PACIFIC COAST REPRODUCTIVE SOCIETY

RETROSPECTIVE COMPARATIVE ANALYSIS OF BIRTH OUTCOMES IN IN-VITRO FERTILIZATION: EXAMINING AUTOLOGOUS EMBRYO IVF VERSUS GESTATIONAL CARRIER IVF

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OBJECTIVE

- Investigate whether birth outcomes associated with in vitro fertilization (IVF) procedures differ between patients undergoing embryo transfer with autologous embryos and those opting for gestational carriers (GC) embryo transfer, aiming to understand the impact of baseline infertility on obstetric outcomes.

MATERIALS AND METHODS

- Retrospective cohort study
- Population: Individuals 18-45 who underwent autologous IVF or gestational carriers between 2015 and 2022 from a national network of IVF clinics.
- Inclusion criteria was for autologous IVF were single embryo transfer via a frozen, programmed cycle.
- Primary outcome was preterm birth defined as live birth at less than 37 weeks 0 days gestation.
- Secondary outcomes included
  - Very preterm birth (<33 weeks)
  - Low birth weight (<2500g)
  - Very low birth weight (<1500g)
  - Small for gestational age (<10th percentile)
  - Large for gestational age (>90th percentile)
  - Macrosomia (>4000g)
- Descriptive statistics were performed to summarize patient characteristics.
- Relative risks (RR) with 95% confidence intervals (CI) comparing outcomes between groups were estimated using Poisson regression models adjusted for patient age, BMI, and parity; P values were from Wald tests.
- A sensitivity analysis restricted the population to ages 22-40, BMI ≤ 40, and parity ≤ 2.

RESULTS

TABLE 1. DEMOGRAPHICS

	Pregnancies of Autologous Embryo Transfer	Pregnancies of Gestational Carriers with Donated Embryos
N	**7413**	**365**
Age	35.8 (3.8)	33.5 (4.9)
Race/ethnicity		
White	3903 (52.7)	128 (35.1)
African American	629 (8.5)	11 (3)
Asian	922 (12.4)	2 (0.5)
Hispanic/Latino	241 (3.3)	9 (2.5)
Other/multiracial	399 (5.4)	6 (1.6)
Unknown/refused	1319 (17.8)	209 (57.3)
Pre-gestational BMI	26.4 (5.2)	27 (4.7)
Gravidity	1 (0, 2)	2 (0, 3)
Parity	0 (0, 1)	1 (0, 2)
Infertility Duration (months)	13 (12, 24)	0 (0, 12)

TABLE 2. OUTCOMES

	Pregnancies of Autologous Embryo Transfer	Pregnancies of Gestational Carriers with Donated Embryos	
	N (%)	N (%)	RR (95% CI)
Preterm Birth (<37 weeks)	1176 (15.9)	48 (13.2)	0.81 (0.61, 1.07)
Very Preterm Birth (<33 weeks)	178 (2.4)	11 (3)	1.25 (0.67, 2.34)
Weeks gestation at delivery, median (IQR) and mean ratio (95% CI)	38 (37, 39)	38 (37, 39)	1 (1, 1.01)
Low birth weight (<2500 g)	594 (8)	30 (8.2)	1.08 (0.76, 1.55)
Very low birth weight (<1500 g)	109 (1.5)	5 (1.4)	1 (0.4, 2.47)
Small for gestational age (<10th percentile)	444 (6)	24 (6.6)	1.33 (0.88, 2)
Large for gestational age (>90th percentile)	1127 (15.2)	75 (20.5)	**1.14 (0.9, 1.44)**
Macrosomia (>4000 g)	686 (9.3)	53 (14.5)	**1.34 (1, 1.79)**

TABLE 3. SENSITIVITY ANALYSIS

Population restricted to ages 22-40. BMI <= 40, parity <=2

	Pregnancies of Autologous Embryo Transfer	Pregnancies of Gestational Carriers with Donated Embryos	
	N (%)	N (%)	RR (95% CI)
Preterm Birth (<37 weeks)	1015 (15.7)	37 (14)	0.88 (0.65, 1.2)
Very Preterm Birth (<33 weeks)	151 (2.3)	11 (4.2)	1.65 (0.91, 3)
Weeks gestation at delivery, median (IQR) and mean ratio (95% CI)	38 (37, 39)	38 (37, 39)	1 (0.99, 1.01)
Low birth weight (<2500 g)	507 (7.8)	25 (9.4)	1.18 (0.8, 1.72)
Very low birth weight (<1500 g)	95 (1.5)	5 (1.9)	1.14 (0.46, 2.82)
Small for gestational age (<10th percentile)	387 (6)	18 (6.8)	1.19 (0.75, 1.88)
Large for gestational age (>90th percentile)	979 (15.1)	52 (19.5)	1.16 (0.88, 1.52)
Macrosomia (>4000 g)	605 (9.4)	37 (13.9)	**1.33 (0.95, 1.87)**

CONCLUSIONS

- Pregnancies resulting from autologous cycles had a higher risk of preterm birth compared to gestational carrier cycles, but this association was imprecise after adjustment.
- Macrosomia rates were higher in gestational carriers compared to autologous IVF, but this association was also imprecise after adjustment. While not significant, this is a trend that should be further explored with a larger cohort of data.
- Small for gestational age rates were comparable between autologous IVF cycles and gestational carriers.
- No significant differences were observed in other outcomes.
- Results of the sensitivity analysis found no differences in the observed outcomes.
- While no significant differences were observed in birth outcomes, additional data collection is necessary to address unexplored confounding factors and trends that may be significant with a larger cohort.
- By revealing non-significant differences in preterm birth rates and other essential obstetric indicators, this research suggests that there may be a minimal impact of baseline infertility on live birth outcomes associated with IVF.

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