

Effect of oocyte vitrification on embryos euploidy in patients who have embryos resulted from fresh and from frozen oocytes in two separate cycles.

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BACKGROUND.

Oocyte vitrification is one of the routine practices in assisted reproduction. It gained more popularity after achieving high survival rates of more than 90% and pregnancy rates comparable to fresh oocytes. Therefore, there is a need to know if oocyte vitrification can affect embryo euploidy.

METHODS

- Retrospective data analysis was performed on 1050 embryos of 84 patients.
- All patients were done controlled ovarian hyperstimulation according to the standard method for short antagonist protocol using recombinant subcutaneous FSH (Gonal-F, Merck Serono), and cetrorelix acetate (Cetrotide; Merck-Serono).
- Finally, a dose of 250 micrograms choriogonadotropin alfa (Ovitrelle, Merck Serono) was administrated subcutaneously when three follicles were 17 mm or larger.
- Ultrasound-guided oocyte retrieval was performed 36 hours after Ovitrelle administration.
- Every patient was done an oocyte vitrification cycle followed by a fresh ICSI cycle within 3 months. On the same day of the fresh ICSI cycle, the vitrified eggs were warmed and were done ICSI.
- All oocyte freezing was done using Kitazato Vitrification Medium.
- The embryos resulted from both fresh and vitrified eggs were done day 5 biopsy followed by Preimplantation Genetic Screening (PGS) using Next Generation Sequencing with High Resolution (NGS HR PGS), finally all the biopsied embryos were frozen .

- The numerical chromosomal abnormalities of monosomy, trisomy and complex abnormal were analysed and compared.
- The patients included in the study were women under 37 years, with regular menstrual cycles, normal uterine ultrasounds, a body mass index (BMI) between 18 and 30 kg/m² .

RESULTS

The biopsied embryo that came resulted from fresh oocytes had aneuploidy rate of 49.2% where versus 53.8% aneuploidy rate for embryos resulted from frozen oocytes. The p value was 0.13 which means the result is statistically insignificant. In addition, the rate of monosomies, trisomies and complex abnormalities did not show a statistical significance.

CONCLUSION

Our study showed that oocyte vitrification does not increase aneuploidy rate in the resulted embryos when biopsied on day 5 in comparison to the fresh embryos in the same patient. The study provides reassurance to young patients undergoing oocyte freezing for variance indications that the technology itself does not affect the rate of chromosomal abnormalities and aneuploidy rate.

	Fresh Cycle	Frozen cycle
Average No of eggs	11.3	11.7
% Fertilised	76.1%	73.4%
Average # of biopsied embryos on D5/D6	6.3	5.9
% of aneuploidy embryos	49.2%	53.8%

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