Title: FERTILIZING FROZEN DONOR OOCYTES: DILEMMA OF CREATING SUPERNUMERARY EMBRYOS WHEN ONLY 1 CHILD IS DESIRED

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Design: Retrospective Cohort Study

ABSTRACT: (500 words)

BACKGROUND: Embryo cryopreservation has increased in popularity, leading to large numbers of excess embryos in storage without clear plans for disposition. In a recent analysis at our institution, we observed a dramatic increase in the number of supernumerary blastocysts as more fresh donor oocytes were fertilized (1 vs. 2 vs. 3 vs. 6 blastocysts in the first, second, third, and fourth quartiles respectively). At the same time, there were no differences in live birth rates between the groups. However, this data was limited to fresh donor oocytes and did not address frozen donor oocytes.
OBJECTIVE: To determine the optimal number of frozen donor oocytes to fertilize in order to achieve one live birth while minimizing supernumerary embryos.
MATERIALS AND METHODS: Patients using frozen donor oocytes at a single academic institution between 1/2013 and 11/2022 were included in this retrospective analysis. Patients were excluded if they used a known oocyte donors or a donor greater than 32 years old. Patients were also excluded if they used surgically retrieved sperm or underwent preimplantation genetic testing for aneuploidy. The number of supernumerary blastocysts was defined as the number of blastocysts remaining after the first live birth. If the patient did not have a live birth, the number of supernumerary embryos was defined as the number of blastocysts remaining the last transfer cycle. Data was analyzed using the Kruskal-Wallis rank sum test and Fisher's Exact Test.
RESULTS: 380 patients who underwent 537 embryo transfer cycles were included. The average patient age was 42.9 ± 5.9 years, and the average oocyte donor age was 27.1 ± 3.0 years. The median patient received 8 oocytes that became 6 2PNs, 3 usable blastocysts, and resulted in 2 supernumerary embryos. 48% of patients did not have any supernumerary embryos remaining. Patients were divided into quartiles based on the number of frozen donor oocytes each patient received (≤7, 8, 9, or ≥10). The median number of supernumerary embryos was 2 for the first quartile, 3 for the second quartile, 2 for the third quartile, and 2 for the fourth quartile. While this was statistically significant (P<.01), it was unlikely to be clinically significant given the small absolute difference between groups. There was also no difference in the live birth rate across the four quartiles (57% vs. 61% vs. 68% vs. 53%, P=.22).
CONCLUSIONS: Unlike our analysis of fresh donor oocytes, there was no increase in the number of supernumerary embryos as more frozen donor oocytes were fertilized. Nonetheless, our data suggests that fertilization of as little as 7 frozen donor oocytes still resulted in a median of 2 supernumerary blastocysts for patients who may only want one child. Additionally, fertilizing 7 frozen donor oocytes was still sufficient to maintain live birth.
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REFERENCES:
1. Correia KFB, Missmer SA, Weinerman R, Ginsburg ES, Rossi B v. Development of a Model to Estimate the Optimal Number of Oocytes to Attempt to Fertilize During Assisted Reproductive Technology Treatment. JAMA Netw Open 2023;6(1):e2249395.