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**PERINATAL OUTCOME FROM THE TRANSFER OF FROZEN, EUPLOID, BLASTOCYSTS
BIOPSIED ON DAY 7**

Margeaux Oliva, MD¹, Devora Aharon, MD¹, Joseph A. Lee, BA², Carlos Hernandez-Nieto, MD², Eric Flisser, MD², Alan B Copperman, MD¹ and Lucky Sekhon, MD²

1. Obstetrics, Gynecology and Reproductive Science, Icahn School of Medicine at Mount Sinai, Klingenstein Pavilion 1176 Fifth Avenue 9th Floor New York, New York, United States, 10029.
2. Reproductive Medicine Associates of New York, 635 Madison Ave 10th Floor New York, New York, United States, 10022

OBJECTIVE:

The current study aimed to evaluate perinatal outcomes from transfers of euploid embryos that required trophectoderm (TE) biopsy on day 7 due to delayed cavitation.

DESIGN:

Retrospective study

MATERIALS AND METHODS:

This study included euploid embryos that underwent IVF and preimplantation genetic testing for aneuploidy (PGT-A) from 2011 to 2019. Embryos with morphology $\geq 4CC$ (modified Gardner scoring system) were biopsied on day 5. Embryos not ready for biopsy were re-evaluated on days 6 and 7. Euploid blastocysts were grouped by day of TE biopsy. Donor oocyte cycles were excluded. Patient age at IVF and embryo transfer (ET), BMI, AMH, basal antral follicle count (BAFC), endometrial thickness at ET, and morphology grade were covariates. Outcomes included neonatal birth weight, gestational age (GA) at delivery, low birth weight rate (<2500 g), fetal macrosomia rate (>4500g) and preterm delivery rate. ANOVA, chi-squared tests and multivariate linear regression were used for the analysis.

RESULTS:

1,795 blastocysts biopsied on day 5, 950 on day 6, and 32 on day 7 were identified. Blastocysts biopsied on day 7 were more likely to come from women of advanced age at IVF, lower BAFC,



and AMH. Day 7 biopsied embryos were more likely to be hatched, have a grade C ICM and grade C TE. Extended culture was not associated with neonatal birth weight, low birth weight rate, rate of fetal macrosomia, GA at delivery, or preterm delivery rate. In the multivariate model, slow-growing embryos were not associated with birth weight ($\beta=.015$, $p=.66$) or GA at delivery ($\beta=-.018$, $p=.65$).

	Day 5 (n=1795)	Day 6 (n=960)	Day 7 (n=32)	p value
Age at IVF	35.4 ± 4	35.9 ± 4.1	36.9 ± 3.9	0.001
Age at ET	35.8 ± 4	36.7 ± 4	37.3 ± 4	<0.01
BMI	23.5 ± 4.1	24 ± 4.4	23.6 ± 4.3	0.14
AMH	4.1 ± 4.7	3.1 ± 3.6	3.2 ± 3.6	<0.01
BAFC	11.7 ± 8.1	10.6 ± 7.9	7.4 ± 6	<0.01
Endometrial thickness at ET	9.7 ± 2.2	9.7 ± 2.1	9.5 ± 2	0.83
Expansion grade (%)				<0.01
4	929 (51.8)	260 (27.1)	10 (31.3)	
5	509 (28.4)	311 (32.4)	8 (25)	
6	356 (19.8)	389 (40.5)	14 (43.8)	
ICM grade (%)				<0.01
A	1394 (78.5)	633 (67.4)	14 (48.3)	
B	348 (19.6)	242 (25.8)	9 (31)	
C	33 (1.9)	64 (6.8)	6 (20.7)	
TE grade (%)				<0.01
A	717 (40.4)	336 (35.8)	4 (13.3)	
B	796 (44.8)	374 (39.9)	9 (30)	
C	262 (14.8)	228 (24.3)	17 (56.7)	
Neonatal birth weight	3340 ± 573	3337 ± 545	3286 ± 571	0.89
Low birth weight (%)	105 (6.7)	54 (6.3)	3 (12.5)	0.37
Fetal macrosomia (%)	15 (1)	7 (.8)	0 (0)	0.86
GA at delivery	39.1 ± 2	39.1 ± 1.7	39 ± 1.7	0.85
Preterm delivery (%)	159 (8.9)	88 (9.2)	4 (12.5)	0.69



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CONCLUSIONS:

Patients who underwent transfer with embryos biopsied on day 7 had comparable perinatal outcomes to transfers with embryos biopsied on days 5 or 6. These results support the continued utilization of extended embryo culture with PGT-A, as pregnancies from transfers with embryos biopsied on day 7 did not show evidence of impaired placentation.

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