



CASE REPORT

# A CASE REPORT ON MANAGEMENT OF FEMALE INFERTILITY DUE TO LOW ANTI MULLERIAN HORMONE WITH AYURVEDIC TREATMENT PROTOCOL

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## Abstract

Complex series of events that are inevitable for a successful pregnancy include the formation of healthy sperm and ovum, their development and maturation, ovulation, fertilisation, transportation of fertilised ovum into the uterus, and implantation into a receptive uterine cavity. The recent trend of delaying conception may be associated with declining ovarian reserve, increasing the need for IVF with donor ovum. Anti mullerian Hormone [AMH] is considered a surrogate marker for ovarian reserve and an indicator of healthy ovulation. So the reduced level of AMH is a great concern in the field of infertility management. *Ayurveda* emphasizes four main factors viz *Rithu* (ovulation), *Kshetra* (functional reproductive organs), *Ambu* (represents proper nutrition after fertilization, that can be correlated with corpus luteal function upto the establishment of placenta and then onwards placental function), and *Beeja* (healthy sperm and ovum) which are essential for conception. Infertility due to Diminished ovarian reserve (DOR) can be considered under *Dhatukshayajanya Vandhya* explained in *Harita Samhita*.

This case study focuses on a 27 year old female patient who approached came to OPD with complaints of inability to conceive even after 8 years of unprotected sexual life. A thorough history taking revealed that all infertility investigations were normal with the exception of the AMH count, which was found to be reduced. She was given medications for *Agni deepana* and *Dhatuposhana* as well as *Panchakarma* treatments, including *Musthadi Rajayapana Vasti* and *Uttaravasti*. With the above-mentioned treatments for 3 courses, the patient approached our OPD, 2 months after discharge with the complaint of secondary amenorrhoea. The urine pregnancy test was found to be positive and the patient was advised for proper antenatal care and timely follow-up. She delivered a full-term healthy female baby on 14.9.23.

## Introduction

Infertility implies the failure of a couple to achieve pregnancy after 1 year of 'unprotected' and regular intercourse.<sup>[1]</sup> Infertility is termed primary if conception has never occurred, and secondary if the patient fails to conceive after having achieved a previous conception.<sup>[1]</sup> Factors such as healthy

spermatozoa, healthy ovum, proper ovulation, patent fallopian tubes, responsive endometrium, and coordinated HPO axis are essential for successful pregnancy outcomes. Among these, the presence of healthy gametes is considered the foremost factor for successful pregnancy outcomes. The ovarian reserve in women is predetermined and it is in a state of depletion with advancing age. Hence ovarian reserve denotes the amount of stock of primordial follicles and the quality of remaining oocytes in the ovaries. AMH is the most recent circulating factor to be analyzed as an ovarian reserve predictor which is expressed by the granulosa cells of small pre-antral follicles, with limited expression in larger follicles [2]. It plays a role in dominant follicle recruitment. Low AMH levels may suggest a shortened reproductive window. So the reduced level of AMH is a great concern in the field of infertility management.

*Ayurveda* places focus on four primary components that are crucial for fertility. ie, *Rithu* (ovulation), *Kshetra* (functioning reproductive organs), *Ambu* (represents proper nutrition after fertilization that can be correlated with corpus luteal function upto the establishment of placenta and then onwards placental function), and *Beeja* (healthy sperm and ovum) [3]. Infertility is brought on by abnormalities in any one of these elements. In this case, the patient presented with a reduced AMH level which can be considered as *Dhatukshayajanya Vandhya* mentioned in *Harita Samhita* [4]. *Vasti chikitsa* is important in this case since *dhatukshaya* is the underlying cause of *vatakopa*. Apart from this, the treatment protocol focuses on nurturing a healthy ovum and a healthy nidus through *Panchakarma* procedures followed by *Uttara Vasti*.

#### PATIENT INFORMATION

A 27 year old married woman who was eager to conceive after eight years of unprotected sexual intercourse and having a history of molar pregnancy approached OPD to seek treatment for secondary infertility.

Interaction with the patient revealed that she had regular menstrual cycles since menarche with an interval of 26-28 days, duration of 2-7 days with a normal amount of bleeding (2-3 pads/day) associated with mild pain over the left flank. She got married at the age of 19 years in the year 2014 and conceived spontaneously within 3 months, but it was a molar pregnancy and D&E was done in the 3<sup>rd</sup> month of gestation. In the same year, the couple underwent allopathic treatment and homeopathic treatment, and all necessary investigations such as HSG, and follicular study were done, in which everything was found to be normal. In 2017, IVF was suggested, prior to that, all investigations were repeated, which revealed low AMH value. In 2018 IVF was done but turned out to be a failure. From 2019 to 2021, she went through phases of OP-based Ayurvedic treatment. In 2022 IUI was suggested, prior to that ovulation induction was done. But as the patient was not willing she came here

for *Ayurveda* management. Besides haemorrhoids, the patient had no diabetes mellitus, hypertension, or thyroid issues.

#### CLINICAL FINDINGS:

Despite eight years of unprotected sexual activity, the patient complained of being unable to conceive. Her bowels were constipated, her appetite was reduced, her micturition frequency was increased (had a history of UTI) and her sleep was decreased due to stress and worry. Regarding food and medications, she had no allergies of any type. There was no relevant family history. The coital history revealed no abnormalities, and the couple never used any contraceptive methods. Her blood pressure and pulse were found to be within normal ranges. Her height was 149 cm and weight was 48 kg with a BMI of 21.6 kg/m<sup>2</sup>. There was no pallor or oedema. On further examinations, cardio vascular system, respiratory system, and central nervous system were intact. Apart from the reduced level of AMH, all the haematological, and biochemical investigations and semen analyses of the spouse were found to be normal. Per speculum, examination on (21.07.22) revealed a healthy cervix with profuse thick white discharge (++) without any per vaginal bleeding.

#### Treatment history

2014-17- Allopathic treatment along with homeopathic treatment for 3 months.

2018- IVF- Failed

2019-21 OP level *Ayurveda* treatment

2022 (May) - Ovulation induction, IUI was suggested (but not done)

#### Surgical history

D&E done in 2014

#### DIAGNOSTIC ASSESSMENT

##### Investigations

##### HSG (21.06.22)

Uterine cavity normal in size and shape

Cornua are normal on both sides

Both the fallopian tubes are well opacified up to fimbria and shows free peritoneal spill.

Impression: Normal study.

YEAR	INVESTIGATIONS	REMARKS
2014	Follicular study	Normal
	HSG	Normal
	USG abdomen & pelvis	Normal
2017	HSG	Normal
	AMH	Reduced (report missing)
2022	AMH	0.262 ng/ml
	USG-abdomen&pelvis (07.11.22)	Normal study
	Urine routine(21.11.22)	Epithelial cells - 18-20/hpf

## Follicular study

Date	R. ovary	L. ovary	Endometrium	Cervical canal	POD Space
26.03.22	Multiple follicles Largest is 21 mm	Multiple follicles Largest is 21 mm	6.0 mm	Normal	Nil
29.03.22	Largest follicle 21 mm	Largest follicle 24 mm	8.0 mm	-	-

## Spouse factor

Age:33 years

Occupation: Harbour worker

Allergy, Addictions: nil

No known history of Chickenpox, Mumps or Varicocele.

Investigations: Semen analysis (July/2022) – Normal study.

## DIAGNOSIS

Dhathukshayajanya vandhyatwa / secondary infertility due to diminished ovum reserve.

## THERAPEUTIC INTERVENTION

IP management from 21.07.2022 to 08.08.2022

Date	Complaints	Internal medicines	Kriya krama			Remarks
21.07.22	Anxious to have a child since 8 years of unprotected sexual life	<b>Vaiswanara churnam</b> <sup>[5]</sup> 5gm with honey 6 am & 6 pm, before food. <b>Gandharvahasthadi kashayam</b> <sup>[6]</sup> with <b>Saindhavam</b> (1pinch) -90 ml 6 am before food . <b>Maharasnadi kashayam</b> <sup>[7]</sup> 90ml 6 pm before food <b>Draksharishtam</b> <sup>[8]</sup> + <b>Aswagandharishtam</b> <sup>[9]</sup> 30 ml after food twice daily				
22.07.22	Whitish mucoid discharge per vagina	Same medicines as above	Vaginal Douche with <b>Thriphala kashayam</b> <sup>[10]</sup> x 7 days. <b>Udwarthanam</b> with <b>Vara churnam</b> x 3 days			
23.07.22		Stopped <b>Maharasnadi kashayam</b> Added <b>Guluchyadi kashayam</b> <sup>[11]</sup> 90 ml twice daily before food.	Vaginal Douche with <b>Thriphala kashayam</b> Day 2 <b>Udwarthanam</b> with <b>Vara churnam</b> Day 2			
25.07.22	-	All the medicines stopped since snehapana started. <b>Snehapana</b> started with <b>Phalasarpi</b> <sup>[12]</sup> & <b>Sukumara gritha</b> <sup>[13]</sup> for 7 days	Day	Phalasarpi	Sukumara ghrita	Patient vomited after intake of <b>Sneha</b> on 1 <sup>st</sup> & 6 <sup>th</sup> day
			1	15 gm	10 gm	
			2	15 gm	15 gm	
			3	25 gm	25 gm	
			4	37.5 gm	37.5 gm	
			5	45 gm	45 gm	
			6	65 gm	25 gm	
26.07.22	C/o nauseating feeling while <b>Snehapana</b>	<b>Thalisadi churnam</b> <sup>[14]</sup> 5 gm with <b>snehapana</b> X 1 day	Snehapana Day 2			
01.08.22	C/o Gas trouble	<b>Vaiswanara churnam</b> 5gm with honey twice daily before food for 3 days	<b>Sarvanga Abhyanga</b> with <b>Dhanwantharam Thaila</b> <sup>[15]</sup> x 3 days <b>Ushma sweda</b> x 3 days			
04.08.22			<b>Virechana</b> with <b>Avipathi churnam</b> <sup>[16]</sup> 15gm with hot water (6 am morning)			6 vegas
05.08.22			<b>Peyadikrama</b>			
06.08.22			<b>Yoga Vasti</b> Planned <b>SnehaVasti</b> with <b>Phalasarpi (45 ml)</b> & <b>Sukumara gritha (45 ml)</b> <b>Kasayavasti</b> with <b>Madhutailika vasti</b> First <b>Sneha vasti</b> done			
07.08.22	Menstruation started		<b>Yoga Vasti</b> postponed			
08.08.22	Menstruation day 2	<b>Abhayarishtam</b> <sup>[17]</sup> 15 ml + <b>Ashokarishtam</b> <sup>[18]</sup> 15 ml + <b>Dhanwantharam gulika</b> <sup>[19]</sup> – twice daily after food during bleeding phase				Discharged

2<sup>nd</sup> course of IP admission

Date	Complaints	Internal medicines	Kriyakrama	Remarks
28.09.22	Anxious to have a child since 8 years of unprotected sexual life. Menstruation – day 4	<b>Abhayarishtam +Asokarishtam</b> 30 ml twice daily after food		
29.09.22	Menstruation over	<b>Vicharana snehapana</b> with <b>Phalasarpi</b> 10ml+ <b>Sukumara gritha</b> 10 ml x 2 days	<b>Dhanwantharam thailam</b> for <b>Abhyanga</b> & <b>Ushna jalasnana</b> x 2 days	
01.10.22 To 08.10.22	-	-	<b>Yoga Vasti</b> x 8 days <b>Sneha Vasti</b> (on 1/10/22, 2/10/22, 4/10/22, 6/10/22, and 8/10/22) with <b>Phalasarpi</b> 45 ml & <b>Sukumara gritha</b> 45 ml. <b>Kashaya Vasti</b> 1&2 (on 3/10/22 and 5/10/22) – <b>Madhuthailaika Vasti:</b> <b>Kashayam-</b> <b>Sapthasaram kashayam</b> <sup>[20]</sup> -400 ml <b>Sukumaram gritham</b> - 200 ml <b>Madhu</b> - 200ml <b>Kalka –Sathapushpa</b> 30gm <b>Saindhavam</b> -15gm <b>Musthadirajayapana Vasti</b> <sup>[21]</sup> - <b>3<sup>rd</sup> Kashaya Vasti on (7/10/22)</b> <b>Gritham- Phalasarpi &amp; Sukumara gritha</b> - 120 ml.	During days of <b>Kashaya Vasti</b> - internal medicine only at evening time.
07.10.22	Whitish mucoid discharge per vagina	-	<b>Yonipooranam</b> with <b>Phalasarpi</b> x 7 days.	On per speculum examination: Cervix unhealthy, mucoid white discharge.
08.10.22	Same complaints as above		<b>Yonipooranam</b> with <b>Thriphala kashayam</b> X 3 Days	
10.10.22		<b>Chirivilwadi Kashayam</b> <sup>[22]</sup> 90ml before food twice daily <b>Sukumaram gritham</b> 1 tsp twice daily with <b>kashayam</b> <b>Hinguvachadi gulika</b> <sup>[23]</sup> 1 gulika twice daily before food		Discharged

3<sup>rd</sup> course of IP admission (19.11.22)

Date	Complaints	Internal medicines	Kriya krama	Remarks
19.11.22	Pain over left side of lower abdomen especially after intake of food	<b>Nayopayam kashayam</b> <sup>[24]</sup> 90ml bd <b>Dhanwanthram gulika</b> 1 gulika twice daily after food	-	-
21.11.22		<b>Nayopayam kashayam</b> 90 ml twice daily before food <b>Dhanwanthram gulika</b> 1 gulika twice daily after food	<b>Yoga Vasti</b> x 8 days <b>Sneha Vasti</b> (on 21/11/22, 22/11/22, 24/11/22, 26/11/22 and 28/11/22) with <b>Phalasarpi</b> 45 ml & <b>Sukumaram gritha</b> 45 ml. <b>Kashaya Vasti</b> 1 & 2 on (23/11/22) and (25/11/22) – <b>Madhuthailaika Vasti:</b> <b>Sapthasaram kashayam</b> -400 ml <b>Sukumaram gritham</b> - 200 ml <b>Madhu</b> - 200 ml <b>Kalka –Sathapushpa</b> 30 gm <b>Saindhavam</b> -15 gm <b>Musthadirajayapana Vasti</b> - <b>3<sup>rd</sup> Kashaya Vasti</b> on 27/11/22 <b>Gritham-Phalasarpi &amp; Sukumara Gritha</b> 120 ml.	
24.11.22	c/o abdominal distension	<b>Nayopayam kashayam</b> 90 ml twice daily before food <b>Dhanwanthram gulika</b> 1 gulika twice daily after food <b>Vilwadi lehyam</b> <sup>[25]</sup> ½ tsp twice daily after food	<b>Yoni pooranam</b> with <b>Phalasarpi</b> x 2 days	
26.11.22 to 28.11.22		<b>Nayopayam kashayam</b> 90 ml twice daily before food <b>Dhanwanthram gulika</b> 1 gulika twice daily after food <b>Vilwadi lehyam</b> <sup>[25]</sup> ½ tsp twice daily after food	<b>Uttaravasti</b> with <b>Phalasarpi</b> x 3 Days	
28.11.22	Pain over left side of lower abdomen especially after intake of food,	Discharge medicines: <b>Kalaskadi kashayam</b> <sup>[26]</sup> 15 ml with 45 ml luke warm water twice daily before food <b>Dhanwanthram Gulika</b> 1 gulika with <b>kashaya</b> <b>Dadimadi gritham</b> <sup>[27]</sup> 1 tsp at noon before food		Discharged

## FOLLOW-UP AND OUTCOME

After using the aforementioned medications for 45 days, the patient came with concerns of missing period and was instructed to do urine pregnancy test on January 15, 2023. The result was found to be positive with LMP on 15.12.2022, EDD by date on 21.09.2023. During her first trimester of pregnancy, regular antenatal care was provided and she was advised to continue visiting for check-ups after that. On 04.05.2023 (GA with 14 weeks of pregnancy) patient came with the complaints of constipation, abdominal distension, and bilateral pedal oedema. The Hb report revealed 10 gm/dl.

Medicines given were:

1. **Bahuslaguda**<sup>[28]</sup> 10 gm at bed time.
2. **Punarnavadi kashayam**<sup>[29]</sup> 90 ml twice daily before food
3. **Nayopayam ksheerakashayam** 90 ml twice daily before food
4. **Dhanwantharam gulika** 1 gulika twice daily after food

Obstetric ultrasounds performed on 9.05.2023 revealed a single intrauterine gestation with a gestational age of 20 weeks and 5 days. Placenta: fundal extending anteriorly and posteriorly, variable presentation. Foetal Heart rate: 144bpm.

## DISCUSSION

After thorough history taking and examinations, it was revealed that the patient had secondary infertility caused by low AMH. Since AMH is the accurate predictor of ovarian reserve which measures ovarian primordial follicular pool, any impairment in its normalcy may result in difficulty to conceive.

*Acharya Susruta* mentioned four crucial requirements for conception to occur which are *Ritu*, *Kshetra*, *Ambu*, and *Beeja*. *Ritu* indicates the proliferative phase ending with ovulation, *Kshetra* - a healthy female reproductive tract, *Ambu* - nutrients derived from *rasadhatu* and the *Beeja* denotes a healthy ovum and sperm. In addition to this *Acharya Vagbhata* mentioned *Hridaya* and *Vata* too<sup>[30]</sup>. *Hridaya* implies a healthy psyche (*Soumanasya*), and *Vata* is responsible for all the physiological reproductive functions. In common, all *Acharyas* mentioned *Beeja* as an important factor for conception. In this case, the patient had an AMH level of 0.262ng/ml, which could indicate poor ovum quality (*Stree Beejam*).

From her personal history, it was clear that the patient was affected by *Apana Vata dushti* because she frequently experienced constipation and had a habit of *Vegadharana*, which impairs the body's physiological functions. *Nidanasevana* like disturbed sleep, stress, and untimely intake of food resulted in the impairment of *Jataragni*. This impairs the digestion and

metabolism of *Ahara* due to which this patient showed symptoms like indigestion and bloated abdomen. *Vata pitta dushti* and *Kapha kshaya* resulted leading to improper formation of *Ahara rasa*, ultimately decreasing the quality of *Rasa dhatu*. Since *Artava* is the *Upadhathu* of *Rasa dhatu*, it will also undergo gradual depletion quantitatively and qualitatively and result in *Vandhyatwa*.

The present disease entity shares a close resemblance to *Dhathukshayajanya Vandhyatwa* in terms of low AMH level attributing to female factor. Here *Vata Dosha vikriti* progresses towards *Rasa Dhathukshaya*, thereby affecting *Artava Upadhathu* which was evident from the *Artavakshaya Lakshana* (*Beejaroopa & dhathuroopa Artava*) of the patient.

The imbalance of *Agni*, which is the primary factor leading to the accumulation of *Ama*, is the root cause of every ailment. Furthermore, the patient's appetite was diminished. The goal of the therapeutic regimen was to balance the *Doshas* by pacifying the *Vata Dosha* and correcting the *Agni*. When taken orally, *Vaishvanara Churna*, which has *Dipana* and *Pachana karma*, aids in *Agni Vardhana* (improving digestive fire), which in turn corrects *Dhatu Parinama*. Oral administration of *Gandharvahasthadi kashayam* has properties like *Agnideepana*, *Mala sodhana* etc.

*Udwarthana* was done before *Snehapana* for 3 days as an initial *Rookshana*. Considering the unhealthy condition of cervix, vaginal douche was done. *Snehapana* done with *Phalasarpis & Sukumara gritha* imparted a synergistic effect on *Dhatupushti*. *Virechana* helps in attaining *Agnideepti* and *Srotovishuddhi* (purification of channels) and hence supports the proper *Dhatuparinama*. According to *Acharya Kashyapa*, *Virechana* helps the *Beeja* to become efficacious (*Beejam Bhavati karmukam*)<sup>[31]</sup>

Pathogenesis of gynecological disorders always involves *Vata Dosha*<sup>[32]</sup>. So, next *Yoga vasti* was planned. *Madhuthailika Vasti* possess both *Dosha nirharana* and *Brimhana* property. Also, it acts as *Vrishya*, *Balya*, *Deepana*, and *Brimhana*<sup>[33]</sup>. *Sapthasaram kashayam* and *Sukumara gritha* were used for *Vasti*. *Mustadirajayapana Vasti* is *Vatahara*, *Deepana*, *Pachana*, *Sadhyobalajanana*, and *Vrishya*<sup>[34]</sup>. The use of *Uttara Vasti* is recommended for all gynaecological conditions, particularly in *Pushpanasa* (ovum destruction)<sup>[35]</sup>.

UPT results were positive on January 15, 2023, and a single intrauterine gestational sac with a good FHS was observed on USG on April 9, 2023. She delivered a healthy female baby on 14.9.23.



## Conclusion

Reduced AMH level indicating Diminished Ovarian Reserve can be considered under *Dhatukshayajanya Vandhya* explained in *Harita Samhita*, which is due to *Kshaya of Beejaroopa or Dhaturroopaartava*. It may also indicate unhealthy *Beeja*. In this case, medications for *Agnideepana and Dhatuposhana* were given in order to stimulate the ovaries to produce healthy oocytes. Since *Dhatukshayajanya vandhya* predominantly involves *Prakupita Vata, Panchakarma* therapies especially *Vasti* were administered. Among that, *Rajayapana vasti* was specifically done since it is directly indicated in *Vandhya chikitsa*. Special treatments like *Uttaravasti* was also done in order to improve AMH and fertility. The above mentioned treatments helped the patient to conceive and deliver a healthy female baby on 14.9.23.

## PATIENT PERSPECTIVE

The patient shared her perspective in her local (Malayalam) language. Since the patient didn't get the desired results from allopathic treatments and also as she was not willing for the IUI suggested by them, she visited our hospital for ayurvedic management. She was extremely happy and grateful that she had conceived successfully.

## INFORMED CONSENT

Informed consent was taken from the patient for the management and for reporting the case.

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