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# Oocyte Donation

*Mehmet Musa Aslan*

## Abstract

Oocyte donations are ethical, social, religious, physiological, and medical problems. The medical risks of oocyte donation are not adequately addressed. The risks of oocyte donation require careful examination of the treatment of oocyte donors during the donation process. There are some long-term risks and various side effects such as pain, infection, oocyte retention, bleeding, premenstrual syndrome-like symptoms, ovarian hyperstimulation syndrome (OHSS), and the risk of ovarian cancer related to the drugs used by the donor. Treatment with oocyte donation is one of the situations in which the most common methods of assisted reproduction are discussed. There are many differences in moral, ethical, and religious issues in society. The use of donor eggs, sperm, or embryos is a social or cultural problem rather than a medical problem. For this reason, legal regulations on oocyte donation are carried out in line with cultural beliefs and public opinion about the procedure; individuals are free to use legal procedures according to their values. However, the fact that it is prohibited in some communities can push the illegal paths by obstructing the ones who want to use it.

**Keywords:** infertility, oocyte donation, fertility

## 1. Introduction

At the Universal Declaration of Human Rights, all women and men who reached adulthood—race, nationality, or religion without discrimination—have the right to establish a family. Reproductive and Sexual Rights Declaration also refers to “reproductive rights, sexual rights, and freedoms, as well as rights and freedoms that concern as much as individuals.” The declaration drawn up by the International Declaration of Human Rights shows that sexual and reproductive rights are a legitimate part of basic human rights [1].

The family is of great importance in ensuring the continuation of the human race and in the training of the individuals suitable for the expectations of the society. Reproductive function is a universal function peculiar to individuals and families. Especially in traditional societies, the role of women in the family and society has been handled in connection with fertility and child care. The female reproductive organs, together with birth, give the individual a role of feminine and the girl child is prepared with this role in the future. As long as the reproductive organs are healthy, they give meaning to the life of the woman; social and psychological balance [2].

Establishing a family, being a child is a desirable condition accepted in all societies. The development of the society and the continuation of the generations depend on it [3]. Having family and children is the primary and social duty of the individual. The infertile woman, while accepting it, violates the norms of behavior by

not being a child. Just like in all world societies, in Turkish society, marriage brings together the possession of children and problems arise in marriages where the child is not. After the marriage, the childless family is unthinkable and the couple is expected to have children immediately [4].

For infertile couples who cannot have children as they wish, the situation is very difficult; because infertility is a process that is tiring, weary, time, labor, and money for diagnosis and treatment. Moreover, infertility may cause women to consider themselves less valuable and insufficient [5].

Infertility, which causes biological, psychological, psychosocial, and culturally important problems in infertile couples, is the inability of the couples in the reproductive age to become pregnant or to continue the gestation [6–9], even though they have sexual intercourse three to four times a week for 1 year.

Having children in Islamic societies is an important goal for marriage and seems to be very important for the stability and happiness of marriage life. For this reason, infertile couples who cannot achieve this basic tendency tend to be judged by the society as unsuccessful. In this context, infertility is an important social problem that can affect relationships and even threaten marriage. In addition, the social environment makes the situation even more difficult by bringing couples into contact with community expectations [10].

Today, there are a variety of treatment options for infertility, and new technologies are emerging to address this important health problem affecting about 15–20% of married couples. There are a number of assisted reproduction models, some of which are carried out by third parties such as gametes or embryo donations and carrier maternity. Women with ovarian failure were considered irreversibly sterile until about 20 years ago, but this view has changed as they have developed in assisted reproductive techniques (ART). Today, women with premature ovarian failure or fast ovarian reserve can be given a realistic pregnancy chance by oocyte donation. Oocyte donation is often carried out by In vitro fertilization (IVF) after ovarian hyperstimulation is controlled, followed by transfer of sperm to the uterus of recipient from the oocyte transporter partner, a healthy young donor. Using donated oocytes, the first successful pregnancy in a recipient woman was performed in 1983 [11]. It is now a developing area of oocyte donation assisted reproductive technology.

Treatment with oocyte donation is one of the most controversial aspects of assisted reproduction. There are many differences of opinion in moral, ethical, and religious matters in society. It can be estimated that oocyte donation is even more complicated in Islamic societies when it is thought that by the third parties even the proselytizing is considered unacceptable in some Islamic rules according to some people and that the legislation prohibits it. Many countries have begun to donate oocytes by making the necessary legal arrangements in line with their values and beliefs. The rights of donor, recipient couple, and child are guaranteed by these laws. Frequently adopted adoptions before ART appear to be a solution to the problem of infertile people, but they are inadequate when considering blood and racial prevalence and can cause psychological problems in parents and children. In Anatolia, an attempt has been made to find a solution in the form of adoption of nephews in the family by taking into consideration the adoption of blood and racial preoccupation. Adoption is the biological link that the ART can provide and the lack of enthusiasm for having a child remains an undesirable option. In Islam, some schools prohibit the adoption of other than the father's [12].

One of the problems brought by assisted reproductive therapy is who is the real parent of the child. Unless third-party genetic material is used, there is no confusion in the concepts of mother and father. For this reason, the use of genetic material by

third parties in the implementation of ART in religious traditions and in the laws of most countries is not tolerated [13].

Donor egg, sperm, or embryo use is a social or cultural problem rather than a medical problem. For this reason, legal regulations on oocyte donations, cultural beliefs, and community are made in line with procedural considerations; individuals are free to use legal procedures according to their own values. However, the fact that it is prohibited in some communities can push them to illegal ways by preventing those who want to use it. Infertile couples try to find solutions for both infertility and other adverse effects, and try a variety of treatment options.

## 2. General information

### 2.1 Infertility

#### 2.1.1 History

Reproduction is a concept that has been very important since ancient times. Initially, thinkers who lived in ancient times carried out their efforts to understand the human reproductive system and the dysfunctions in this system, after which the scientists continued their work on this subject. The first texts about infertility date back to 2200–1950 BC. Hippocrates, who lived between 460 and 370 BC, also mentioned infertility [14]. The prescriptions for the early recognition of pregnancy and the prevention of infertility were first used in ancient Egypt [15].

The first artificial fertilization in the world was obtained by Hunter between 1776 and 1799 [14–16]. The first reference to reproductive dates back to antiquity, and one of the first examples is the biblical command, “be productive and multiplicative.” According to religious beliefs, God was the source of both fertility and infertility. A woman’s ability to raise children is considered as a measure of her femininity; infertility was seen as a punishment of misconduct [14–16].

Rapid developments in reproductive health in the past 30 years have also increased interest and expectation for the concept of infertility. The definition of infertility was accepted in recent years although the couple in reproductive age has been unprotected, sexually related three to four times a week for at least a year [17–20]. It is suggested that infertility rate in the world affects more than 80 million people in the world, which is seen in different ratios in different countries, and it is stated that the infertility rate varies between 5 and 30%.

In industrialized societies, it is estimated that 10–15% of couples receive a primary or secondary infertility diagnosis. This ratio increases to 30–50% in African countries [21]. Turkey is also considered a diagnosis of infertility in 10–20% of couples [20, 21]. Increased infertility due to various factors all over the world is seen as a developmental crisis involving individual and spousal relationships rather than a medical situation due to the emotional problems created in individuals and marriage relations.

#### 2.1.2 Reproduction process and infertility

In order for the breeding period to be successfully completed, the male and female physiology must have the maturation and conditions necessary for reproduction. Firstly, hypothalamus-Pituitary aksis, fallopian tube functions, cervical and endometrial conditions; and hypothalamic-hypophyseal-testicular axis in men, sperm production, and mobility should be normal [22, 23].

### 2.1.3 Incidence of infertility

Infertility is a question of varying frequency and cause of region to region, involving 15% of men and women in the reproductive age [24]. According to the survey, South Korea (1.3%), Jordan (2.2%), and Syria (2.9%) were the lowest in the 40–49 age group. In contrast, especially in Africa, some tribes and communities have much higher rates of infertility. For example, 65% of women aged 45–49 in Mbelo in Zaire are without children [25]. Health care practitioners in the United States report that the incidence of infertility is 15%, that is, it affects one in every six pairs or 4.8 million women [26].

According to the results of the 1990 census in our country, the rate of married women aged 15–49 is 23%, which is calculated as 11.3 million women. When the incidence of infertility is accepted as 8.5%, it corresponds to 1.5 million women and consequently it directly affects at least 3 million people. This is a large population that is longing for children. According to the results of the 1993 census, the proportion of women who say that it is not possible to give birth at all is found to be 9.5% [26].

## 3. Infertility reasons and treatment

Clinically, there are two forms of infertility, physiological and pathological infertility. Infertile pairs; 40–55% infertility is the cause of women, 25–40% in men, 10% in both, and 10% in cases of unexplained reason.

Causes of infertility due to females are: 30–40% ovulatory dysfunction, 30–40% tubal peritoneal factor, 10–15% unexplained infertility, and 10–15% multiple factors together [12, 27]. While 15% of married couples have infertility, only 1–2% have sterility. There is a certain height of reasons for the woman here, because after the ejaculation, the function of the man ends for fertilization. Fertility, however, is not finished here but has just begun [26].

### 3.1 Causes of physiological infertility

Causes of physiological infertility are: infantile infertility, pregnancy infertility, lactation infertility, postmenopausal infertility, cyclic infertility, voluter infertility, and relative and social infertility.

- a. **Infantile infertility:** infertility is seen in this period because it is not usually a reproductive function at 12–15 years old.
- b. **Pregnancy infertility:** a pregnant woman cannot conceive a second time during her pregnancy.
- c. **Lactation infertility:** some women may not conceive as long as they are breastfeeding.
- d. **Postmenopausal infertility:** reproduction stops with the end of ovarian functions.
- e. **Cyclic infertility:** 28–30 days of normal cycle, ovulation occurs on the 14th or 15th day. After 8 h of ovulation, the chances of fecundity will decrease every hour and will rise within 24 h. Except for days 10–17 of the cycle, the woman is physiologically infertile

f. **Voluter infertility:** infertility is the result of the wishes of couples not having children with their own desire.

g. **Relative and social infertility:** marriage is not regular and healthy when married couples are ill after marriage, military service, college, work situation, etc. The infertility that occurs in these conditions is called relative and social infertility [7, 28, 29]. All infertile pathologies other than physiological infertility are pathologically infertile. It is possible to collect the causes of pathological infertility under three large groups.

### 3.2 Causes of pathological infertility

Causes of pathological infertility are general causes, extragenital causes, and genital causes.

#### 3.2.1 Common causes

Infertility affects intellectual, sexual mismatch, obesity, drug dependence, hypovitaminosis, protein deficiency, iron deficiency anemia, stress, excessive alcohol, coffee and cigarette intake, radiation, and heavy metal poisoning [7, 12].

#### 3.2.2 Extragenital causes

1. **Hypophyseal:** increase or decrease of pituitary function causes secondary failure. Hypopituitarism, hemorrhagic circulation collapse and pituitary necrosis (Sheehan syndrome), granulomas, cysts, tumors, galactorrhea, amenorrhea syndromes, hunger, and anemia may result [7, 12, 29].
2. **Thyroid:** hypothyroidism—anovalation, infertility, and abortion; and hyperthyroidism—amenorrhea causes infertility if severe.
3. **Adrenal:** adrenocortical hyperfunction (Cushing's disease) weakens ovulation and adrenal insufficiency (Addison's disease) causes gonadal atrophy.

#### 3.2.3 Genital causes

Genital causes of the female according to the organs [7, 26, 29]:

1. Causes of vulva and vagina
2. Causes of cervical
3. Causes of uterus
4. Causes of tuba uterine
5. Over hypothalamus and hypophthalmia causes
6. Metabolic diseases and other causes
7. Psychic causes

### 3.2.4 Genital causes of men

Factors that cause infertility in men are less than in women. Male infertility factors are abnormal spermatogenesis, abnormal motility, anatomical disorders, endocrine disorders, and sexual dysfunction. Anatomical abnormalities are probably caused by congenital absence of vas deferens, vas deferens obstruction, and abnormalities of the ejaculatory system. Abnormal spermatogenesis may develop due to mumps orchid, chromosomal abnormalities, cryptorchidism, chemical or radiation exposure, and varicocele [12]. Excessive temperature exposure, severe allergic reaction, exposure to radiation and environmental toxins, high amounts of narcotic drugs, and alcohol and drug use significantly affect sperm quality and number [30]. Immunity can play a role in some infertility. Antisperm antibodies were found in 72% of infertile couples in males and in 13% of females. It has been suggested that all antibodies against sperm may play a role in infertility by inhibiting sperm cervical mucus penetration by reducing sperm motility in the female genital tract by causing agglutination, immobilization, or opsonization [26, 31].

### 3.3 Evaluation of infertile couples

Infertile couples should be examined and treated together. Infertile couples are examined by anamnesis, general examination, and laboratory studies, and five cardinal examinations are performed after genital examinations. These examinations are performed on certain days of the menstrual cycle, and none of them have priority over the others [24, 29, 32, 33].

1. Spermogram
2. Ovulation detection
3. Hysterosalpingography
4. Postcoital test
5. Laparoscopy

#### 3.3.1 Anamnesis

Couples should be evaluated together and a good history should be taken. The history is very important. With a good history, about 50% is diagnosed. Sometimes 100% is diagnosed and verified by examinations.

Information necessary to take in the history:

- Age and duration of marriage (the prognosis is poor since the ovarian reserve is over 35 years old) and duration of infertility
- Previous pregnancy, low number of cases, any complication of pregnancy, and menstrual history (such as menarche age, duration of menstruation, frequency, and order)
- Previous infertility tests and treatments

- Whether there are diseases such as lung, heart, kidney disease, or urogenital disease
- Sexual history (frequency, timing, vaginismus, dyspareunia)
- Occupational and environmental life, chemical or radiation containing substances, hobbies, and work habits [4, 24, 34]

### 3.3.2 General examination

Female genitourinary and pelvic examination is assessed for congenital anomaly, abnormal uterine position, pelvic pathology (such as endometriosis, ovarian cysts, and myomas), and vaginal discharge. It should be emphasized whether it is sexual or hirsutismus. In addition, the development status of the breasts and the presence of galactorrhea should be investigated [26, 35]. An infertile man should also be examined by a specialist andrologist and urologist. The condition of testes and the examination of the epididymis and ductus deferens should be performed to check whether varicocele is present [29, 35, 36].

### 3.3.3 Special examinations

This includes semen analysis in men, ultrasonography, endocrine tests, testicular biopsy, and sperm penetration tests. Postovulatory tests, ultrasonography, endometrial biopsy, hysterosalpingography, hysteroscopy, laparoscopy, and endocrine tests are included determining the day of ovulation.

Tests for man:

- Spermogram
- Endocrine tests
- Ultrasonography
- Testicular biopsy
- Sperm penetration test

Tests for women:

- Ovulation detection
- Basal body temperature
- Serum progesterone measurements
- Endometrial biopsy
- Examination of cervical mucus
- Ultrasonography

- Hysterosalpingography
- Laparoscopy

### **3.4 Surgical treatment of infertility**

Treatment of varicocele in men is to remove obstruction by minimally invasive method in male or female, myomectomy, hysteroscopy or metroplasty in some anomalies, intrauterine synechia, septum or polyps hysteroscopy. In addition, in cases of endometriosis not resolved with medical treatment and retrogradation in extreme cases, laparotomy or laparoscopy is performed [1, 4, 26]. Tubal or pelvic causes caused by pelvic inflammatory disease (PID) can be corrected by microsurgical techniques or by performing laparotomy for the opening of pelvic adhesions [35]. To correct the coital factor, psychotherapy, sexual therapy, and artificial insemination are applied with sperm of partner [1].

## **4. Assisted reproduction techniques**

Assisted reproductive techniques are a general concept and include many methods. Assisted reproductive techniques (ART) are the names given to procedures performed following ovarian oocyte retrieval [9, 37, 38].

### **4.1 Intrauterine insemination (artificial insemination, IUI)**

The insertion of spermatozoa into the genital tract without coitus is called insemination. If the cervix is placed, that is, if cervical insemination is placed into the uterus cavity, it is called intrauterine insemination; and if placed in a peritoneal cavity, it is called peritoneal insemination. Insemination with sperm taken from a woman's wife is called homologous insemination, whereas insemination with sperm taken from another man is called insemination. There is no donor insemination (DI) in our country according to the law. The success rate for intrauterine insemination (IUI) is 10–15% [24, 39].

### **4.2 In vitro fertilization and embryo transfer (IVF-ET)**

The oocyte matured with a needle guided by laparoscopy or transcervical ultrasonography is aspirated from the ovary. Spermatozoids from the man are placed in tissue culture in the laboratory. After fertilization has occurred, the ovum is placed in the uterus of the embryo at the morula stage (4–16 cell stage) [1, 12, 24, 36, 40]. The optimal period for transfer is 48–72 h after insemination [2].

### **4.3 Gamete intrafallopian transfer (GIFT)**

The basic principle in the gamete intrafallopian transfer method is that eggs were developed by controlled hyperthermia and aspirated and put into the tuba ampulla with the sperm. In order to apply GIFT, it is necessary and sufficient that at least one tubane detected by permeability hysterosalpingography is open. The success rate in GIFT is 20–30% [3, 24, 39, 41]. Gamete intrafallopian transfer has the advantage over the IVF method; the reason for the application of the method under laparoscopy is that the 2-day laboratorial incubation period and the embryo's placement into the uterine cavity have been eliminated. The disadvantage of the method

is the individual must have to work fast during anesthesia and the application of the laboratory's method [26, 39].

#### 4.4 Intracytoplasmic sperm injection (microinjection, ICSI)

It is placed in the oocyte cytoplasm with a sperm micropipette. ICSI can be used not only in cases with very low sperm counts but also in gamete interferences in zona pellucida and vitelline membrane level. ICSI has also been used successfully in qualitative, functional sperm disorders and idiopathic infertility cases [24, 26, 42].

#### 4.5 Zygote intrafallopian transfer (ZIFT)

Oocyte and sperm are fertilized in vitro, and then zygote is injected into the tuba bulb by laparoscopy [24]. But this is not implemented today.

### 5. Assisted reproduction techniques and ethics

Thanks to advances in medical technology, people have had the opportunity to change this evil fate. As well as having evil in every good, the ART has brought religious, legal, and ethical problems together. The main opposition line against the ART is representative of religious traditions. The belief and acceptance system, which takes an important place in the formation of social consensus, derives from religious traditions [43].

Concentration of theologians and religious thinkers on the ethical and scientific aspects of assisted reproductive technology can be evaluated in four overlapping periods. The first period covers the mid-1960s. The initial debate is the defense of genetics and biologists who consider clearing the gene pool from defective genes through selected genotypes based on reproductive control, alternative ART, and cloning [44, 45]. Protestant Josef Fletcher, who participated in the debate in this period, defended the increase of control over human autonomy and human reproduction. Paul Ramsey, a Protestant, also treats the ART as a "border" and regards it as a situation that must be chosen between humanity and creation at risk. Ramsey predicted three horizontal (human-human) and two vertical (human-god) boundaries in the ART and defined them as the point of passage.

1. ART reproduction: (or tried to be) gene pool.
2. Second ART: it will include nontherapeutic research on unborn babies.
3. Third ART: it will transform "creation" into "reproductive" which will affect the parental concept, which will harm the unifying and creative aspects of the sexual outcome [44, 46].

Vertical boundaries are:

1. **Assisted reproduction:** he is carrying the sin of eternal vanity.
2. **Assisted reproduction:** The second period began in 1978 with two important events. The first in vitro fertilization product was published by Louise Brown and David Rorvik's book [44, 45]. The basis of ethical advocacy of assisted reproduction technology is the use of the reproductive right of the person. If a

person uses this right for contraception, he can also use it for the right to have children. The right to reproduction includes not only the “child” ownership of the person but also the physical and mental health of the child. If there is genetic disease that can be transmitted through the body, efforts to prevent this transmission are ethically and legally acceptable [29]. Adoptive adoption before the development of assisted reproduction technology appears to be a solution to the problem of infertile people, but it is inadequate especially in Muslim and Jewish societies when blood and neseben prevalence is considered and can cause psychological problems in parents and children. In Anatolia, an attempt was made to find a solution in the form of adoption of nests in the family by taking the blood-bondage and the neseben advantage of adoption. Adoption is the biological link that the ART can provide, and the lack of enthusiasm for having a child remains an undesirable option. In Islam, some schools ban men from adopting children, so that one can be regarded as someone other than his father [12].

One of the problems brought by assisted reproductive technology is who is the real parent of the child. Unless the third-party genetic material is used, there is no confusion in the concepts of mother and father. For this reason, the use of genetic material by third parties in the implementation of the ART in religious traditions and in the laws of most countries is not tolerated [46]. Religious traditions have emphasized the family institution and the sanctity of love. The unity of love and the creative nature manifest itself in the birth of a baby. The care and growth of this child belongs to the blessed family institution. Any event that will shake the structure of the family will affect the development of the child’s personality. Because ART will affect family morals and religious roles, the basic structure of the family will also be affected. The ART regulation in force in our country has only allowed married couples to serve this issue [47].

Some countries and regions have legally accepted sperm and oocyte donations. Artificial insemination donor “AID” is called artificial insemination applied with sperm supplied from sperm banks. In this case, the name of the donor is kept secret. With this technique, who will be the father of the child born after pregnancy? How much love can this child be able to adopt to his wife? If the spouses cannot agree and divorce, can the father-in-law reject the spouse? [8].

When assisted reproductive technology is applied, it may be the mechanization of sexual intercourse. The couple may look at treatment as a method against performance inadequacy, rather than just medical intervention, which can lead to feelings of guilt, unconscious indictments, and serious ego trauma in the responsible person [4]. With the material from the third person, with the help of the ART, it is possible to marry two brothers who are unaware of each other, which creates great danger for the generations. Maternity is one of the main causes in a woman’s life. Today, the definition of traditional motherhood, “giving birth to blood and bringing up children” has become debatable, and “bonding with love,” genetic motherhood has the same prescription [6]. For many, life begins with the fertilization of the egg; no matter how early the embryo is a human offspring. Putting him in a fridge like an inanimate object, doing experiments on it, and eventually throwing it in a waste basket is neither moral nor faithful [41, 48].

Oxford scientist Prof. Dr. Warnaeck reflected his worries: societies have some rules and boundaries about their lives and their treatment of their deaths, loyalty and respect, honor, and sexual life. These limits and rules may vary from community to community, as well as from time to time in the same community. However, if a society totally loses its own principles, this is the problem of morality for that society. For this reason, lawmakers, philosophers, and scholars limit new developments

[49]. Along with the development of in vitro fertilization techniques, problems such as the establishment of sperm banks, the beginning of sperm business, the surplus of frozen embryos, and rental motherhood have been accompanied. Companies selling egg cells, sperm-cell-trading companies, bring about results like desperately attempting to influence the gender of the fetus, big irregularities, children born disabled, or sexually ill. The most controversial issue arising from in vitro fertilization is the situation of fertilized egg. Collection of eggs occurs with oocyte pick-up (OPU) process. The chance of successful fertilization and cellular division is increasing statistically by taking more than one ovum and making more than one fertilization. With medical induction technique, more eggs are formed and several eggs are taken and fertilized. During the resetting procedure in practice, more than one fertilized egg is transferred to the offspring of the mother and this raises the risk of multiple pregnancies. Some problems arise during this process. Although the first problem requires a moral ground, this is the legal direction. The European Union is taking the protection of embryos in vitro through the 1997 Oviedo Convention on Human Rights. Accordingly, it is forbidden to produce human embryos for research purposes [52].

Contrary to organ donors, gamete donors are likely to survive when used for egg or sperm fertilization. It is not lawful to accept the right to use gamete cells as an acquired right as it is in fertilized human eggs. The donation of gametes used in fertilization from moral, religious, and social care should not be considered as an ordinary cell donation [53]. Religious views and beliefs constitute the moral foundations of society. The religious beliefs and beliefs of the community play an important role in the formation of social norms in almost all societies around the world. Social norms draw a basic philosophical framework of how life should be experienced. The fundamental resistance to the ART comes from religious men and thinkers. The reason is that assisted reproductive technology destroys ongoing social norms and assumptions [3, 9]. The tube was the ideal research material for embryo scientists in the refrigerator. Many dark spots of science have given birth to daylight. Thus, it is possible to examine the metabolism of the human embryo and to know which substances are useful and which substances are harmful [55]. Another fact that limits the ART is that individual benefit is the priority rather than social benefit. Preliminary screening of individual benefit is an effort to prevent genetic discrimination [46, 50, 51].

It is not possible to solve and clarify any complicated problems with animal experiments. Thalidomide, which is harmless in animals, was used in humans in the 1960s and caused the birth of thousands of people without sleeves [51]. Although the embryo is not legally regarded as a full personality, it must be treated with reverence. An inanimate object should be treated like a human fetus, not as a piece of furniture. Otherwise, this may slowly lead people to newborns, comatose patients, change their attitudes toward the elderly, and lose their respect. The embryo is mistaken to look like a complete human being. Moreover, it should not be forgotten that researches on embryos will make a great contribution to humanity. In this sense, it is not possible to give up. As technologists progress, customs do not always stay in the same place. Their change is also awaited [43]. This slogan "to play God" is most often and often expressed in the critique of medical developments. The concerns expressed with this slogan are very diverse. It is thought that people should not investigate the mysteries of life. The scientific explanations of these mysteries are: it can lead to the creation of a theology of thought that includes mysteries unexplainable in humans only by the concept of "God filling in the gaps" which is explained by the dogmas of religion [54].

Diseases related to sex can be prevented by performing gender determination in embryos, and the formation of mongol babies can be prevented by performing

chromosome examination. Improvement of metabolism has been detected at the growth phase of the embryo by reduction of the material called pyruvate. With the same experience, the penetrating ability of the sperm was multiplied and it is now possible to fertilize oligospermia cases with less than 2 million sperms in  $\text{cm}^3$  [46]. The embryos used in all these experiments also go to the waste basket. This is causing great objections. For many, life begins with the fertilization of your egg; no matter how early the embryo is human, the fetus [55]. IVF can lead to some dangerous developments, and these developments can be economic, esthetic, and political; for example, attempts to create superior races [51].

The evaluation of the effects of new techniques on subsequent generations is very important. This is investigated by studies on other species and investigated as limited use in clinical trials. Chromosomal assays in the 8-cell and blastocyst stage of the human embryo provide a new technique for evaluating the adverse effects of new techniques. The defense of the artificial nature of this new technique emphasizes that all medical treatments are artificial and aim at correcting the mistakes of nature [51].

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### **Author details**

Mehmet Musa Aslan

Department of Obstetrics and Gynecology, Sakarya University Education and Research Hospital, Sakarya, Turkey

\*Address all correspondence to: [jinopdrmma@gmail.com](mailto:jinopdrmma@gmail.com)

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