ABSTRACT

The evolving concept of “family” reflects contemporary social changes, influenced by historical and cultural shifts. This review explores unconventional family models, focusing on same-sex families, particularly female same-sex couples. As advancements in assisted reproductive techniques (ART) empower these couples, the Reception of Oocytes from Partner (ROPA) method gains popularity. ROPA involves active participation of both partners in conception, with one as the oocyte provider and the other as the gestational mother. This review delves into clinical, ethical, and psychosocial aspects of ROPA, comparing it with other ART options like donor intrauterine insemination (DIUI) or in vitro fertilization (IVF). A comprehensive bibliographic search conducted in 2023 forms the basis of this exploration. Historical perspectives on ART’s acceptance for same-sex couples, legislative changes, and global variations in donor anonymity are discussed. The ROPA method's procedural details, including donor selection and the roles of the genetic and gestational mothers, are outlined. The review also emphasizes the impact of donor anonymity laws on decision-making. Roles and responsibilities in the ROPA method are explored, with a focus on the reciprocal and reverse ROPA approaches. Medical indications, potential benefits, and the impact on obstetric risks are scrutinized. The review concludes with insights into motherhood in female same-sex couples, highlighting the prevalence of children raised in such families across diverse regions in the United States. This comprehensive examination aims to provide practitioners and patients with valuable insights into the clinical, ethical, and psychosocial dimensions of the ROPA method, fostering a better understanding of its advantages in comparison to other ART options.

KEYWORDS: ROPA method in lesbian couples. Reception of oocytes from partner. In vitro fertilization with reception of oocytes from partner.

MANUSCRIPT

Introduction

Over the years, the concept of “family” has evolved; largely due to social changes, but also to the historical and cultural moment we are living. Family models in modern society or unconventional families range from those composed of single parents by choice (single-parent families), families with children from different partners, reconstituted families resulting from divorce or remarriage (reconstituted families) to families composed of same-sex couples (same-sex families)\(^1\). Same-sex families may consist of two men or two women. Similarly, the couple may live...
alone, with their own children, adopted children, or children conceived through assisted reproductive techniques (ART) or through alternative routes to procreation within the framework of a conventional couple\(^1\). Thanks to advances in ART, same-sex couples seeking to form a family have benefited, and as a result, social acceptance is increasing; with this, the concepts of paternity and maternity have been redefined\(^3\).

Female same-sex couples face a biological necessity when seeking motherhood, which is the need to use donor sperm to achieve the formation of a zygote\(^3\). Because of this, nowadays female same-sex parent families can choose to undergo donor intrauterine insemination (DIUI) or pursuing ART such as in vitro fertilization (IVF)\(^3\). Although both partners have the potential to be birth mothers, in most cases, only one of the women desires to become pregnant by donating the oocytes and carrying the pregnancy. However, the non-genetic partner in the couple is limited in actively and biologically participating in the pregnancy\(^3\).

Reception of Oocytes from Partner (ROPA) method consists of an ART for female couples in which both women take an active role in the conception of the newborn\(^3,4\). One partner is the oocyte provider (genetic mother) and the other receives the embryo and carries the pregnancy (gestational mother)\(^3,4\). These method is also called co-in vitro fertilization (Co-IVF), lesbian shared IVF, intrapartner oocyte donation, shared motherhood IVF\(^3\).

**Objective**

In recent years, ROPA treatment has become increasingly accepted among practitioners and patients. Since ROPA offers certain advantages over other ART for female couples, the aim of this work is to review the clinical, ethical, and psychosocial aspects of ROPA method that motivate more female couples to choose this ART versus DIUI or IVF.

**Methods**

A bibliographic search was conducted in July 2023 on electronic databases, Medline (PubMed) and Google Scholar that included information about the ROPA method in female same-sex couples. The first search included articles on new family models, homoparental families, assisted reproductive techniques in same-sex couples and subsequently, articles on the ROPA method in female same-sex couples.

The keywords used in the search were the following: "nuevos modelos familiares", "new family models", "homoparenthood" "homoparental families", "ART in same-sex couples", "ART in lesbian couples", "ROPA method in lesbian couples", "ROPA method", "shared motherhood", "reciprocal ivf", "reciprocal in vitro fertilization", "assisted reproduction in lesbians", "ROPA method in lesbian couples", "reception of oocytes from partner", "in vitro fertilization with reception of oocytes from partner". Publications in both English and Spanish were included, without a date limit. Neither was any type or design of publication excluded since the literature published so far on the subject is somewhat limited. In addition, the references of the selected articles were reviewed since articles with relevant information were included.

**Results**

**Assisted Reproductive Techniques Throughout History**

Some theories propose that the environment in which children of same-sex families are born may not be suitable for them, which is why for a long time, female couples were denied access to intrauterine insemination (IUI), donor sperm insemination (DSI), and other assisted reproductive techniques (ART)\(^5\). The first sperm bank in Spain was established in 1977 with the goal of studying and treating reproductive issues in both men and women, mainly to be able to give life\(^6\). In 1990, in the United Kingdom, thanks to the Human Fertilization and Embryology Act, female couples achieved greater reproductive equality with access to donor sperm insemination (DSI) and egg donation (ED)\(^2\). In Spain, in 2005, with the "Equal Marriage" Law (Ley 13/2005), the rights of homosexual couples were equalized with those of heterosexual couples\(^6\). In 2010, Australia and New Zealand implemented the Assisted Reproductive Treatment Act, which allowed single women and female couples to access fertility treatment and assisted reproduction\(^7\). In 2013, the American Society for Reproductive Medicine established that access to reproductive technologies should not be restricted based on sexual orientation or marital status\(^7\). In 2015, the U.S. Supreme Court also legalized same-sex marriage\(^7\). Thanks to these advancements, it's possible nowadays for both women in a same-sex couple to biologically participate in pregnancy: one providing the eggs (donor, egg donor, partner donor, or genetic mother) fertilized with donor sperm, and the other receiving the embryos and gestating them (recipient, gestational partner, or gestational mother)\(^8,9\). This method of reproduction is known as Reception of Oocytes from Partner (ROPA), in vitro fertilization (IVF) with Reception of Ova from Partner (ROPA), or co-IVF, and was first described in 2010\(^6,8\).

**ROPA Method**

The ROPA method consists of performing controlled ovarian stimulation and ovarian puncture on
the genetic mother; subsequently IVF with an anonymous or known donor in accordance with the legislation of the country where the procedure is carried out(10). Once the eggs are fertilized, the embryos are left in culture(10). The gestational mother undergoes a different hormonal treatment to prepare the uterine lining(10). Once 3 to 5 days of embryonic development have elapsed, the best quality embryos are selected using the morphological assessment criteria (ASEBIR). Subsequently, the embryo transfer is performed to the gestational mother, followed by a pregnancy test(10).

**Donor Selection**

One of the most important decisions facing women in a couple is determining whether they will use an anonymous or known sperm donor. In Spain, for example, children born from donors do not have access to the donor’s identity, as anonymity is in effect. This emphasizes the significance of considering local laws and regulations when making decisions in the assisted reproductive process. The choice may depend on personal preferences, values, and how the couple envisions communicating with the child about their genetic origin in the future(11). Law 2006/14 on assisted reproduction techniques mentions that: “The choice of the sperm donor can only be made by the medical team that applies the technique, which must preserve the conditions of anonymity of the donation. Under no circumstances may the donor be personally selected at the request of the recipient. In any case, the corresponding medical team must try to guarantee the greatest possible phenotypic and immunological similarity of the available samples with the recipient woman”(12).

Just like in Spain, anonymity is also considered in the legislation of several European countries such as Denmark, Greece, the Czech Republic, Bulgaria, and France(11). In South America, countries like Brazil, in resolution 2013/13 of the Federal Council of Medicine, also state that maintaining the anonymity of donors is mandatory, except for medical reasons that may require disclosure(13). Likewise, Uruguay's Assisted Reproduction Act 19,167 of 2013, in its article 12, establishes that: “Gamete donation will be anonymous and altruistic, ensuring the confidentiality of the identity data of the donors”(12). In Argentina, donation is generally anonymous, although under circumstances, the identity of the donor may be revealed(15). In Mexico, it is also required that donor information regarding their identity be kept confidential(14). On the other hand, more and more people born with IAD demand the right to know their biological origin(11). Therefore, several countries have chosen to lift anonymity. Sweden, in 1984, was the first country to do so(11). In 2005, the United Kingdom also lifted its anonymity and later countries such as Austria, Switzerland, the Netherlands, Norway, and Finland joined in(11). Other countries, such as Iceland and Belgium, for example, contemplate a two-way approach in which donors are allowed to decide whether to remain anonymous(11). There is a strong debate between revealing the identity of the donor or not, as some opinions affirm that the person born by this method has the right to know all the data related to the circumstances of his or her birth(11); furthermore, as mentioned by Hayman, et al. In a study of 15 female couples in Australia, participants who chose a known donor did so because they considered it important that the child would have the possibility of fostering a relationship with the donor in the future(15). The fact that this communication exists between the women of the couple and the children generates a closer bond of trust in the relationship and prevents the child from obtaining the same information in another way in the future, whether through third parties, conversations and/or family documents(11). On the other hand, known donors have the possibility of providing support in medical circumstances such as organ donation and transplantation or simply serving as an additional caregiver(11).

**Roles and Responsibilities in ROPA Method**

Some women completely reject the idea of gestating and taking on that role in the partnership, despite their physiological ability to conceive(15). However, in the context of ART for homosexual couples, when there is the same desire of both women to be a mother, the couple must make the decision as to which woman will be the surrogate. And in many cases that decision is difficult. One of the most important advantages that the ROPA method offers is allowing women to share biological motherhood, since both women can take an active role in the conception of the newborn. One of the women will be the egg donor and the other will be the recipient and gestate the embryos. However, the two women can play both roles; either at the same time, which is known as reciprocal ROPA, or after an unsuccessful cycle they can reverse the roles to try to improve results, which is known as reverse ROPA(16). Women's personal desire to become pregnant is one of the motivations for sharing biological motherhood; Dondorp, De Wert and Janssens (2010) mention that the method can strengthen the bond between the couple or can improve the couple's sense of security in a complicated social environment, thus improving the couple's general well-being(17). On the other hand, the ROPA method allows the couple to choose the partner with the best reproductive prognosis at ovarian and uterine conditions, potentially reducing obstetric risks(16). Some medical indications for this method include poor egg quality, low ovarian reserve, or a higher genetic risk in one of the women, which may make her a suitable gestational mother(16,18). Alternatively, if one of the women has a medical
condition that contraindicates pregnancy or prevents gestation, she could solely become the genetic mother\(^\[16\]\). Additionally, ROPA can be useful in cases involving transgender patients who underwent gender reassignment after fertility preservation\(^\[16\]\).

**Motherhood in Female Homosexual Couples**

According to the 2000 U.S. Census, in at least 96% of municipalities, children are being raised in same-sex parent families\(^\[19\]\). Nationally, approximately 34% of female same-sex couples have children\(^\[19\]\). Mississippi (43.8%), South Dakota and Utah (42.3%) each, and Texas (40.9%) are the states with the highest percentage of lesbian women raising children\(^\[19\]\).

**Conclusion**

In recent years, the evolving concept of “family” has witnessed a transformation, with diverse family structures emerging in response to social, historical, and cultural shifts. Among these, same-sex families, particularly those consisting of female couples, have seen notable changes, thanks to advancements in assisted reproductive techniques (ART). The Reception of Oocytes from Partner (ROPA) method, a form of in vitro fertilization (IVF) where both partners actively contribute to the conception process, has gained acceptance among practitioners and patients.

This review explores the clinical, ethical, and psychosocial aspects of the ROPA method, shedding light on its advantages over other ART options for female couples. The ROPA method allows both women to play distinct yet vital roles in the reproductive journey, addressing the biological necessity faced by female same-sex couples seeking motherhood. The process involves controlled ovarian stimulation, IVF with donor sperm, embryo transfer to the gestational mother, and subsequent pregnancy.

The critical decision of selecting a donor—whether anonymous or known—is influenced by legal considerations and personal preferences. The review emphasizes the importance of understanding local laws, as anonymity rules vary among countries. The ongoing debate on donor anonymity reflects a balance between the right to privacy and the growing demand for knowledge of biological origins.

Roles and responsibilities in the ROPA method provide unique flexibility, allowing couples to share biological motherhood. The option for reciprocal ROPA or reverse ROPA, based on individual desires and medical considerations, adds to the method’s appeal. Beyond enhancing the bond between partners, the ROPA method addresses medical indications, such as poor egg quality or higher genetic risk, offering a tailored approach to reproductive challenges.

In conclusion, the ROPA method represents a significant advancement in assisted reproduction for female same-sex couples, fostering inclusivity and providing a framework that aligns with changing societal norms. As acceptance grows, the ROPA method continues to contribute to reshaping the landscape of modern families, allowing for shared biological motherhood and personalized reproductive choices.

**FUNDING**

No external funding was either sought or obtained for this study.

**CONFLICT OF INTEREST**

The authors declare they have no conflict of interest.


