

Delaying Trophoctoderm Biopsy Does Not Compromise the Reproductive Potential of High-Quality Embryos

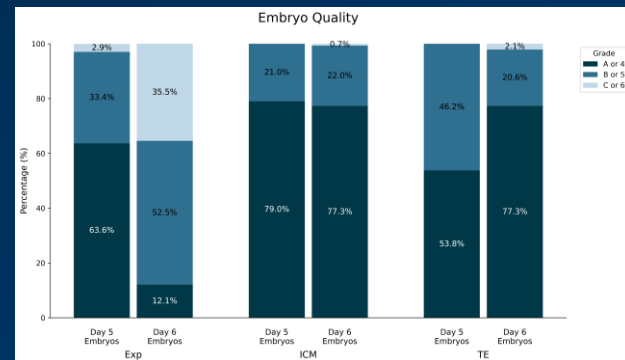
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Results

	Day 5 Embryo Transfer (n = 4,091)	Day 6 Embryo Transfer (n = 141)	p
Ongoing Pregnancy/ Live Birth	2536 (62.0%)	82 (58.2%) OR 0.80 (0.55 - 1.17)	0.3529
Pregnancy	3357 (82.1%)	111 (78.7%) OR 0.82 (0.52 - 1.29)	0.3114
Clinical Pregnancy	2900 (70.9%)	97 (68.8%) OR 0.89 (0.60 - 1.32)	0.5847
Clinical Pregnancy Loss	364 (12.5%)	15 (15.2%) OR 1.38 (0.76 - 2.50)	0.4374



Objective

Embryo biopsy for pre-implantation genetic testing (PGT) is performed at the fully expanded blastocyst stage of development, when the embryo is hatching from the zona pellucida and has acceptable trophoctoderm (TE) and inner cell mass (ICM) grades. When embryos undergo laser-assisted hatching on day 3, the TE may not yet be hatching by day 5. In such cases, embryos are cultured to day 6 to ensure safe access to the TE cells.

The purpose of this study was to evaluate pregnancy outcomes following single euploid embryo transfer (SEET) for embryos biopsied on day 5 compared to those cultured to day 6 due to inaccessible TE cells.

Materials & Methods

- Design: Retrospective cohort study
- Inclusion Criteria: Patients who underwent their first SEET cycle between January 2016 - February 2025 using a day 5 or day 6 embryo
- Patients were grouped by day of embryo biopsy:
 - Group 1: Day 5 biopsy
 - Group 6: Day 6 biopsy due to inaccessible TE on Day 5
- Primary outcome: ongoing pregnancy/live birth
- Secondary outcomes: pregnancy, clinical pregnancy, clinical pregnancy loss
- Statistical analysis: Chi square and Wilcoxon-Rank Sum tests for univariate analyses; logistic regression adjusting for patient age at SEET, oocyte age, BMI, endometrial thickness, year of cryopreservation, year of SEET, and embryo quality at the time of biopsy

- Patient demographics, ovarian reserve, and cycle characteristics were similar between groups.
- More embryos cryopreserved on Day 6 were fully hatched when compared to embryos cryopreserved on Day 5 (35.5% vs 2.9%, $p < 0.001$).
- 9.9% of embryos received a poorer ICM and/or TE grade when biopsy was performed on Day 6 due to inaccessible TE cells on Day 5.
- There was no difference in pregnancy, clinical pregnancy, clinical pregnancy loss, or ongoing pregnancy/live birth between groups, on both univariate and adjusted analyses.

Conclusions

- Pregnancy, clinical pregnancy, clinical pregnancy loss, and ongoing pregnancy/live birth rates were comparable between high-quality day 5 embryos, whether biopsied on day 5 or following delayed biopsy on day 6.
- These findings highlight that ideal laboratory conditions allow for safe prolonged culture of embryos to optimize biopsy timing without impacting the reproductive potential of the embryos.