SUCCESS PREDICTS SUCCESS: OBTAINING A EUPLOID EMBRYO IN FIRST IVF CYCLE DEMONSTRATES INCREASED CHANCES FOR SUBSEQUENT CYCLES

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Background

- Multiple IVF cycles are often required to achieve one live birth.[1]
- Only 43.1% of women less than 35 years old have a live birth from their first egg retrieval.[2]
- Preimplantation genetic testing for aneuploidy (PGT-A) results can guide whether patients should complete additional IVF cycles before attempting embryo transfer.

Objective

- To determine if obtaining a euploid embryo in the first IVF cycle is predictive of acquiring additional euploid embryos in subsequent cycles.

Methods

- This retrospective study included patients with two or more autologous IVF cycles with PGT-A analyzed by Progenesis from 1/1/2019 to 9/1/2024.
- A multilevel logistic regression model analyzed the likelihood of a euploid embryo in a subsequent cycle after obtaining a euploid embryo in the first cycle.
- This analysis was repeated after categorizing the patients by their SART-defined age groups.

Results

- 2,037 patients underwent two or more autologous IVF cycles with PGT-A.
  - These patients completed IVF 6,548 cycles.
  - 19,001 embryos underwent PGT-A testing.
- 4,027 (62%) cycles had at least one euploid embryo.
  - 1,824 (29%) cycles had >1 euploid embryos.
- The median IVF cycles per patient was 3 (±1.30).

Results

Table 1: Likelihood of a euploid embryo in subsequent IVF cycles after obtaining a euploid embryo in the first cycle by SART age groups

Age (years)	Patients (n)	Cycles (n)	OR	p-value
<35	435	1,176	9.81 (6.86,14.0)	<0.0001
35-37	602	1,529	5.10 (3.92, 6.57)	<0.0001
38-40	775	1,986	5.61 (4.61, 6.83)	<0.0001
41-42	498	1,192	3.40 (2.66, 4.34)	<0.0001
>42	271	665	3.80 (2.61, 5.55)	<0.0001
Total	2,037	6,548	7.75 (6.79-8.84)	<0.0001

Table 2: Comparison of Euploid Ratio per Cycle in Patients with at Least Three Cycles

Total cycles	Patients (n)	Euploid Ratio	SD (±)	p-value
3	1102	0.403	0.373	0.464
4	348	0.385	0.374	0.238
5	109	0.348	0.380	0.570
6	45	0.360	0.399	0.753
7	12	0.390	0.422	0.327
8	5	0.324	0.395	0.711
9	9	0.289	0.397	0.699
10	2	0.042	0.103	0.961
Total	1,632	0.388	0.379	0.269

Discussion

- Obtaining a euploid embryo in the first IVF cycle was predictive of acquiring another euploid embryo in a subsequent cycle. This association was strongest for younger patients.
- Even in the >42-year-old age group, obtaining one euploid embryo in the first IVF cycle demonstrated a significantly increased likelihood of obtaining additional euploid embryos in subsequent cycles.

Conclusion

- Patients, including those in older age groups, may be encouraged to undergo subsequent IVF cycles after obtaining a euploid embryo in the first cycle if additional euploid embryos are needed to reach their family goals.

References