errhine therapy) for 7 days for two sittings with gap of 3 days). Group B: (*Narayana tail Matra Basti* (60ml) for 8 days for two sittings). It was concluded that *Matra Basti* group had better results [29].

- Rashmi R. Sharma conducted a clinical trial entitled “*Phalkalyan Ghrita* by Oral Route and *Matra Basti* in the Management of *Alpartava*”. 30 patients were randomly divided into 3 groups - Group A - *Phalkalyan Ghrita* [Matra basti + Oral], *Matra basti* (60ml/day during Secretory phase for 8 consecutive days + Oral (5gm B.D.) for 2 months. Group B- *Phalkalyan Ghrita* (Oral) 5gm. B.D. for 2 months, Group C- *Rajahpravartini Vati* (Oral) 250mg. B.D for 2 months. *Matra basti* group was found to be most effective in management of *Alpartava* (oligo menorrhea) [30].

- Shachi S Pandya conducted a clinical trial entitled-“Role of *Madhutailik Basti* and *Pippalyadi Yoga* in infertility” and randomly divided 33 patients of female infertility into 3 groups. Group A: *Madhutailik Basti* (228 ml for a duration of 15 days after cessation of menses for 2 consecutive cycles). Group B: *Pippalyadi Yoga* (4gm BD before meal orally), Group C-*Madhutailik Basti + Pippalyadi Yoga*. It was concluded that *Madhutailik Basti* Group is more effective in comparison to other groups [31].

The above studies clearly show that *Madhutailik Basti* (an alternative of *Niruha basti*), *Matra basti* and *Uttar basti*, all have been found to be significantly effective in the management of female infertility.
Mode of action of Basti in Female Infertility

Vata (one of the three humors responsible for all bodily movements) is mainly responsible for all types of Yoni Roga (gynaecological disorders) [32]. Prakruta Vata (in balanced state) is responsible for the Beejotsarga (Ovulation). Vata predominance Tridosha Dusti is responsible for Abeejotsarga (Anovulation). Basti eradicates morbid Vata from the root along with other Dosha and in addition it gives nutrition to the body tissue [33].

Mode of action of Basti given through the genital route (Uttar Basti)

In condition of anovulation, Uttar Basti removes the Srotosanga (obstruction in the channels) and corrects the Artavagni (which regulates the menstrual cycle), thus resulting in ovulation. Ovaries contain receptors which receive hormones secreted by hypothalamus and pituitary gland. The drug stimulates these receptors, so that proper ovulation occurs in each cycle [34]. In tubal blockage the drug is reaching in bulk to the site of pathology. Hence Uttar Basti relieves tubal block by lysis of adhesions and relieves obstruction [35].

In cervical factor, drug administered locally in the cervix and absorbed by cervical epithelium due to Sukshma (subtle) property of drug. The lipid soluble drug is passively diffused across the membrane in the direction of its concentration gradient. The rate of transport is proportional to lipid: water partition coefficient of the drug. The more lipid soluble, higher is the concentration and quicker diffusion. In this way altered cervical pH can be corrected by Uttar Basti [36]. Uttar Basti helps in endometrial conditions by improving thickness of endometrium, improves the quality of endometrium, helps in curing endometriosis, absorption is very fast giving quicker result [37].

Mode of action of Basti given through the rectal route (Sneha Basti and Madhutailik Basti)

Basti given through the rectal route enters into G.I tract which is considered as Enteric Nervous System. The Virya (potency) of Basti Dravya (contents of Basti) stimulates endogenous opioids which are usually present in G.I. tract. Endogenous opioids are a group of peptides, which play an important role in the ovarian cycle through the inhibitory effect on GnRH secretion. Other pituitary hormones are also modulated by opiates. β-endorphin has been best known opioid related to the reproductive system regulating variety of pituitary hormones including gonadotrophins. It has a role in the regulation of the normal ovarian cycle [38]. Basti-stimulates the ENS which generates the stimulatory signal for CNS which in turn causes stimulation of Hypothalamus for GnRH and the Pituitary for FSH & LH with the help of neurotransmitters. Parasympathetic activity is mainly responsible for the Apana Vayu activity. Basti given through rectum will stimulate this parasympathetic nerve supply which in turn helps for the release of ovum from the follicle in the ovary [39].

Sneha Basti (Anuvasana Basti or Matra Basti)

Sneha Basti given through Guda (rectal route) normalizes Apana Vayu leading to Vatanulomana and physiological functioning of Vata, which may help in turn for the extrusion of ovum from the follicle and ovulation. Basti Dravya spreads all over the body, pacifies the aggravated Dosha along with Vyana Vayu (one of the five subtypes of Vata which distributes blood and nutrients to different parts of the body through blood circulation) leads to Samyaka Rasa Raktadi Dhatu Nirmana (proper formation of body tissues). Sukshma
Bhaga (fine part) of Rasa reaches the Bijagranthi (ovary), which regularizes the Beejotsarga (ovulation) with the help of normal Apana Vayu \(^ {[40]} \).

**Madhutailik Basti (an alternative for Niruha Basti)**

The drugs of Madhutailika Basti possess anti-oxidant, Immune-Modulatory etc. properties which may help in relieving the stress, age-decline etc i.e., causes of anovulation. From Ayurvedic point of view, the drugs used in preparation of Madhutailika Basti are having properties like Vrishya (aphrodisiac), Vayahsthapana (which counter aging) etc. Shatapushpa which had been used as Kalka Dravya (paste), is mentioned in separate Adhyaya (chapter) in Kashyapa Samhita due to its special properties like Putrprada (helps in conception), Viryakari (which increases potency of ovum and sperm), Yoni Shukra Vishodhini (purifies the reproductive organ in female, sperm and spermatic fluid in male), Pushpa Prajakari (increases progeny) \(^ {[41]} \).

**CONCLUSION**

Infertility is a condition which can lead to distress, depression and disturbed family life. It is necessary to cure infertility to enhance the patient’s condition as well as to maintain harmony in married life. Thus, Basti is an important therapeutic procedure in the management of female infertility and is a boon to individual as well as society.
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