



## REVIEW ARTICLE

# ROLE OF *UTTARABASTI* IN THE MANAGEMENT OF FEMALE INFERTILITY – EVIDENCE BASED CRITICAL REVIEW

SUPRABHA KUNJIBETTU<sup>1</sup> KRUTIKA CHAUDHARI<sup>2</sup> LAXMIPRIYA DEI<sup>3</sup>

### ABSTRACT

Female infertility is a major issue in the current era due to the growing number of incidences as a result of combination of various unwholesome environmental, social, psychological and nutritional factors. In Ayurveda, *vata* is considered to be the root cause behind all the disorders related to female reproductive system including female infertility. *Uttarabasti* is a unique therapy for the management of gynaecological disorders, wherein medicated oil or ghee is administered directly into the uterine cavity. The present review study is aimed to compile the different research works carried out in Streeroga and Prasutitantra department of IPGT & RA Jamnagar and to present them scientifically with regard to their effect on infertility caused by various etiological factors. Analysis of data reveals that, about 13 research works have been carried out on female infertility from 2001 to 2016 in the institute. About 11 different formulations are evaluated for their beneficial effect on infertility caused by various factors like anovulation (5), tubal blockage (5), endometrial (2) and cervical factors (1). Six *ghrita* preparations like *prajasthapana gana siddha ghrita*, *shamim ashvatta ghrita*, *brihat shatavari ghrita*, *go ghrita*, *phalakalyana ghrita*, *shatavari ghrita* and six *taila* formulations such as *shatavari taila*, *shatapushpa taila*, *mahanarayana taila*, *yavakshara taila*, *tila taila*, *apamarga kshara taila* are found to have significant effect clinically. These formulations can be effectively utilized by Ayurvedic gynecologists in the form of *uttarabasti* for the management of female infertility.

**KEYWORDS:** Conception, female infertility, medicated oil and ghee, *Uttarabasti*.

<sup>1,2</sup> PhD Scholar, <sup>3</sup> Professor and HOD, Dept. of Prasooti Tantra and Streeroga, IPGTRA, Gujrat Ayurveda University, Jamnagar, INDIA

Corresponding Email id: [dr.pavankumar.1988@gmail.com](mailto:dr.pavankumar.1988@gmail.com)

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## INTRODUCTION

Infertility is failure to conceive within one or more years of regular unprotected coitus. Female factor is directly responsible in 40-55% among which prevalence of infertility due to ovarian factor is 15-25 %, tubal factor 25-35%, uterine factor 10 % and cervical factor 5%. [1]

According to Ayurveda, *vata* is considered as a physiological force as it is responsible for the normal functioning of body systems. Infertility being a *vataja* disorder, demands *basti karma* which is having local oleation and nourishing action. [2] In various gynecological disorders, *basti karma* has been advised through intra uterine route in the form of *uttarabasti*. *Uttarabasti* helps in expelling the vitiated *doshas* of uterus and its associated structures i.e. cervix, tubes and ovary, thereby eradicating the morbidity and diseases related to female uro-genital system. It rectifies female infertility along with the factors associated to it.

The formulations used in *uttarabasti* i.e. medicated oil or ghee are endowed with properties such as cleansing the uterus and increasing the strength and vitality of reproductive organs. Due to the local action and the quick penetrating and spreading properties of the drugs, it enters the minute channels and is absorbed easily. It is the best medium for the drug to cleanse the uterus, to reach the tubal lumen and remove the

blockage, to strengthen and activate the endometrial receptivity and to stimulate the hormonal receptivity for normal function of reproductive system.

*Uttarabasti* contributes in the all round treatment of the female factors causing infertility, as it exerts direct local action and also systemic effect on reproductive system. Considering the significance of *uttarabasti* in female infertility, in the present review, an effort has been made to compile the evidence based clinical trials conducted in the department of Prasutitantra and Streereoga IPGT &RA Jamnagar to present them in a systematic manner.

## MATERIALS AND METHODS

Different clinical research works related to management of female infertility by *Uttarabasti*, in Prasutitantra and Streeroga Department of IPGT &RA Jamnagar are compiled and analyzed critically. The available data is presented systematically with regard to their action on infertility caused due to various etiologies like anovulation, tubal blockage, endometrial and cervical factors.

### Selection criteria:

All the studies included married women of child bearing age group (20-40 years), presenting with the complaint of failure to conceive after atleast one or more years of regular, unprotected coitus for the study. Both primary and secondary infertility patients were

included. Infertility complicated with other systemic disorders and STDs were excluded from the study.

**Assessment criteria:**

For the evaluation of ovulation, series of transvaginal sonography was carried out on alternate days from the 10<sup>th</sup> day of menstruation until ovulation was achieved, depending on the size and maturation of the follicle. To evaluate the tubal patency, hysterosalpingography was performed within 5-10 days of menstruation. Sim's Huhner and Moghissi's score for cervical mucus was used to assess the cervical factor and Appelbaum's USSR scoring system was utilized for assessing the endometrial factor.

**General Uttarakabasti protocol followed:**

Prior to administration of *uttarakabasti*, *kostha shodhana* was done in all patients by administering *amapachana vati* (250mg) 2 tablets twice a day and *erandabrushta haritaki* 5gm at bedtime with hot water for 3 days from 3<sup>rd</sup> day of menstruation.

**Uttarakabasti procedure followed in the trials:**

*Uttarakabasti* was carried out after admitting the patients in IPD. Vitals were recorded and patients were instructed to empty the bladder before the procedure. *Abhyanga* with *bala taila* was performed on low back region, lower abdomen, and lower limbs followed by *nadi sweda* for 15 minutes, just before the main procedure. Later on *yoni prakshalana* with 500

ml *panchavalkala kwatha* was given. The procedures were carried out in the operation theatre maintaining aseptic precautions. Patients were taken in lithotomy position and cervix was visualized through Sims speculum & anterior vaginal wall retractor. The anterior lip of cervix was held with the help of Allis' forceps. After sounding the uterus, intra uterine *uttarakabasti* was administered through *uttarakabasti* cannula attached with 5 ml syringe filled with medicated oil or ghee. Medicines were slowly pushed into the uterus, maintaining the patient in head low position. After the completion of the procedure, hot water bag was kept on the lower abdomen for 20 minutes and head low position maintained.

**Observation and results:**

Research works carried out in the management of infertility, with the formulations used, are presented in table 1. Analysis of data reveals that, about 13 research works have been carried out on infertility due to various etiological factors of female infertility like ovulatory factor (5), tubal factor (5), endometrial factor (2) and cervical factors (1). Among the formulations studied on infertility, 6 ghee preparations i.e., *prajasthapana gana siddha ghrita*, *shamim ashvatta ghrita*, *brihat shatavari ghrita*, *goghrita*, *phalakalyana ghrita* and *shatavari ghrita*; and 6 oil formulations such as *shatavari taila*, *shatapushpa taila*, *mahanarayana taila*,

*yavakshara taila, tila taila, apamarga kshara taila* were reported for their clinical efficacy.

**Table 1: Formulations used in various factors of female infertility**

SN	Etiological factors	Formulations
1.	Ovulatory factor - Anovulation	<i>prajasthapana gana siddha ghrita</i> , <sup>[3]</sup> <i>shamim ashvatta ghrita</i> , <sup>[4]</sup> <i>go ghrita</i> , <sup>[5]</sup> <i>shatavari taila</i> , <sup>[6]</sup> <i>shatapushpa taila</i> , <sup>[7]</sup> <i>mahanarayana taila</i> <sup>[8]</sup>
2.	Tubal factor - Tubal blockage	<i>kumari taila</i> , <sup>[9]</sup> <i>yavakshara taila</i> , <sup>[10]</sup> <i>tila taila</i> , <sup>[11]</sup> <i>apamarga kshara taila</i> <sup>[12]</sup>
3.	Endometrial factor - Endometrial thickness & receptivity	<i>brihat shatavari ghrita</i> , <sup>[13]</sup> <i>phalakalyana ghrita</i> <sup>[14]</sup>
4.	Cervical factor - Cervical mucus receptivity	<i>shatavari ghrita</i> , <sup>[15]</sup> <i>goghrita</i>

### 1. Ovulatory factor

Details of different clinical works carried out on ovulatory factors of female infertility are tabulated in table 2. Different formulations like *prajasthapana gana siddha ghrita*,

*shamim ashvatta ghrita, go ghrita, shatavari taila, shatapushpa taila, mahanarayana taila* are studied and found effective in the management of infertility due to anovulatory factors. (Table 2)

**Table 2: Research works on female infertility due to anovulatory factors.**

SN	Drug	Methodology and Result
1	<i>Prajasthapana Gana Siddha Ghrita</i> (Jadav Swati et al., 2002)	In Group A (n=7) intrauterine <i>uttarabasti</i> with <i>prajasthapana gana siddha ghrita</i> in the dose of 3 ml was administered for a duration of 3 days, for 2 consecutive cycles after menstruation. In Group B (n=7) <i>Prajasthapana gana siddha ghrita uttarabasti</i> along with <i>prajasthapana gana vati</i> 1 tablet (500mg) twice a day with milk as adjuvant given for 2 months. <b>Result:</b> In Group A, ovulation occurred in 71.4% patients and conception was achieved in 14.30% patients whereas in Group B, ovulation occurred in 57% patients and conception in 14.30%. <sup>[16]</sup>
2	<i>Shatavari Taila</i> (Mishra Gayatri et al., 2003)	In this study, Group A (n=7) was administered 5 cc intrauterine <i>uttarabasti</i> with <i>shatavari taila</i> , for 4 days for 2 consecutive cycles after cessation of menstruation and Group B (n=7) was also given

		<p>the same <i>uttarabasti</i> along with <i>garbhaprada</i> compound, 2 capsules (500mg) thrice a day from 4th to 12th day of menstruation for 2 cycles.</p> <p><b>Result:</b> Follicular growth was improved up to 71% in Group A and 45% in Group B. Ovulation occurred in 71.42% and 28.57% in Group A and Group B respectively. <sup>[17]</sup></p>
3	<p><i>Shatapushpa Taila</i> (Hetal Savalia et al.,2005)</p>	<p>In Group A (n=12), 5 cc intrauterine <i>uttarabasti</i> with <i>shatapushpa taila</i> was administered for 3 days for 2 consecutive cycles after cessation of menstruation. In Group B (n=16), along with the <i>shatapushpa taila uttarabasti</i>, oral administration of <i>shatapushpa churna</i> in the dose of 2 g, thrice a day with honey and ghee for 2 months was given.</p> <p><b>Result:</b> 73.20% and 74.78% improvement in follicular growth was achieved in Group A and Group B respectively. Ovulation occurred in 75% patients in Group A and 81.25% in Group B after the therapy. <sup>[18]</sup></p>
4	<p><i>Mahanarayana Taila</i> (Meera Rajini et al., 2007)</p>	<p>In this work (n=7), <i>uttarabasti</i> with <i>mahanarayana taila</i> in the dose of 5 ml was administered for 3 days after the cessation of menstruation for 2 cycles.</p> <p><b>Result:</b> Ovulation occurred in 28.57% patients. <sup>[19]</sup></p>
5	<p><i>Shamim Ashvatta Ghrita</i> and <i>Go Ghrita</i> (Kajal Khadadiya et al.,2009)</p>	<p>In this clinical study, Group A (n=12) was administered <i>uttarabasti</i> and oral administration of <i>shamim ashvatta ghrita</i> 10 g in morning, empty stomach, for 2 months. Group B (n=8) was administered with <i>uttarabasti</i> and oral administration of <i>goghrita</i> 10 g in morning, empty stomach, for 2 months. In both the groups, <i>uttarabasti</i> was administered after the cessation of menstruation in a dose of 5 cc for 3 days a month for 2 consecutive cycles.</p> <p><b>Result:</b> Ovulation occurred in 58.33% and conception in 16.67% in <i>shamim ashvatta ghrita</i> group and in <i>goghrita</i> group, 50% ovulation and 12.50% conception occurred. <sup>[20]</sup></p>

## 2. Tubal factor:

Clinical studies carried out on tubal factor of infertility are enlisted in table 3 along with the details of drugs and dosages. Formulations like *Kumari taila*, *Yavakshara taila*, *Apamarga*

*kshara taila*, *Tila taila* were analyzed for their efficacy in the management of infertility due to tubal factors. (Table 3)

**Table 3: Research works on female infertility due to tubal factor**

SN	Drug	Methodology and Result
1.	<i>Kumari Taila</i> , <i>Yavakshara Taila</i> (Kamayani Shukla <i>et al.</i> ,2010)	<i>Kumari taila</i> and <i>yavakshara taila</i> were administered for Group A (n=12) and Group B (n=14) respectively, in the form of intrauterine <i>uttarabasti</i> (5 ml), after cessation of menstruation, for 6 days with a gap of 3 days in between for 2 consecutive cycles. <b>Result:</b> 80% tubal patency and 40% conception was achieved by <i>kumari taila</i> group, whereas 85.71% tubal patency and 7.14% conception was achieved in the <i>yavakshara taila</i> group. <sup>[21]</sup>
2.	<i>Kumari Taila</i> , <i>Yavakshara Taila</i> (Neha Mamgein <i>et al.</i> ,2012)	Group A (n=16) was administered 5 ml intra uterine <i>uttarabasti</i> with <i>kumari taila</i> , and in Group B (n=17) <i>yavakshara taila</i> was administered, for 6 days with a gap of 3 days in between for 2 cycles, after cessation of menstruation. <b>Result:</b> In <i>kumari taila</i> group, tubal patency was achieved in 87.5% and conception in 25% patients. In <i>yavakshara taila</i> group, tubal patency was attained in 88.24% patients and conception in 5.88% <sup>[22]</sup> .
3.	<i>Kumari Taila</i> , <i>Yavakshara Taila</i> (Hetal Baria <i>et al.</i> ,2013)	After cessation of menstruation, intra uterine <i>uttarabasti</i> of 5ml was administered for 6 days with a gap of 3 days in between, for two consecutive cycles with <i>kumari taila</i> in group A (n=18) and with <i>yavakshara taila</i> in Group B (n=16). <b>Result:</b> In this study, 66.67 % tubal patency and 11.11 % conception rate was observed in <i>kumari taila</i> group whereas 68.75 % tubal patency and 6.25 % conception rate was observed in <i>yavakshara taila</i> group. <sup>[23]</sup>

4.	<i>Tila Taila, Kumari Taila</i> (Jigisha Baldha et al., 2014)	<i>Uttarabasti</i> was administered in 5 ml dose for 2 consecutive cycles with <i>tila taila</i> in Group A (n=12) and with <i>kumari taila</i> in Group B (n=12), after cessation of menstruation for 6 days with a gap of 3 days in between. <b>Result:</b> 33.33% and 50% tubal patency was observed with <i>Kumari taila</i> and <i>tila taila</i> respectively. Conception rate in both groups were 16.66% ( <i>kumari taila</i> ) and 25% ( <i>tila taila</i> ). <sup>[24]</sup>
5.	<i>Apamarga Kshara Taila, Kumari Taila</i> (Shivshankar Rajput et al.,2015)	5 ml <i>Apamarga kshara taila</i> was administered for 6 days with 3 days interval for 2 consecutive cycles, after cessation of menstruation in Group A(n=16) whereas <i>Kumari taila</i> was administered in the similar way in Group B (n=17). <i>Phalakalyanaka ghritha</i> was given orally in both the groups with a dose of 10ml once a day for 1 month in empty stomach, soon after achieving tubal patency. <b>Result:</b> In <i>kumari taila</i> group, tubal patency was observed in 70.59% patients and conception rate was 25% and in <i>apamarga kshara taila</i> group, tube had opened in 75% patients and 25% patients had conceived. <sup>[25]</sup>

### 3. Endometrial Factor:

Two studies were carried out on endometrial factor of female infertility and the results are mentioned in table 4. *Brihat shatavari ghritha*

and *phalakalyana ghritha* are studied clinically in the management of infertility due to endometrial factors.

**Table 4: Research works on female infertility due to endometrial factor**

SN	Drug	Methodology and Result
1	<i>Brihat Shatavari Ghritha</i> (Anjali Verma et al.,2014)	<i>Brihat shatavari ghritha</i> (n=10) in the dose of 5 ml, was administered in the form of intra uterine <i>uttarabasti</i> , after the cessation of menstruation, for 6 days for 2 consecutive cycles along with <i>baladi churna</i> 3 g orally with milk twice a day in empty stomach. <b>Result:</b> In this study, as per Appelbaum's USSR scoring it was found that 70% patients showed increase in endometrial

		thickness, 63.33% increase in endometrial layering, 40% in myometrial echogenecity, 45% in uterine artery doppler flow, 40% in endometrial blood flow zone-3 and 80% in myometrial blood flow. 80% improvement in ovulation and conception was achieved in 20% of the patients. <sup>[26]</sup>
2	<i>Phalakalyana Ghrita</i> (Anmol Verma et al., 2016)	<i>Phalakalyana ghrita</i> (n=15) in the dose of 5 ml, was administered in the form of intra uterine <i>uttarabasti</i> for 6 days for 2 consecutive cycles, after the cessation of menstruation. <b>Result:</b> In this study, as per Appelbaum's USSR scoring it was found that 77.77% patients showed increase in endometrial thickness, 44.4% increase in endometrial layering, 40% in myometrial echogenecity, 63.3% in uterine artery doppler flow, 29.3% in endometrial blood flow zone-3 and 80% in myometrial blood flow. In 93.33% patients ovulation occurred and conception was achieved in 13.33% patients. <sup>[27]</sup>

#### 4. Cervical Factor:

One study has been carried out on infertility due to cervical factor. In this study, *shatavari*

*ghrita* and *go ghrita* were studied and found beneficial in the management of infertility due to cervical factors. (Table 5)

**Table 5: Research work on female infertility due to cervical factors**

SN	Drug	Methodology and Result
1	<i>Shatavari Ghrita, Go Ghrita</i> (Chetana Khodinariya et al.,2008)	In Group A (n=7), 5ml intracervical <i>uttarabasti</i> was administered with <i>shatavari ghrita</i> and in Group B (n=7) with <i>goghrita</i> , for 6 days with 3 days interval, for 2 cycles after cessation of menstruation. <b>Result:</b> Improvement in cervical factors such as amount of cervical mucus were 60% and 42.11%, improvement in cervical mucus viscosity 56.25% and 52.63%, spinbarkeit test 38.46% and 60%, cellularity 58.82% and 64.71%, ferning 38.09% and 27.76%, sperm density in cervical mucus 60% and 42.11%, sperm motility in cervical mucus 76.19% and 45% in <i>shatavari</i>



		<i>ghrita</i> group and <i>go ghrita</i> group respectively. <sup>[28]</sup>
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**DISCUSSION:**

**Ovulatory factor**

Ovum is one among the four essential factors of conception and therefore the process of ovulation is very important for the fertilization to take place. Differentiation, division and expulsion are the functions of *vata*. Therefore, *vata* is responsible for the formation and rupture of follicles resulting in ovulation. As per the 5 clinical works, it can be analyzed that *shatapushpa taila uttarabasti* along with *shatapushpa churna* orally showed significant result in achieving ovulation. *Shatavari taila* and *prajasthapana gana siddha ghrita* also showed effective results on ovulation. *Shamim ashvatta ghrita* orally and in *uttarabasti* form had higher conception rate.

**Mode of action:** *Uttarabasti* given in intra uterine route in the *ghrita* and *taila* medium such as *prajasthapana gana siddha ghrita*, *shamim ashvatta ghrita*, *go ghrita*, *shatavari taila*, *shatapushpa taila* and *mahanarayana taila* activates the normal function of *vata* and stimulates the ovarian hormones, ultimately achieving ovulation. Ovaries contain receptors which receive hormones secreted by hypothalamus and pituitary gland. *Uttarabasti* stimulates these receptors, so that proper

maturation of follicles and ovulation occurs in each cycle.

**Tubal factor**

Fallopian tubes play major role in the transport of gametes and embryo. Any abnormality in the form of adhesions or obstructions hampers the patency leading to infertility. Among the 5 research works carried out on four formulations, *uttarabasti* with *kumari taila* and *yavakshara taila* had maximum effect in achieving tubal patency and *kumari taila uttarabasti* showed significant conception rate.

**Mode of action:** Correlating fallopian tubes with the *artavavaha (artava-bija-vaha) srotas*, its blockage is compared with the *sanga srotodushti* of this *srotas*. *Vata* is the prime *dosha* involved in tubal blockage as *vata* is responsible for every movement. Thus administering intrauterine *uttarabasti* with drugs like *kumari taila*, *yavakshara taila*, *tila taila* and *apamarga kshara taila* having scraping, penetrating, uterine cleansing, wound healing, *kapha-vata* alleviating properties, does *vata* alleviation, act locally on tubes and removes the blockage of tubal lumen by directly flushing obstruction. It also does the lysis of adhesions and restores the

normal function of tubal cilia by its rejuvenating and soothing effect. *Uttarabasti* cause local uterine contractions which stimulate the endometrium and ovarian receptors which stimulate the receptors and HPO axis regulating the normal menstrual cycle with ovulation.

### **Endometrial factor**

Endometrium acts as bed for fertilized ovum where it gets embedded for further development. Unresponsive endometrium may cause implantation failure or abortion in early stages. From the 2 clinical studies on endometrial factor, it can be evaluated that *brihat shatavari ghritha* with *baladi chura* orally was beneficial in increasing endometrial layering and endometrial blood flow and had higher conception rate. *Phalakalyanaka ghritha* was beneficial in increasing endometrial thickness, uterine artery Doppler flow and in achieving ovulation. Both drugs were equally effective in improving myometrial echogenicity and myometrial blood flow.

**Mode of action:** *Uttarabasti* with drugs like *brihat shatavari ghritha* and *phalakalyana ghritha*, possessing oleating, nourishing and phytoestrogen properties gets easily absorbed through the mucous membrane, glands and vessels. They proliferate and nourish the endometrium and rejuvenate the local tissues, potentiating the endometrial receptors which

may finally improve the implantation rates by promoting fertilization & nidation of embryo.

### **Cervical factor**

The physical, chemical and cellular components of the cervical secretion are essential for the natural fertilization process. Deviation from the normality of the mucous secretion creates hostile environment for the entry of sperm leading to infertility. *Shatavari ghritha* was effective in improving the cervical mucus, cervical mucus viscosity, ferning pattern, sperm density, sperm motility whereas *goghrita* showed better result in cellularity and spinbarkeit test.

**Mode of action:** Owing to its properties such as *tridosha* alleviating and subtleness of *shatavari ghritha* and *goghrita*, they are directly absorbed by the cervical epithelium and act locally on tissues. It is passively diffused across the membranes, nourishes and regenerates the epithelial cells and thereby normalizes the cervical secretion and reduces the sperm hostile cervical mucus activity.

### **CONCLUSION:**

This review summarizes the evidence underlying the usage of *uttarabasti* for managing female infertility. In case of anovulation it stimulates the process of follicular development and ovulation, in tubal blockage it relieves obstruction and establish the patency and normal function of the tubes, in endometrial factor it increases blood

circulation, helps in proliferation and increases the receptivity of endometrium and in cervical factor it normalizes the cervical mucus secretion, increases the receptivity of genital tract to entry of sperms resulting in improvement of conception rates. So intra uterine *uttarabasti* with appropriate drugs is effective in treating all the factors causing female infertility and is a great contribution to ayurveda gynecologist in the management of female infertility.

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