Artificial Reproductive Technology and Its Implication In The Offsprings Right to Know

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1 Introduction

Today, there exist unresolved questions on whether the offspring of assisted reproductive technologies should be informed about their conception. In recent years, there has been increased support in disclosing non-identifying information about donors to offspring upon request (Ethics Committee Report, 2004). There are various ethical dilemmas involved with assisted reproductive technology (ART). Some of those issues deal with parent-offspring relationships, disclosure information, the offsprings psychological identity, and the ethical, legal, and health implications of ART. The position presented in this article is that children produced via ART should be informed of the manner in which they were conceived and that this information should be provided to them at a young age for their future well-being.

2 Background

Assisted reproductive technology (ART) is a collection of various fertility techniques that involve the handling of eggs and sperm. The general procedure is to surgically extract a woman’s eggs from her ovaries and combine them with sperm in a laboratory. The embryos will then be implanted into the woman (Center for Disease Control and Prevention ART Report, 2004). Some ART techniques include in-vitro fertilization, donor insemination, and egg donation (see Appendix A). According to the World Health Organization and National Center of Health Statistics, between 8-10% of couples in developed countries have problems with infertility (Baby Center Medical Advisory Board, 2006). In-vitro fertilization pre-embryo transfer (IVF-ET) was first successfully performed in England in 1978 by the embryologist Dr. Robert Edwards and the gynecologist Dr. Patrick Steptoe. Infertility affects approximately 6.1 million people in United States. About 250,000 babies have been born through this process in the
U.S. alone (Georgia Reproductive Specialists, 2005). There are many patient and treatment characteristics that can influence success rate. These include: age (especially the woman’s eggs); reason for infertility; normalcy of the uterus; semen quality; history of previous births and miscarriages; previous ART cycles; number of embryos transferred; type of ART procedure used; and clinic size (CDCP, 2004; Jones Institute for Reproductive Medicine, 2006).

3 Issue of Disclosure

The Code of Practice of the Human Fertilization and Embryology Authority (HFEA) was established to implement laws when treatment with donated gametes was being licensed. One of their criteria for consideration was, “a child’s potential need to know about his or her origins” [50]. There are two important documents that have emerged since 2003 that provide assistance in clarifying this delicate issue. Both documents are reports from The Ethics Committee of the American Society for Reproductive Medicine, Birmingham, Alabama and are intended to give guidance to providers of assisted reproductive technology (ART), sperm banks, patients, and donors about the issues and concerns related to medical procedure. The first report in November 2003 report focus on the impact on offspring and family relationships when family members and surrogates are the donors:

“Children can never consent to the circumstances of their conception, even if they later become aware of them and suffer from conflicts or disruptions that those circumstances bring. The fear is that knowledge of the actual genetic relationships among the participants could contribute to a profoundly altered view of identity and family relationships....Medical and mental health professionals have raised concerns about the emotional consequences that could occur and have emphasized the need to pay special attention to the psychological needs of children born of such relationships (Ethics Committee of the American Society for Reproductive Medicine, 2003).”

The second report which followed in March 2004 focused on the merits of disclosure to the offspring. Furthermore, it gave suggestions about policies for ART programs and sperm banks. Although there were thirteen specific suggestions enumerated in the report, their opinions were summarized as follows:

“It is the recipient parents choice whether to disclose the fact of donor gamete conception to their offspring. Clinicians, mental health professionals, academics, and children themselves have in recent years called for more openness in donor conception in order to protect the interests of offspring. Because of persons fundamental interest in knowing their genetic heritage and the importance of their ability to make informed health care decisions in the future, the Ethics Committee supports disclosure.... the gathering and storage of medical and genetic information
Several studies have indicated that it is not common for parents to disclose the use of ART to the children that were conceived through this process. A study showed that 86.5% of the parents who conceived using donor insemination had not and did not have plans to tell their child how they were conceived and 40% had not told anyone, not even a close family member. Two published studies found that between 1980 and 1995, only 1-20% of parents planned to tell their child they used donor gametes to conceive (McGee et al., 2001; Patrizio, et al., 2001). This can pose a problem later in life when family medical history is needed in order to identify any possible health risks for the child. The medical needs of the child must also be taken into consideration when deciding whether to disclose their origin. A person's genetic history is critical information in diagnosing and treating certain diseases and making reproductive decisions. Some children will be unable to obtain their biological parents genetic history. This can lead to misdiagnosis which can cause the child to undergo unnecessary treatments or forego necessary treatments. Some have argued that parents should provide the correct genetic history of the donor on the child's medical records. This would allow the child to be adequately treated without requiring the parents to disclose the child's origin. For this reason, it is advised that children should be informed about their origins by their parents as early as possible. Waiting until adolescence or adulthood to tell the child about their origin can lead to a greater risk of psychological problems, low self-esteem and trust issues. Another reason to tell the child about their origin is their right to know. The Chair of the Committee of Inquiry into Human Fertilization and Embryology in England, Mary Warnock, upheld the right to know by saying, “with non-disclosure, the child is being used as a means to the parents end of having a normal family, and this can never be right (McGee et al., 2001).” Traditionally, adoption couples were advised not to tell the child about their origin. It was believed that secrecy was for the best interest of the child and telling the child would only complicate the child's life by confusing or upsetting them. Today, adoption couples are advised to tell the child of their origin. As a result, the advice is given to couples who conceive through the use of donor gametes. Currently, more attention and priority is being given to the rights of children conceived through ART.

Non-disclosure of a child's origin was also seen as a way to make sure that the child develops a strong bond with the non-genetic parent to maintain a 'normal' appearance within the family, to avoid upsetting the child with his/her true origin, and to keep the parents' infertility a secret. Additionally, non-disclosure is a way to preserve the unanimity of the donors identity. The donor can be unknown because of clinic confidentiality guidelines. This can prove difficult for the child who may want information about their identity and genetic origins. However, arguments have emerged against non-disclosure. It is claimed that family relationships can be negatively affected by non-disclosure. For example,
family tension is created when the environment is made uncomfortable due to the avoidance of giving true information about the child’s origin. Another example is that if the secret is kept from everyone, the parents will have no one to turn to for advice or support. Also, learning about the deceit can cause the child psychological distress. The child may learn of their origin during a family argument, a stressful situation, or from another person who was either told or accidentally found out.

3.1 Parent-Offspring Relationships

Fischer-Jeffes et al. showed that parents of ART and IVF children had various concerns and questions that were left unanswered. The families in the study were inquiring about how to tell their children about their conception. They asked for booklets or some information on how to do this. However, the research group did not have any of these resources at the time of their study. Thus, research is needed to understand and identify ills, harms, and identity issues resulting from these technologies.

A study on the first cohort of children created by IVF was published in Child Development in 2001 by Golombok et al. Such studies had been difficult to carry out because few IVF families existed with children that had already reached adolescence. In this particular study however, parent-child relationships and child psychological well-being in IVF families were compared to naturally conceiving families and adoptive parents. The results showed that IVF parents expressed greater warmth toward their children than parents of adoption and about the same warmth as naturally conceiving parents (Golombok et al., 2001). However, IVF mothers displayed less sensitivity when responding to their children than biological mothers (Golombok et al., 2001). Yet, IVF mothers were perceived to be more dependable than natural mothers (Golombok et al., 2001). Between all groups, no significant differences were seen in the occurrence of conflicts (Golombok et al., 2001). There were no differences in socio-emotional functioning across the different family types (Golombok et al., 2001).

A more recent study compared the differences of parents from in-vitro fertilization (IVF), donor insemination (DI), and egg donation families. This study found that women who received egg donations demonstrated significantly lower levels of sensitivity when responding to their children’s needs than mothers of DI children (Murray et al., 2006). Furthermore, DI mothers were significantly more emotionally involved with their children than egg donation mothers (Murray et al., 2006). This brings into light the possible harms resulting from detachment and over-attachment to the children in these families. It is important to note that children from egg donation families showed no psychological problems (Murray et al., 2006). No differences were found in school functioning or relationships of the children across the different family types. However, mothers perceptions of their ART-conceived children differed from those of natural conceiving mothers. Fisher-Jeffes et al. (2006) reference a previous study where IVF mothers perceived their children more vulnerable and special as compared...
to naturally conceiving mothers. They state that IVF mothers hold “unreasonable higher expectations for their children and parenthood in general.” They tend to overprotect their children and “infantilize” their children (Fisher-Jeffes et al., 2006). Thus these mothers may not promote the child’s own autonomy and create over-attachment issues in their lives.

3.2 Young-Aged ART Children

Another difference in parenting is that IVF parents are more likely to tell their children about their conception as opposed to DI or egg donation parents. This may be the case because both parents in IVF technology are biologically related to their children. On the other hand, since egg donation and DI parents do not contribute equally to the genetic makeup of the child, they may anticipate negative responses from the children upon disclosure. In a study by Murray et al., ART families who disclosed the information about conception stated “the child had a right to know about the circumstances surrounding his/her conception (2006).” Those that did not disclose the information held on to the belief that the disclosure of information had “possible negative effects on the child’s psychological well-being (Murray et al., 2006).” Research by Golombek et al. (2001) showed that IVF children informed of their conception did not exhibit disrupted psychological development during early adolescence. However, if the information is disclosed during early or late adulthood, feelings of hostility and loss of trustworthiness towards the parents develop (Turner, 2005; Murray, 2006). Coleman and Hendry (1990) showed that since “issues of identity become important in different stages of the child’s life, such as during adolescence, this can give rise to parent-child conflict. Copin and Soenen (2002) also reported that the IVF parents in their study who had informed their children of their conception displayed more difficult behavior as compared to children from IVF parents who had not disclosed the information. However, Snowden et al.’s (1983) study showed that the children were more likely to accept information about their conception if parents told them at an early age. Children tend to be generally accepting of such information when they are young (Murray et al., 2006) just as adopted children react positively to information regarding their adoption if the information is introduced early in their childhood. The primary concern with donors, surrogates, and children in intra-familial arrangements is the potential emotional and psychological impact the children may suffer as a result of the conflicts or disruptions brought about during adolescence and young adulthood. The Ethics Committee of the American Society for Reproductive Medicine (ASRM) warns that persons entering into these relationships should be especially sensitive to the social and psychological complications that might occur regarding disclosure and that they take special care to ensure the child’s welfare. The fear is that knowledge of the actual genetic relationship among the participants could contribute to a profoundly altered view of identity and family relationships [1]. For example, renowned developmental psychologist Erik Eriksons studies and research identified eight lifetime developmental stages, with adolescence being the fifth stage of development. He claims that in the adolescence state, there is
a struggle between ego identity that gives one a sense of individuality and role confusion. The development of a positive identity depends on support from significant groups like parents, family, peers, teachers, heroes. That support leads to a sense of coherent individuality that enables one to resolve one's conflicts adaptively. If adolescents fail to answer the question “Who Am I?” satisfactorily, they will suffer role confusion. Also, if they are not able to find a meaningful and significant adult role model, the unfavorable or deleterious effect will be an identity crisis—a transitory failure to establish a stable identity. It can be seen how disclosure during this state can affect identity profoundly.

3.3 Adult Identity Experiences

Many studies and reports have shown that donor offspring who learn of their genetic origin as adults have feelings of anger, resentment, and sense of loss. A study conducted in 2000 investigated the feelings of donor offspring who learned about their genetic origin as adults. The sample consisted of 13 males and 3 females between the ages of 26-55 years old. This study found that the majority of participants expressed mistrust toward their families, had negative self representation, suffered from a loss of identity, felt frustration about having to search for their biological parent, felt that their life was lies, and felt a need to talk about their experience with someone close. Shock was expressed by many participants when they learned they were donor offspring. For example, one participant stated, “In the following weeks I began to question my existence.” Another participant stated, “I felt my entire life was based on a lie and I was furious with my mother for dying with this secret.” All but one of the participants felt as though they needed to know about their genetic origins. All of the donor offspring expressed interest in searching for their biological parent. However, some felt alone in their search for information. Some looked for support from other donor offspring. For example, one participant searched for other donor offspring around the world, “this connection with others was a surprise and gave me confidence to continue and validate my search (Turner & Coyle, 2000).” Nevertheless, many adult donor offspring wished they had been told much earlier about their genetic origin. A shared belief among donor offspring was that no one thought they were important enough to keep accurate records about their origin. In addition, they felt the system was designed to deliberately deceive them and make it impractical for them to ever know their genetic origin (McWhinnie, 2001).

3.4 The Offspring’s Right to Know Their Genetic Identity

Traditionally, assisted human reproduction by gamete donation has been an anonymous procedure. Strict donor anonymity ensured that both donor offspring and their birth parents would never know the identity of the donor(s) (Johnston, 2003). However, recent findings suggest a desire for more donor information among recipients, adult offspring, and parents wanting to give their children the option of identifying and possibly meeting the donor. Nonetheless, it is not clear
whether parents are more likely to tell their children about their conception when they have an open-identity donor as opposed to anonymous donor (Scheib et al., 2003). Whether offspring have a right to know the identity of their gamete donors is a highly debated issue. The main problems associated with the practice of ART and children’s identity rights are: the regulation of the practice or ART; the rights of children’s; the rights of donors; the rights and obligations of the social parents; and the storage and availability of donor records by sperm centers and physicians performing ART.

Some countries have legislated over these issues but there are several conflicts. On the one hand, some laws protect the children’s right to know about their biological parents. On the other hand, there are also some laws that protect the anonymity of donors. Furthermore, in many countries, legislation concerning the practice of ART does not exist. The revelation of children’s origin involves a combination of factors. The children’s right to know is unquestionable. The problem lies in that there are not enough laws to regulate ART. In countries where there are laws to regulate the use of ART, the donors anonymity is protected. In countries where there is an option decide between anonymous and non-anonymous donation, parents may choose not to notify the children of their origins. In cases where parents want to notify their children about their origin, there may be no access to information either because the clinics/ART centers do not have that information or because of their regulations and policies on anonymity does not allow them to disclose such information. Thus, it is important to try to resolve these conflicts as soon as possible in order to protect the rights of those human beings involved in the practice of ART.

### 3.5 The Children’s Rights

Many societies are now placing greater emphasis on children’s rights than in the past. For example, the United Nations’ Convention on the Rights of the Child was, for example, the most rapidly signed international convention on human rights [?], et al. One of the rights the document views as fundamental is the right to know one’s parents (Article Seven). This has been interpreted as a child’s right to know the identity of his or her gamete donor [?], but the justification for such rights is contentious because the conventions on child and human rights were not written with gamete donation in mind. The Council of Europe has stated that, “It is not possible at the present moment to draw decisive arguments from the Convention for the Protection of Human Rights and Fundamental Freedoms either in favor or against the anonymity of donors” (Council of Europe, 1989, in Frith, 2007).

On the other hand, The United Nations Convention on the Rights of The Child (UNCRC), Law 23.849 in Art. 8 commits States Parties, “to respect the right of the child to preserve his or her identity,” and to provide “assistance and protection” when a child is deprived of “some or all of the elements of his or her identity” ([48], [43], [6, 7]. This includes nationality, name, and family member relationships [43]. Other relevant articles prevent discrimination (Art. 2), separation from parents except when necessary for the child’s best interest
(Art. 9), and interference with privacy, family and home (Art. 16). The UNCRC was unanimously adopted by the UN General Assembly in 1989, ratified by Canada in 1991, and was recognized by the Supreme Court of Canada as “the most universally accepted human rights instrument in history.” The laws or regulations that purposely deny offspring access to identifying information about their biological parents violate the UNCRC. For example, Article 8 requires legislation to provide the offspring with information relevant to his/her genetic identity by opening previously sealed records. Also, Articles 9 and 16 facilitate meetings between donor offspring and genetic relatives (Shanner, 2003).

3.6 Regulation of the practice of ART

There is an ongoing debate in society, especially among members of the medical profession, as to the necessity for jurisdiction, regulations, and public control of the practice of ART. At present, the majority of centers in Europe do not have established legislation pertaining to the various aspects of the practice of ART. It is assumed that this is because the law tends to lag behind social changes and scientific achievements. Regulations through the process of law arise from two sources: statutes and judge-made law. Statutes are decided upon by legislatures. Judge-made laws develop either from the courts which are called to interpret and apply written law or, where such law does not exist, by use of analogy to other similar cases. The issue of ART has received attention in the parliamentary assembly of the Council of Europe. However, not enough agreement has been achieved for the Committee of Ministers to draft a legal instrument addressing ART (Council of Europe, 1990 in Schenker, 1997). On the other hand, some countries in Europe have been creating laws regarding ART since 1985. They are currently working on the adaptation of these laws to new situations and trying to clarify the application of law in controversial situations involving ART (Schenker, 1997; Garcia, 2004). However, in other countries, legislation concerning the practice of ART does not yet exist. Still, in other countries, there are not enough laws to regulate ART. Where there is regulation, it is solely based on the ethical conduct of professionals because it is a newly introduced technology. Although ART can be practiced in several countries, it leads to strong political, social, religious and ethical dilemmas. For these reasons, governments consider ART a delicate issue and, therefore prefer to adopt an external legislature on the topic (Schenker, 1997; Sartori, 2007). At present, legislation regarding ART exists in only 10 countries in Europe (Appendix B) (Schenker, 1997). In the U.S., there is only one federal statute that aims at the regulation of assisted reproduction—the Fertility Clinic Success Rate and Certification Act of 1992. In Canada, there is a new Assisted Human Reproduction Act (AHRA) of 2004 that has been considered to constitute a successful legislation on human genetic and reproductive technologies (Soini, et al., 2006).
3.7 The Rights of Donors-Why Anonymity?

The 1990 Human Fertilization and Embryology Act stipulated that gamete donation should be anonymous. That is, the identity of the donor cannot be given to either the donors offspring or the couple receiving the gametes (Frith, 2001). The Council of Europe recommends that all precautions should be taken to keep secret the identity of all the parties involved. Furthermore, the identity of the donor must never be revealed even in court. At present, the trend is that the child should be informed by his parents of his conception by ART (Frith, 2001). Donor anonymity could be seen as a necessary practice both to protect the donor from paternal responsibility and allow the recipient parental rights (Frith, 2001). The donor has no rights, obligations or interest with regard to the child born as result of ART. In cases of sperm donation, the need for formal consent by the husband or co-habitant of the recipient is more prominent. The consenting husband is listed on the birth certificate as the father and has the full rights and duties for rearing the child so that the offspring becomes his legitimate children (Schenker, 1997). Furthermore, the rights of the donor could be threatened by a policy that enforced non-anonymous gamete donation. In a robust system of gamete donation, donors should fully give informed consent to the donation taking into consideration the possibility that they could, in the future, be identified by any offspring. If they do not wish to contribute non-anonymously, it is their prerogative to decline donation (Frith, 2007; Frith, 2001). Although a policy of non-anonymous donations may help create a culture in which more parents feel capable of telling their children of about the nature of their conceptions, it provides no guarantee that all children will receive such information. If it is perceived that knowledge of one’s genetic inheritance is indeed a fundamental right, then it is unsatisfactory to leave such a decision solely to the parents discretion (Frith, 2001). Thus, a policy of donor secrecy denies individual and familial autonomy on these intimate relationships, violates the human rights of children to know their full identity, creates discriminatory categories among offspring (i.e. donor offspring, egg donation offspring, donor insemination offspring), violates the privacy rights of offspring (and perhaps others), and violates the commitment in Bill C-13 to the protection of children. There is simply no evidence that anonymity is in the child’s best interests. The preferences of procreating adults cannot be considered a compelling justification for such grave systemic injustices to these children (Shanner, 2003).

3.8 Problem of Record Information

There are many reasons why the donor’s anonymity is not in the child’s interest. First, each individual has the right to know his or her origin, and, second, there are certain medical conditions for which it is vital to have important medical or genetic information concerning the parents of a patient. Such information is missing for a child conceived with donor’s spermatozoa when the donor is anonymous. This obstacle has been overcome in many cases by record keeping and informing the child that he was born following sperm donation. However,
today, donor preferences within a system offer the choice between an anonymous and identity-registered donor.

3.9 International Trends

Internationally, the vast majority of countries endorse anonymous gamete donation (see Table III Appendix B) (Frith, 2001). Some countries such as France, Denmark, and Norway do not allow for donor offspring to obtain any information about their conception (Council of Europe, 1998 in Frith, 2001). There has, however, recently been a trend towards allowing children access to identifying information about their gamete donor (Penning, 1997 in Frith, 2001). The first country to remove the anonymity of gamete donors was Sweden in 1984. Law No. 1140 allowed children, when sufficiently mature, to find out the identity of their sperm donors. Austria also allowed children to gain identifying information following the passing of federal legislation on medically assisted procreation, law no. 275. These laws only concerned sperm donation. Sweden and Austria do not allow egg donation. In 1992, Switzerland incorporated a new article into its constitution to guarantee the ART child has “access to data concerning his/her lineage.” This entitles him/her to receive identifying information about his/her donor. Two Australian jurisdictions have recently reviewed the issue and modified the system to allow for the anonymous and non-anonymous options of the donor (Frith, 2001). Following this tendency, many countries have started to outline their regulation on secrecy to ensure the right of children to know their origin, lineage and donors. Appendix B shows the main European countries legislation about the donors anonymity options (Frith, 2001).

Brewaeys et al. (2005) showed that there is a tendency for couples that use ART to choose a non-anonymous donor which is usually a family member or close friend. The study found that 63% of heterosexual couples and 98% of lesbian couples preferred identifiable donors. Motives for choosing an identifiable donor did not differ between heterosexual and lesbian couples. The great majority pointed to “the right of the child” to know their genetic origins. However, recipients differed in the importance attached to identifying donor information. For some, DI would not have been an option if only anonymous donors were available. For others, anonymity was not a preferred choice. All couples realized that their interests differed from their child’s. Although the majority of future parents expressed the wish not to become involved with the donor, they decided that it was not for them to hinder the child’s access to donor information (Brewaeys et al., 2005).

Another vital basis in support for having a good system of records and registration is the importance of knowing one’s genetic heritage for health reasons, particularly in light of the growing focus on the genetic cause of diseases (i.e. Human Genome Project). Few countries polices have addressed procedures for acquiring information about donors such as their genetic predisposition for disease. For example, in Denmark, the National Board of Health has issued guidelines for the tests a donor must undergo before the use of his sperm. These include
tests for HIV, syphilis, gonorrhea, and hereditary disorders that can be detected (Soini, et al., 2006).

The policies regarding donation vary from country to country. In developed countries where ART is practiced, laws concerning systems of records and registration of donor’s information are being improved. In developing countries, the dimensions of this problem are beginning to be known. These countries choose to adopt external laws and legislation that concern ART (Frith, 2001; Schenker, 1997).

3.10 Conclusion

The argument that children created by assisted reproductive techniques should be informed about the nature of their conception early in life is supported by the research conducted on ART offspring and families. The reasons for supporting disclosure of such information is based on the well-being of the children themselves, their development of a strong sense of self and identity, their right to access important health information about their genes, family history, etc., and the fundamental human right the children have to information about their origin. Parents fear disclosing information regarding ART to their children because they wish to prevent possible psychological and identity problems. However, they need to understand that they may harm their children more and may cause those very problems by withholding such information. Thus, it is crucial for parents to take into consideration all health risks, psychological identity issues, and emotional responses of children created by ART before deciding to fulfill their want of having children via ART.

References

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Appendix A

– Assisted reproductive technologies (ART) have three main techniques for assisted reproduction: Sperm donation, ovum donation, and embryo donation (Schenker, 1997; [?]; Frith, 2001).

– Sperm donation: Artificial insemination by donor (AID) for humans was introduced into medical practice in the 1930s (McWhinnie, 2001). AID is indicated in cases of male infertility or when the husband is a carrier of serious inherited diseases or abnormality (Schenker, 1995b in Schenker, 1997; [?]; Frith, 2001). The practice of AID is opposed by many religions and is not morally acceptable to all infertile couples or their physicians. Many countries in Europe in which AID is practiced do not have specific legislation on this matter. In countries where ART is available to single women, AID is allowed (Schenker, 1997; Frith, 2001).

– Ovum donation and ART: Patients requiring oocyte donation fall into two major categories (Schenker, 1991, in Schenker, 1997; [?]): (i) women with ovarian failure and (ii) women with loss of gonadal function. It seems that, where AID is already accepted, oocyte donation should not constitute any ethical problem. Oocyte donation has an advantage over AID in that both the infertile woman and the husband or partner contributes to the birth of the child. Furthermore, from the point of law, oocyte donation can be dealt with in the same manner as AID. In all countries in Europe the oocyte donor has no rights or obligations with respect to the child (Schenker, 1997, [?]).

– Embryo donation: The issue of embryo donation is more complicated than that of sperm or oocyte donation since there is no direct link between the embryo and the future rearing parents, even though there will be a gestational
link. In embryo donation the relationship is analogous to that of adoption, and the only difference is the time at which adoption occurs. The donors are not informed of the outcome of their donation, and they will not have any knowledge or control over the child who is their genetic offspring (Schenker, 1997).

– In vitro fertilization (IVF) One of the most commonly used procedures, eggs are extracted and combined with sperm in a laboratory. The produced embryo(s) develop for 3 to 5 days and are placed in the woman’s uterus through the cervix.

– Intracytoplasmic sperm injection (ICSI) The sperm is directly injected into the woman’s egg. The resulting embryo is placed in the woman’s uterus.

– Gamete intrafallopian transfer (GIFT) The eggs are combined with the sperm in a laboratory. Using a laparoscope or fiber-thin tube, the egg and sperm combination are placed in the woman’s fallopian tubes. As a result, fertilization and implantation occur naturally inside the body.