



AYURVEDIC MANAGEMENT OF ENDOMETRIAL FACTOR OF INFERTILITY: CASE REPORT

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ABSTRACT

Uterine causes of infertility contribute to about 5 to 10% of cases. A fairly normal uterine cavity and endometrial lining are necessary in order to conceive and maintain normal pregnancy. Low endometrial thickness is one of the most challenging factor, even artificial reproductive techniques (ART) like IVF fails if the endometrium is not supportive for proper implantation resulting in either implantation failure or early pregnancy loss. In the present case a 24 year female presented with primary infertility due to thin endometrium was managed with *ayurveda*. The study was done to evaluate the role of *sthanika* and *shamana chikitsa* i.e.; *yonipichu* with *phalakalyana ghrta* along with oral use of *baladi vati* for two consecutive menstrual cycles. After completing two courses of treatment significant improvement (CET-3mm to 9.2 mm)- was noticed as per Applebaum's USSR (Uterine Scoring System For Reproduction-Total Score-10 to 19) criteriae with enhancement of the endometrial thickness. The treatment protocol was *agnideepana*, *vata-shamana*, *dhatuposhana* as infertility due to thin endometrium may be considered as *dhatukshaya vandhya*. There were no adverse effect found during the course of therapy.

Keywords: *Ayurveda, Baladi Vati, Case Report, Dhatukshaya Vandhya, Phalkalyana Ghrta, Primary Infertility, Thin Endometrium, Yoni Pichu*

INTRODUCTION

Infertility is defined as failure to conceive within one or more years of regular unprotected coitus. Primary infertility denotes those patients who have never conceived whereas secondary infertility indicates previous pregnancy but failure to conceive subsequently¹. Infertility due to thin endometrium poses a major challenge in modern medicine as ovulation induction cycles fail to see results if associated with thin endometrium. Thin endometrium is also a major hindrance for IVF cycles. Therefore, thin endometrium should be regarded as an independent prognostic factor for achieving a pregnancy². Several treatment modalities have been offered to patients with thin endometrium, including hysteroscopic adhesiolysis, hormonal manipulation by estrogen and GnRH agonist, vasoactive measures such as aspirin, vitamin-E, pentoxifylline, L-arginine or sildenafil, intra-uterine infusion growth factor such as G-CSF and the recent application of regenerative medicine³. In spite of the vast diversity of treatment, most of the options accomplish only minor change in the endometrium thickness and subsequent pregnancy rate, and when they fail, patients are usually referred to surrogacy³. *Ayurveda* mentions the management of *vandhyatva* due to various causes and in this case treatment protocol

for *dhatukshaya vandhya*⁴ was adopted as thin endometrium, can be managed effectively through *ayurveda* without resorting to hormonal therapies.

PATIENT INFORMATION:

A 24 year old female patient and her 32 year old husband approached the Prasuti Tantra and Stree Roga OPD in Parul Ayurved Hospital, Vadodara, Gujarat with the chief complaints of failure to conceive since 2 ½ years on 4.9.2021 with an active marital life of 2 ½ yrs with in a total 4 years of married life. Sonosalpingography (SSG) suggested bilateral fallopian tube patency. The semen analysis of the partner was normal. On USG thin endometrium (3 mm) was observed (Day 10 of menses). After 1 ½ years of allopathic treatment with menstrual regularizer and ovulation induction, and IVF failure twice, conception could not be achieved. Therefore, couples approached for ayurvedic medication.

Menstrual History:

Age at Menarche: 12 years.

LMP-28.8.2021, Duration-4-5 days, Interval-28 to 30 days, Regular, painless, 2-3 pads soaked per day.

Obstetric History: Nulligravida

Past Medical History: No H/O Type II Diabetes Mellitus, Hypertension, Thyroid Dysfunction

H/O Tuberculosis (Childhood)

Past Surgical History: No any Surgical Intervention

Family history: No history of same complaints in the family of partners.

Contraceptive History: Barrier Method (Condom) first 1 ½ years of marriage.

Personal History: Diet-Mixed, Appetite-Poor, Bowel-Irregular, Sleep-Sound, Habbit-Tea 2 times a day.

General Examination:

General condition- fair, Built-Average built, Nutrition- Poor, Pallor-Present; Icterus-Absent, Cyanosis-Absent, Nails-No Clubbing, Edema-Absent, Lymphadenopathy-Absent, Pulse-76b/min, BP-120/70mmhg, RR-18 b/min, Height-160 cm, Weight-50 kg, BMI-19.5 kg/m².

Systemic Examination:

Respiratory system- NVBS+

Cardiovascular System- S1 S2 heard normal, No Murmur, No cardiomegaly

Central Nervous system- Conscious well oriented

Per Abdomen- Soft, Non tender, No hepatosplenomegaly, bowel sound+

Per Speculum Examination:

Vaginal wall/mucosa-Appearance-Normal

Discharge-Absent

Cervix-External os-Nulliparous, Erosion-Absent, No hypertrophied, No abnormal growth.

Per Vaginal Examination:

Uterus-Position-Anteverted, Size-Normal
Cervix-Consistency-Firm, Movement-Painless

Fornices-Free, Non tender.

Rogi Pariksha:

Prakruti-Vatapittaja, Vikruti-Vata, Sara-Madhyama, Samhana-Madhyama, Pramana-Madhyama, Satmya-Sarvarasa, Satva-Madhyam, Vayu-Madhyama, Vyayamashakti-Madhyama, Aharashakti-Avar.

Roga Pariksha:

Nidana- Poor nutrition, *divaswapna* (day sleep)

Purvaroopo-Failure to conceive

Rupa-Failure to conceive since 2.5 yrs

Upashaya: desire to take *snigdha ushna dravya*

Anupashya-use of *sheetala jala, vishama ahara, ratrijagarana*

Samprapti-Visheshan of *vata dosha* along with *dhatvagni mandya* leads to *dhatukshaya*

DIAGNOSTIC CRITERIA:

1. USG ET less than 7mm
2. Applebaum's USSR- 10 (Pregnancy rate 100% with Score-20, 80% With Score-17-19 and 60% with Score of 14-16. Score of 13 or less no pregnancy)
3. Primary or secondary infertility with history failure of IUI or IVF

INVESTIGATIONS:

The previous investigations reports prove non diabetic condition, no thyroid dysfunction and without marked hormonal imbalances. The endometrial thickness was 3mm on Day 10 and 5 mm on Day 17 of menses. SSG at same time was showing bilateral tubal patency. So the endometrial factor of infertility was confirmed (Table 1) and radiological investigations during and after treatment in (Table 2.)

TREATMENT PROTOCOL with

Timeline: (Table.3.)

All medicine stopped, advised to strictly follow *pathya apathya* and follow up on mid-cycle of menses.

OBSERVATION AND RESULT:

Significant improvement was observed in USSR (Applebaum’s Uterine Scoring System For Reproduction)⁸ (Table.4.).

Table 1: Hematological and Hormonal Assay, USG and SSG (past reports):

Anti-mullerian Hormone-4.98 ng/ml S.Prolactin-11.8 ng/ml S.TSH-2.2 mIU/ml S.LH-4 mIU/ml S. FSH-7.8 mIU/ml HbA1C- 6% FBS- 94 mg/dl Hb-9.2gm/dl RBC-4.33 mill/cumm TLC-6630/cu mm Platelet-2,40,000/cumm HSA (Husband Semen Analysis)-Normal
USG -TVS: As per available report CET on day 10 of menses- 3mm CET on day 17 of menses-5 mm Ovulation is documented.
Past SSG Report: shows bilateral tubal patency with normal endometrial cavity without any adhesion.
 <p>SSG-raphy: Both tubes Patent. Cavity Normal</p>
Fig.1.SSG

Table 2: Radiological Investigations:

USG Pelvis done on 6 th day of Treatment in PAH on 9.9.2021. At first visit USG not done. According to Applebaum, Sonographic qualities of the uterus are noted during the normal mid-cycle.
USG Pelvis:9.9.2021(13 th day of menses): Uterus-Normal, Size-66x38x30mm, CET-5.4, Endometrial layering-Hazy 5-line appearance,Endometrial motion-4,Myometrial echogenicity-Relatively homogenous,Uterine artery doppler flow(PI)-3.14,Endometrial blood flow in Zone-Present,but sparse,Myometrial blood flow-Present,Rt ovary- 24x16mm shows few follicles within largest measures 16x16mm, Lt ovary 35x25mm shows few follicles within largest measures 16x9mm.
USG Pelvis:10.12.2021(12 th day of menses)-After Treatment: Uterus-Normal,Size-73x44x36 mm,CET-9.2 mm, Endometrial layering-Distinct 5-line,Endometrial motion-6,Myometrial echogenicity-Relatively homogenous,Uterine artery doppler flow(PI)-1.11,Endometrial blood flow in Zone-Present,Multifocally,Myometrial blood flow-Present,Rt ovary 25x17mm show few follicles within largest measures 9x5 mm,Lt ovary 25x25mm show few follicles within largest measures 16x9 mm

Table 3: Treatment Protocol with Timeline:

Date	Drug	Route	Dose	Frequency	Duration	Anupana
4.9.2021 to 6.9.2021	<i>Panchkola phanta Kashaya</i> ⁵	Oral	6gm powder made into 100ml administered twice daily.	Twice a day	3 days	
<i>Shamana Oushadhi Prayoga:</i>						
7.9.2021 To 7.9.2021	<i>Baladi Vati (Ingredients- Bala, Ashwagandha) Guduchi, Yashtimadhu, Bhavana Dravya-Durva Swarasa)</i>	Oral	500 mg	Twice a day	2 months	<i>Godugdha(100 ml) (A/F)</i>
<i>Sthanika Chikitsa: Yoni Pichu</i> ⁶ with <i>Phalakalyana Ghrita</i> (For two consecutive cycle- 5 th day to 12 th day of menses)						
First Month Follow Up:						
LMP-26/9/2021						
<i>Purvakarma:</i> <i>Yoni Abhyanga with Tila Taila</i> <i>Yoni Swedana with Sukhoshna Jala</i>						
Pradhanakarma:						
Date	Drug	Dose	Frequency	Duration		
30/9/21 to 7/10/21	<i>Phalakalyana Ghrita</i>	20 ml	Twice a day	8 days (5 th to 12 th day of menses)		
Second Month Follow Up:						
LMP-28/10/2021						
<i>Purvakarma:</i> <i>Yoni Abhyanga with Tila Taila</i> <i>Yoni Swedana with Sukhoshna Jala</i>						
Date	Drug	Dose	Frequency	Duration		
1/11/21 to 8/11/21	<i>Phalakalyana Ghrita</i>	20 ml	Twice a day	8 days (5 th to 12 th day of menses)		



Fig. 2. USG Pelvis:9/9/21
CET-5.4mm on 13th day of menses
LMP-28/8/2021



Fig.3. (AT) USG Pelvis:10/12/21
CET-9.2mm on 12th day of menses.
LMP-29/11/2021



Fig.4.Doppler USG :9/9/21

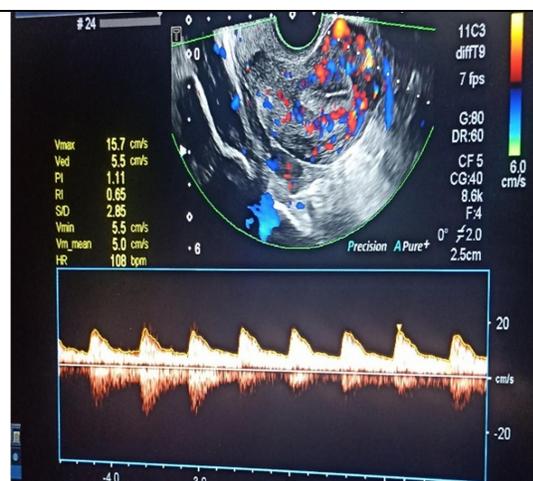


Fig.5.Doppler USG:10/12/21

Table 4: Appelbaum’s Uterine Scoring System For Reproduction (USSR):

Parameter	Determination	Score	DT(9/9/21)	AT(10/12/21)
Endometrial Thickness(mm)	<7	0	0	2
	7-9	2		
	10-14	3		
	>14	1		
Endometrial Layering	No layering	0	1	3
	Hazy 5-line appearance	1		
	Distinct 5-line	3		
Endometrial Motion (no. of myometrial contractions 2 in minutes (real time))	<3	0	3	3
	>3	3		
Myometrial echogenicity	Course in homogenous	1	2	2
	Relatively homogenous	2		
Uterine artery Doppler flow (PI)	2.99-3.0	0	0	2
	2.49	1		
	<2	2		
Endometrial blood flow in zone 3	Absent	0	2	5
	Present, but sparse	2		
	Present multifocally	5		
Myometrial blood flow (gray scale)	Absent	0	2	2
	Present	2		
Total Score		20	10	19

Table 5: Hematological parameters after treatment:

10/12/2021	After Treatment
Hb	11.2 gm/dl
RBC	3.36 gm/dl
Platelet Count	231000/cumm
WBC Count	6700/cumm

DISCUSSION:

Ritu, kshetra, ambu and *beeja*⁹ are the essential factors for conception and receptive endometrium with adequate thickness is very much important for implantation. Since infertility was due to thin endometrium, it was considered as a case of *dhatukshaya vandhya*. *Sthanika* and *shamana chikitsa* was started with the aim of correcting the functions of *agni* and *vata dosha*. Increased *ruksha guna* of *vata* along with *dhatvagni mandya* leads to thin endometrium and hence, the treatment protocol was *agnideepana, vata shamana* and *dhatuposhana*.

Diagnosed case of endometrial factor of infertility was administered with a *Panchakola Phanta* with its *deepana pachana, vata anulomana* properties, acted as *amapachaka* and *rasa rakta vishodhaka*. *Phalakalyana Ghrita* has beneficiary action on recurrent abortions and failure to conceive due to multiple factors of uterine or ovarian origin. It has *brimhana, balya, dhatuposhana* properties and *Baladi Vati* (*Bala, Ashwagandha, Guduchi, Yashtimadhu, Durva*) as it is having *balya, brimhana, vyasthapaka, jeevaneeya, pumsavana, vrishya, phytoestrogenic*

properties. Phytoestrogen exert their effect in a selective estrogen receptor modulators (SERM). Through this SERM they act as both estrogen agonists and antagonists. They inhibit the enzymatic conversion of endogenous oestrone to oestradiol and also possess intrinsic oestrogen activity. Estrogen induces the proliferation of functional layer of endometrium and stimulates progesterone receptors on endometrium in follicular phase of menstrual cycle. Lateral changes in function layer are engendered by progesterone from corpus luteum (luteal phase). It is adapted to provide an optimum environment for implantation and growth of the embryo. Consumption of *Baladi Vati* help in follicular growth, proper formation of endometrium and proper growth of conception.

Endometrial Thickness- The *brimhana* property of therapy is directly responsible to increased thickness of endometrium. *Phalakalyana Ghrita Yoni Pichu* gives nourishment to endometrium potentially by its *brimhana* property through local action and *Baladi Vati* works on *dhatu poshana* level.

Endometrial Layering-Layering in the endometrium seems due to differences in compactness of tissues in functional and basal layer, a distinct five lines indicate compact and favourable endometrium for implantation. As the proliferative activities are the *karma* of *vata* and secretory function of *kapha*, the *ama pachana* and *vata anulomana* and *brimhana* action of the drugs are substantiable.

Myometrial Echogenicity-Homogenous myometrium means that muscular portion of uterine wall is normal. Proper cell division is the action of proper functioning of *vata*, *Yoni Pichu with Phalakalyana Ghrita* does *snehana karma* and gives nourishment to local tissue while *Baladi Vati* by its *rasayana* property rejuvenates tissues. Uniform contractility of myometrium is significant for normal of endometrial regeneration and implantation in the *kshetra*- ie. *Garbhashaya*. Thus the *chala guna* of *vata* is pacified and regulated by *sthiraguna* of drugs in *yonipichu* and strengthening of the tissues of myometrium through *snehana* activity of *ghrita* which is *pitta* and *vatahara*.

Uterine Artery Doppler Flow- Uterine arteries provide blood to uterus. When blood flows normally in uterine artery it shows pulsatile index <2, while if abnormal resistance found in uterine artery then pulsatile index is raised. *Vata* is responsible

for any type of *gati* (velocity); contraction and relaxation is also action of *vata*, thus the drugs restoring the *prakruta karma* of *vyana vatadosha*, *rasadhatu vikshepa* (circulatory redistribution) occurs normally, Pulsatile index of uterine artery could have been restored to normalcy. Both drugs are effective for this parameter of uterine scoring.

Endometrial Blood flow in zone 3 - Blood circulation reaches in third zone of endometrium when all micro channels for circulation gets decontaminate and open, so that basal layer of endometrium get proper nourishment to produce healthy cells of functional layer. *Yoni Pichu* purifies all micro channels and both drugs gives nourishment to cell by topical and systemic level.

Myometrial Blood Flow – Enhanced arterial supply and venous drainage prove the improvement in circulation, thus proper oxygenation of tissues and elimination of tissues oxidative biowastes thus providing favourable environment for epidermal growth factors and appropriate maturation of endometrium. It was evidenced from colour doppler study that both the drugs enhanced the myometrial blood flow. Thus total effect of therapy was very encouraging and highly significant to increase endometrial receptivity assessed on the basis of Applebaum's USSR.

CONCLUSION:

Poor endometrial thickness is a major endometrial factor in female infertility issue in the present era. *Ayurveda* treatment modalities of *sthanika chikitsa* with *yonipichu* of *phalakalyana ghrita* and *shamana chikitsa* with *panchakola phanta* and *baladvati* shows encouraging results in improvement of the endometrial receptivity.

Conflicts of Interest: None declared.

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