



# **A Successful ART Treatment of Advanced Maternal Age Pregnancy with HRT Along with Donor Oocytes: A Case Study at Wardha Test Tube Baby Centre**

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## **Authors' contributions**

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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**Case Study**

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## **ABSTRACT**

**Introduction:** This case report refers to 54 years old infertile woman who visit ACHARYA VINOABHAVE RURAL HOSPITAL for her ARTHRITIS PROBLEM with her husband (age 61-year-old). During her treatment, she got to know about IVF/ART procedures. As she belongs to a rural area and is not so educated, she was not aware of this and start investigating it and found it interesting. After knowing about all these procedures, a new ray of hope was awakened in her that, she can also give birth to her baby after so much waiting and facing so much criticism by society as a barren woman. In the 36th week of gestation, one healthy baby girl has been delivered by Cesarean section. In this way, the faith between patient and doctor was built-up and inevitably, we can appreciate this case of postmenopausal gestation (Geriatric Pregnancy) As A Therapeutic Victory For Wardha Test Tube Baby Centre and for the patient as well. This infertile couple was not that financially strong and even this all procedure is too much unaffordable to them still after all these, their urge to having a baby is so high that, they invest financially as well as emotionally and also mother put her health in peril while going through IVF/ART procedure. Being an infertile woman, she has to face a lot, and in such conditions, women go through psychological torture, and from this depressive phase, many health issues arise.

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**Main Symptoms and/or Important Clinical Findings:** Menopausal woman, qualitative analysis of AMH show 0 ng/ml, means diminished ovarian reserve (DOR).

**The Main Diagnoses, Therapeutic Interventions, and Outcomes:** The woman is pinpointed with primary infertility for 26 years. The couple suggested going for IVF/ICSI treatment with donor oocytes(frozen) and self-sperm sample, ICSI is performed and sequential embryo transfer is done and gets conceived in the first cycle of ART. As being a menopausal woman, the dose of oral intake of estrogen hormone tablets doubles as an HRT treatment.

**Conclusion:** Intake of the double dose of estrogen orally (hormone replacement therapy, HRT) than the normal women whose age is not much and who is not menopausal, increases the endometrium thickness and its receptivity which helps the woman to conceive in the first cycle through ART.

*Keywords: Advanced maternal age; IVF/ICSI; infertile woman; post-menopausal; HRT; ART.*

## 1. INTRODUCTION

Infertility is not being able to reproduce clinically even after unprotected sexual intercourse till one year regularly (like 2-3 times a week) [1]. It can be seen in both partners. There are 15% infertile couples worldwide among which, according to WHO, 3.9-16.8% infertile couples are Indians and 14% of females worldwide are suffering from infertility [1,2]. Various factors are responsible for infertility, such as abnormally production of sperm, cryptorchidism, chromosomal defects, diabetes, STDs, varicocele in male and failure to produce ovum, low or zero AMH, POI (primary ovarian insufficiency), PCOS (polycystic ovarian syndrome) in female [3]. Infertility affecting people nowadays from every aspect like financially, socially, emotionally, physically, mentally, and even spiritually too [4]. In our society, couples think, being a parent is like completing their relationship and also feels like being the parent of their biological child completes them as a human. As these things pushing couples for seeking help in ART rises.

Couples who are facing infertility goes through many things like treatment for natural conceptions, some think that they should wait for some more years and in all these things their age increases, with the increasing age of women, the changes in reproductive organs also occur like changes in hormonal levels, irregular menstrual cycle, ovaries stop releasing eggs (started diminishing, DOR) and hormones, problems with short term memory, decrease in breast tissue, hot flashes, vaginal dryness and pain in intercourse, etc. [5] Along with this mental stress increases with extending the time of infertility and in all these things one thing is that in India especially, most of the population is unaware of many technologies especially related to health

science. No doubt ART making noise in the world of reproductive medicine but still there are many rumors in the rural society of India that baby conceived with the help of ART is not their own. But the fact is, to the most possible extent doctors tries to retrieve patients own egg with the help of HRT. And when it became impossible to retrieve the patients' egg, then and then doctors suggest a couple to take donor's eggs of good quality with the patients' consent. Without their consent, doctors never take any decision on their own.

Widely, in ART (assisted reproductive technology), couples diagnosed with primary infertility or women (or partners) with poor quality of gamete recommend with donor gametes. Especially in women with advanced age, have either DOR (diminished ovarian reserve) or very poor quality of oocytes as they are present from the birth of women, with age, they also became older. Chances of giving birth to an abnormal baby increase with the increasing age of women as well as eggs. In such cases, taking oocytes from donors is recommended. And also, if the gametes of both partners are poor then, donor embryos were also there, which is cryopreserved and transfer when needed to the patient who has the greatest urge to become parents.

In this case study, advanced age pregnancy is discussed along with its complication and treatment (HRT), which was taken for improving endometrial thickness for implantation of an embryo which is transferred by sequential embryo transfer method of transferring the embryo. A couple facing infertility for 26yrs and how they visit A.V.B.R.H. (WARDHA TEST TUBE BABY CENTRE) and got treated with IVF/ICSI and success story in the first cycle is all discussed here in this study in detail.

## 2. CASE PRESENTATION

### 2.1 Patient Specific Information

This case report refers to a 54-year-old infertile (menopausal) woman who visits ACHARYA VINOABHAVE RURAL HOSPITAL for her ARTHRITIS PROBLEM with her husband (age 61-year-old) in June 2018 from Changanwadi, Dist. Akola. During her treatment, she got to know about IVF/ART procedures. They were farmers. A woman had no habit of consuming liquor and tobacco and a male have the habit of consuming liquor and smoking tobacco on daily basis.

### 2.2 Primary Concerns and Symptoms of the Patient

It was a case of a couple with advanced maternal age primary infertility, with the hope to give birth to a baby for 26 years and from 27 years of marriage.

### 2.3 Medical History

The wife was suffering from diabetes mellitus and hypertension. Male has a history of Asthenozoospermia in 2002, which was cure by antioxidant supplement at that time, during treatment count and motility was good (52 mill/ml – count with 80% motility), apart from this male partner had no history of diabetes, hypertension, tuberculosis, asthma, seizure disorder, disease related to the thyroid gland, and also had no history of any major diseases or surgeries.

### 2.4 Family History

They have no family history of any of these diseases like diabetes, hypertension, tuberculosis, asthma, seizure disorder, disease related to the thyroid gland, and also had no history of any major diseases or surgeries.

### 2.5 Psycho-social History

They had no history of any mental- psychiatric illness reported.

### 2.6 Relevant Past Interventions with Outcomes

The couple had taken treatment for infertility in Akola for conceiving a baby naturally but was not

aware of any ART technique so they have no history of IUI or ICSI. But male partner was found to be asthenozoospermic which was treated with antioxidant supplements at that time in 2002.

### 2.7 Clinical Findings

#### On general examination of female:

- General condition was fair, normal body temperature.
- Pulse: 76 beats/min
- Blood pressure: 124/90 mm/Hg
- Body swelling
- Weight: 60kgs
- Height: 5'2 feet
- BMI: 25

#### On general examination of male:

- Pulse: 87 beats/min
- Blood pressure: 118/78 mm/Hg
- Weight: 72kgs
- Height: 5'8 feet
- BMI: 24.1

### 2.8 Significant Physical Examination (Pe) and Important Clinical Findings

The couple underwent standard diagnostic procedures like karyotype testing and it was normal in both partners. A woman also underwent the Papanicolaou test and it was also normal. Hysterolaproscopy was done (uterus present, anteverted and anti-flexed and tube connecting uterus is normal with normal opening).

### 2.9 Timeline

Couple came to AVBRH for Arthritis treatment and know about IVF camp arranged by hospital and get enrolled and started treatment of IVF/ICSI (ART) for their primary infertility in June 2018, had history of failed IUI during treatment. Couple showed normal clinical finding for general, significant and necessary physical examination.

### 2.10 DIAGNOSTIC ASSESSMENT

#### Diagnostic testing (female):

- CBC: 12.8 mg%
- Hb: 12.3 mg/decilitre
- WBC: 8600 cells/cm<sup>3</sup>

- Platelets: 2.6 lacks
- Liver Function Test- Normal
- Kidney Function Test- Normal
- HIV: Non-Reactive
- HBsAg: Non-Reactive
- HCV: Non-Reactive
- VDRL: Non-Reactive
- Anti-Mullerian Hormone (AMH) Test: 0.0
- Antral Follicle Count (AFC): very poor (undetectable)
- Hysterosalpingography (HSG) test: Uterine cavity normal, bilateral fallopian tubes normal, free spillage of dye seen.

#### Diagnostic testing (male):

- CBC: 14.3 mg%
- Hb: 12.0 mg/decilitre
- WBC: 9600 cells/cm<sup>3</sup>
- Platelets: 3.87 lacks
- Liver Function Test: Normal
- Kidney Function Test: Normal
- HIV: Non-Reactive
- HBsAg: Non-Reactive
- HCV: Non-Reactive
- VDRL: Non-Reactive

#### Semen analysis report:

- Sperm count: 52 mill/ml
- Sperm total motility: 80% motile
- Sperm morphology: 65% normal

### 2.11 Diagnostic Challenges

Women quantitative analysis of AMH and AFC showed diminished ovarian follicle state.

**Diagnosis:** Female primary infertility with diminished ovarian follicle.

**Prognosis:** A good prognosis was there for their problem is in the form of IVF/ICSSI frozen donor oocytes fertilized with self-sperm sample with HRT (HORMONE REPLACEMENT THERAPY), which had shown positive results many times in WARDHA TESTTUBE BABY CENTRE (WTTBC).

### 2.12 Therapeutic Intervention

**Types of therapeutic intervention:** The couple was propounded to go for ART (IVF/ICSI) treatment in which HRT (hormone replacement therapy) started to the patient and suggested to take donor oocytes which were frozen earlier and

fertilized with the self-sperm sample by the process of ICSI [6,7].

#### Administrative of therapeutic intervention:

After embryo transfer (sequential embryo transfer of GRADE A, 02 day-03 embryos and GRADE A, 02 day-05 embryos) medication prescribed for 15 days in which dose of tab. estradiol was like 2mg QID("quarter in die") for 5 days and after 5 days 2mg TDS ("ter die") for 10 days which will increase endometrium thickness.

### 2.13 Follow-up and Outcomes

**Clinical and patient-assessed outcomes:** This case was related to advanced maternal age pregnancy due to primary infertility. They were suggested to take donor eggs (frozen earlier when retrieved) which was fertilized with self-sperm sample. ICSI was done on June, 2018. On 29<sup>th</sup> of June, 2018 Grade A, 02 day-03 embryos and Grade A, 02 day-05 embryos On 1<sup>st</sup> of July, 2018 were transferred to female patient's uterus.  $\beta$ -HCG test was done and pregnancy was confirmed on day 14 of embryo transfer and in February, 2019 she gave birth to female baby in just one cycle of ART.

#### Important follow-up diagnostic and other test results:

After embryo transfer follow-up was done whenever required but upto 14 days follow up was done regularly and at each follow-up encounter endometrium thickness was noted and observed gradually increased thickness of endometrium which helps embryo to implant properly and mainly successfully. On day-14<sup>th</sup> of Embryo transfer  $\beta$ -HCG test done which indicates successful implantation ( $\beta$ -HCG= 700).

**Adverse and unanticipated events:** Out of 4 transferred embryos only one embryo of good quality was implanted.

## 3. DISCUSSION

Geriatric gestation may be a term utilized by doctors earlier for describing pregnancies of girls on top of the age of 35-year-old. [8] these days doctors ask those pregnancies above 35-year-old as advanced maternal age (AMA) [8]. lately thanks to carrier and education, women designing their pregnancy once their 30s despite specializing in their procreative health. [8] once the 30s, the reproductive health of women starts to say no that sex gland reserve starts

decreasing and additionally canal walls become dry and diluent that have an effect on sexual intercourse. [9,10] girls have restricted range of ova at the time of birth and few remains at the time of puberty, after gaining pubescence one gamete a month (one ovum matures a month) from every ovary alternately begin emotional on the fourteenth day of the cycle that is understood as start and once it remains unfertilized, the menstrual cycle begins, which is day each of the menstrual cycle and this cycle of 28days happens every month. [11,12] once 40-45 years of age, ovaries stop manufacturing hormones which are chargeable for unleash of ovum, and sex gland cysts start diminishing, girls get biological time [13]. Premature menopause additionally occur when follicle in ovaries diminished early, hormones plays main role in all these process [14,15]. At early age like from the 20s of women, it is the best reproductive age up to their 30s [16]. Up-to 30s of women chance of giving birth to an abnormal baby is very less and have fewer chances of complications in pregnancy like premature birth and low birth weight, stillbirth, genetic abnormalities, labor complications, and cesarean section, etc. [17]. These all complications can occur in pregnancy after the 30s of women. The problem of hypertension in advanced age pregnancy may lead to serious conditions like pre-eclampsia [9]. Gestational diabetes in such pregnancy also increases the problem of DM in later life [18]. In advanced age pregnancy, the patient prefers healthy donor oocytes, because after menopause retrieving mature follicles from the patient's ovary is impossible, and somehow if doctors try to retrieve oocytes from the patient's ovaries by giving hormonal treatment, it is likely impossible to retrieve mature and good quality of oocytes [19]. There is no fixed age written somewhere that, one should be giving birth to the baby in 20s to 30s of women age and after that, you can't conceive. It is like in the 20s to 30s of women follicles are of good quality after that its aging starts and its quality started decreasing and one aspect of being a mother in advanced age is that your age increases and the energy in you decrease. The support, the energy which you can spend on your baby in that young age, in advanced maternal age, you want to show that enthusiasm to your baby in that age, but your body is tired. Science and technology making everything easy for us, but we have to decide that when and how to utilize and take advantage of these facilities [20]. A number of related studies were reported [19-22]. Khandelwal et al. reported on successful IVF

pregnancy in a young patient with stromal Leydig cell tumour [23-24]. In our case of study, women are above their 50s (i.e., 54 year-old), and having a diminished ovarian reserve and AMH is ZERO. In such conditions, she decided to give birth to her baby with the help of ART. As being a diabetic patient for years, the risk was at its peak of pre-eclampsia, and in that, she is also hypertensive but by overcoming all the risk factors she gave birth to her baby without any complication. Her willpower for being a mother is so high that she overcome all her problems related to health, finance, and emotional and mental too.

#### **4. CONCLUSION**

ART has become a boon for the infertile couple to become parents, and specially to the women above the age of 35 yrs. Pregnancy of a women above the age of 35yrs is advanced maternal age pregnancy. In such cases risk are very high but there are various feelings of women involved in being mother at this age. Physicians plays important role here because such types of pregnancy can bring joy in one's life or can bring apprehension. This is all depends upon the environment around that women along with her knowledge provided by her physician about how to cope up with this feeling and with the risk involve in it.

#### **CONSENT**

The patient's information was identified to ensure confidentiality. For the processes related to ART like what is IVF treatment, how doctors will treat (line of treatment), risk factors due to advanced age pregnancy, risk during procedure, oocyte donor confidentiality (not to know about her), etc.; informed consent was signed. Inform consent was in local language of patient and in English too.

#### **ETHICAL APPROVAL**

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

#### **COMPETING INTERESTS**

Authors have declared that no competing interests exist.

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