

Advanced Maternal Age and its Impact on Egg Quality in IVF

Kleii Nysio*

Department of Gynaecology and Obstetrics, University Libre de Bruxelles, Brussels, Belgium

ABOUT THE STUDY

In this area of Assisted Reproductive Technologies (ART), *In Vitro* Fertilization (IVF) has transformed the environment of fertility treatments, giving hope to couples facing difficulties in conceiving. However, one of the serious challenges found in the IVF journey is poor egg quality, a factor that considerably influences the success of the procedure. Egg quality is a key determinant in the success of IVF, as it directly influences fertilization, embryo development, and implantation. The term "egg quality" refers to the health and capability of an egg, which is fundamental for the formation of a healthy embryo. High-quality eggs have the potential to undergo successful fertilization, division into a blastocyst, and subsequent implantation in the uterus. Poor egg quality can delay these processes, leading to failed fertilization, developmental abnormalities, or early pregnancy loss.

Causes of poor egg quality in IVF

Advanced maternal age: One of the most well-established factors influencing egg quality is maternal age. As women age increases, the quantity and quality of their ovarian eggs decline. The decline in egg quality becomes more distinct after the age of 35 and accelerates in the late 30s and early 40s. Advanced maternal age is associated with an increased risk of chromosomal abnormalities in eggs, leading to a higher chances of failed fertilization, miscarriage, or the birth of a child with genetic disorders.

Chromosomal abnormalities: Chromosomal abnormalities within the egg can impact its quality. Errors in chromosomal alignment during egg maturation or fertilization can lead to aneuploidy, a condition where the egg has an abnormal number of chromosomes. Aneuploidy eggs are less likely to result in a possible pregnancy, and their frequency increases with maternal age.

Ovarian reserve depletion: The ovarian reserve, which represents

the number of eggs a woman has, naturally reduces over time. Premature ovarian aging or conditions like Polycystic Ovary Syndrome (PCOS) can accelerate this process, leading to a reduced quantity of eggs of lower quality. Women with weakened ovarian reserve may experience challenges in producing high-quality eggs for successful IVF.

Hormonal imbalances: Disruptions in hormonal balance, including irregularities in the Follicle Stimulating Hormone (FSH), Luteinizing Hormone (LH), and estradiol, can impact egg quality. Hormonal imbalances may interfere with the normal maturation of eggs within the ovarian follicles, affecting their ability to undergo successful fertilization and early developmental stages.

Environmental and lifestyle factors: External factors such as exposure to environmental toxins, smoking, excessive alcohol consumption, and a poor diet can negatively influence egg quality. Environmental pollutants, stress, and an unhealthy lifestyle can create oxidative stress within the ovaries, leading to damage to the eggs and their surrounding cellular environment.

Endometriosis: Endometriosis, a condition where tissue similar to the lining of the uterus grows outside the uterus, may negatively impact egg quality. The inflammatory environment created by endometriosis can affect the ovaries and the eggs, leading to reduced egg quality and damaging the chances of successful fertilization.

Genetic factors: In some cases, genetic factors may contribute to poor egg quality. Variations in genes involved in the regulation of ovarian function, egg maturation, and fertilization can impact the overall quality of eggs. Genetic testing may provide understandings into specific factors influencing egg quality and guide personalized treatment approaches.

Addressing poor egg quality in IVF

Pre-implantation Genetic Testing (PGT): PGT, earlier known as Pre-implantation Genetic Screening (PGS), is a technique that

Correspondence to: Kleii Nysio, Department of Gynaecology and Obstetrics, University Libre de Bruxelles, Brussels, Belgium, E-mail: knysio@gmail.com

Received: 25-Oct-2023, Manuscript No. JFIV-23-28344; **Editor assigned:** 27-Oct-2023; PreQc No. JFIV-23-28344 (PQ); **Reviewed:** 10-Nov-2023, Qc No. JFIV-23-28344; **Revised:** 17-Nov-2023, Manuscript No. JFIV-23-28344 (R); **Published:** 24-Nov-2023, DOI: 10.35248/2375-4508.23.11.336

Citation: Nysio K (2023) Advanced Maternal Age and its Impact on Egg Quality in IVF. *J Fertil In vitro IVF Worldw Reprod Med Gent Stem Cell Biol.* 11.336

Copyright: © 2023 Nysio K. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

allows for the screening of embryos for chromosomal abnormalities before implantation. By selecting embryos with the correct number of chromosomes, the chances of successful implantation and a healthy pregnancy are increased, particularly for women with advanced maternal age or a history of frequent pregnancy loss.

Ovarian stimulation protocols: Optimizing ovarian stimulation protocols is important for recovering a sufficient number of high-quality eggs. Modifying the stimulation procedure based on a woman's age, ovarian reserve, and response to previous treatments can increase the chances of obtaining optimal eggs for fertilization.

Egg freezing (Oocyte cryopreservation): Egg freezing allows women to preserve their eggs at a younger age when egg quality is typically higher. By freezing eggs for future use, women can reduce the impact of age-related decline and increase the probability of successful IVF when they decide to follow fertility treatment.

Lifestyle modifications: Encouraging lifestyle modifications, such as maintaining a healthy diet, exercising regularly, and

avoiding harmful substances, can positively influence egg quality. Sufficient nutrition, proper hydration, and stress management contribute to overall reproductive health and may improve the chances of successful IVF.

CONCLUSION

The recreation of parenthood through IVF is a journey made with hope, resilience, and challenges. Poor egg quality represents a major difficulty in this journey, impacting the success of IVF cycles. Understanding the diverse factors contributing to poor egg quality is essential for both healthcare providers and individuals seeking fertility treatments. By adopting a complete and personalized approach, fertility specialists can address specific challenges, improve treatment protocols, and guide patients toward informed decisions. As research continues to analyze the complexities of egg quality in IVF, the field of reproductive medicine holds possibilities for advancements that may further develop the opportunities of successful conception for those facing this particular challenge.