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DOES LONG-TERM STORAGE COMPROMISE THE REPRODUCTIVE POTENTIAL OF RE-WARMED VITRIFIED EUPLOID BLASTOCYSTS?

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Title:

DOES LONG-TERM STORAGE COMPROMISE THE REPRODUCTIVE POTENTIAL OF RE-WARMED VITRIFIED EUPLOID BLASTOCYSTS?

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Preferred Presentation Type:

Oral or Poster

Study Type:

Retrospective Cohort Study (includes comparator groups)

Category - Subcategory(ies):

ART: Clinical

ART: Outcomes

Funding:

NA

References:

1. Zhan S, Lin C, Lin Q, Gan J, Wang C, Luo Y, Liu J, Du H, Liu H. Vitrification preservation of good-quality blastocysts for more than 5 years reduces implantation and live birth rates. Hum Reprod. 2024 Sep 1;39(9):1960-1968. doi: 10.1093/humrep/deae150.

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Trainee: Yes

Abstract Category:

All Other Categories

Applied for the In-Training Award for Research

Abstract Text:

OBJECTIVE:

Investigators have proposed that storage of vitrified blastocysts for greater than five years compromises implantation and live birth.¹ However, those studies assessed embryos based solely on morphologically, and did not account for chromosomal normality. Restricting the study group to euploid embryos provides a more precise cohort to analyze any correlation. This study evaluates pregnancy outcomes in patients who underwent single euploid embryo transfer (SEET) using blastocysts stored across a range of cryostorage durations.

MATERIALS AND METHODS:

This retrospective, single academic center study included patients that underwent autologous in vitro fertilization (IVF) with preimplantation genetic testing for aneuploidy (PGT-A) followed by vitrification, warming and a SEET from January 2016 to June 2024. PGT-A was performed via next generation sequencing (NGS). Patients were categorized based on cryostorage duration: Group 1 (<3 years), Group 2 (3–5 years), and Group 3 (>5 years). Primary outcome was live birth rate; secondary outcomes included clinical, ectopic and biochemical pregnancy, as well as clinical loss rate. Cases in which patients harbored chromosomal rearrangements, underwent PGT for monogenic disorders, uterine factor infertility, recurrent pregnancy loss, and/or used embryos that were thawed, warmed and re-frozen were excluded from the analysis. Statistical analyses included ANOVA, chi-square, and multivariate logistic regression fitted with a GEE model. A sample size of 110 SEET per group was calculated to detect a difference of 10% in live birth rates with 80% power ($\alpha=0.05$).

RESULTS:

A total of 11828 cycles were included (Group 1:11027, 93%; Group 2: 647, 5.5%; Group 3:154, 1.5%). The overall live birth rate was 54.9% for Group 1, 55.9% for Group 2, and 54.7% for Group 3, $p = 0.79$. Controlling for patient age at oocyte retrieval and embryo transfer, body mass index, embryo biopsy day, and embryo quality at transfer, the duration of cyrostorage did not associate with odds of achieving a live birth (aOR 0.98, CI95% 0.99-1.01), clinical pregnancy (aOR 1.0, CI95% 0.98-1.05), ectopic (aOR 0.99, CI95% 0.99-1.03), biochemical (aOR 1.0, CI95% 0.99-1.03) and clinical pregnancy loss (aOR 0.99, CI95% 0.99-1.01).

CONCLUSIONS:

Long-term euploid blastocyst vitrification, even beyond five years, does not negatively affect pregnancy outcomes, offering reassuring evidence for patients considering delayed embryo transfer.

IMPACT STATEMENT:

Prolonged vitrification does not compromise pregnancy outcomes for euploid embryos, supporting the safety of long-term embryo storage.

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Within the past 2 years, have you or your spouse/partner had any potential COI?

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Biographical Sketch Early success, marked by his first publication in CELL at Harvard Medical School, inspired Joseph to continue his research endeavors in reproductive endocrinology and infertility. Joseph has been with Reproductive Medicine Associates of New York since 2011. Joseph has authored over 400 peer-reviewed abstracts & manuscripts. Passionate about development, he cultivates relationship with investors & entrepreneurs to advance reproductive endocrinology & infertility care.

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Biographical Sketch Dr. Martha Luna is a board certified reproductive endocrinologist and infertility specialist . She joined RMA of New York in 2005 and is currently Medical Director of RMA International Mexico located in Mexico City. She completed her fellowship in RMA NY/ Mount Sinai School of Medicine and holds a masters degree by EVMS. Dr. Luna is a clinical professor of the Obstetrics and Gynecology residency program at the American British Cowdray (ABC) Hospital in Mexico City and serves as the Co-Chair of the REI Fellowship Program in Hospital Angeles del Pedregal in Mexico City. She is President of the Mexican Society for Reproductive Medicine (AMMR). Belongs to the Global Associate Panel of Fertility and Sterility.

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Organization Name	Relationship Type	Who has this Relationship?	
Progyny	Company Officer Relationship Began - Friday, August 25, 2017 Relationship Ended - Thursday, June 1, 2023 Paid Consultant Relationship Began - Relationship Ended - Direct Stockholder Relationship Began - Friday, August 25, 2017 Relationship Ended - Friday, November 1, 2024	Self	

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