Title: IVF OUTCOMES IN COUPLES UTILIZING FRESH OR FROZEN DONOR OOCYTES: A RETROSPECTIVE COHORT STUDY

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Background: Current research regarding outcomes of fresh versus frozen donor oocyte embryo transfer (ET) cycles is limited. Based on current evidence, fresh donor cycles may be associated with better implantation and higher livebirth rates.

Objective: We aim to compare outcomes of fresh donor oocytes to frozen donor oocytes at a single academic institution.

Materials and Methods: The data were analyzed in two ways, first, embryology IVF outcomes were assessed from 37 fresh egg donor and 33 frozen egg donor cycles (three different egg banks) between 2020-2023. Second, ET outcomes were evaluated among 57 fresh egg donor cycles and 44 frozen egg donor cycles. Student's T Test was used for continuous variables, Fisher's Exact test was used for categorical variables.

Results: Demographic data was similar among the two groups. As expected, patients utilizing fresh donor oocytes received higher number of mature oocytes per cycle (16.2 vs 6.6, $p<0.001$), and had a higher number of blastocysts (8.3 vs 2.6 fresh and frozen donor oocyte cycles, respectively). Additionally blastocyst conversion rate was higher in fresh donor oocyte group (58.0% vs 48.4%, $p=0.0248$), despite similar fertilization rates (84.2% vs 78.2%, $p=0.0903$).

When comparing cumulative ET cycles, a higher livebirth rate was achieved in fresh donor cycles (63.2% vs 43.2%, $p=0.0462$). There was no difference in implantation rate (72.4% vs 62.5%, $p=0.2807$) or spontaneous abortion rates (11.1% vs 27.3%, $p=0.0675$). In frozen donor group we reported, higher number of ET per patient (1.09 vs 1.02, $p=0.0448$) and significantly more cases without livebirth (8 vs 1, $p=0.0071$) despite the use of all available blastocysts. When analyzing first ET data from fresh and frozen donor oocyte cycles, pregnancy rates (76.5% vs 87.1%, $p=0.2772$) and live birth rates (58.8% vs 51.6%, $p=0.5663$) were similar.

Conclusions: Based on our data, there is a significantly higher chance of achieving livebirth when utilizing fresh donor oocytes. Additionally, for families planning more than one child, fresh donor oocytes may preferable both financially and genetically, given the higher likelihood of creation of additional embryos for future use.

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