

Embryo ploidy in thawed frozen versus fresh oocytes: Is there a difference?

Shelun Tsai, M.D., Jasmyn Johal, M.D., Jonas Malmsten, D.P.S., Steven Spandorfer, M.D.

¹The Ronald O Perelman and Claudia Cohen Center for Reproductive Medicine, Weill Cornell Medical College, 1305 York Avenue 6th Floor, New York, New York 10021



Objective

- To evaluate embryo ploidy of patients who underwent IVF with PGT-A with thawed frozen oocytes compared to fresh oocytes.

Methods

- Design: Retrospective Cohort Study
- Inclusion Criteria:
 - Patients who underwent first autologous frozen oocyte thaw and IVF with PGT-A
- Exclusion Criteria:
 - Fresh or frozen transfer of an untested embryo
 - PGT-M or PGT-SR
 - Donor oocytes or surgically retrieved sperm used
 - No blastocysts available for biopsy
 - Thawed a portion of cryopreserved oocytes
- Comparison Group: 3:1 age-matched controls who underwent their first IVF cycle with fresh oocytes and PGT-A
- Primary outcome: Proportion of euploid, mosaic, and aneuploid embryos between those using frozen versus fresh oocytes.
- Statistics: Student's t-test or Chi-squared test were used to compare variables.

Oocyte cryopreservation was NOT associated with adverse chromosomal competence when compared to age-matched controls utilizing fresh oocytes.

Results

Table 1. Embryo ploidy from thawed frozen vs. fresh oocytes

	Frozen oocytes (n=117)	Fresh oocytes (n=351)	P
Embryo Ploidy			.06
Euploid embryos	238 (40.1%)	845 (41.6%)	
Mosaic embryos	93 (15.7%)	244 (12.0%)	
Aneuploid embryos	263 (44.3%)	944 (46.4%)	
Mean # Euploid embryos per patient	2.0 ± 1.7	2.4 ± 2.5	.14
# Patients with no euploid embryos	22 (18.8%)	75 (21.4%)	.55

Table 2. Oocyte thaw and blastocyst development

Mean per patient	Frozen oocytes (n=117)	Fresh oocytes (n=351)	P
# Mature Oocytes Retrieved	10.9 ± 4.9	11.1 ± 6.3	.67
# Oocytes Survived Thaw	10.0 ± 4.6	N/A	
# Fertilized Oocytes (2PN)	7.8 ± 4.0	8.7 ± 5.5	.10
# Blastocysts	5.1 ± 3.1	5.8 ± 4.3	.10

Conclusion

- Embryo ploidy remained the same for blastocysts created from fresh or frozen oocytes.
- There were no differences in fertilization, blastulation, or live birth rates between the two groups.

Strengths

- Age-matched control group for comparison
- PGT-A performed at single laboratory setting

Limitations

- Retrospective study
- Limited follow-up time for return to use of frozen oocytes

Directions for Future Research

- Include patients who have cryopreserved oocytes for a longer period of time, since most patients have not returned to use cryopreserved oocytes
- Follow-up for birth and neonatal outcomes