Date: November 8, 2026 10:20-10:30
Venue: Crystal Court I, Hopewell Hotel
Session: Parallel Session 4B: Treatments for Rare Genetic Diseases

Abstract No.: 46

Treatments for Rare Genetic Diseases

PGT-A and Clinical Outcomes Following Laser-Induced Vacuole Disruption in Vacuolated Embryos

First Author: Sirikul KULANUWAT

Co-Author: Chanchamroen S | Asawakittananon P | Thongsook T | Tuntipoj M| Siriprasertchok N | Chansawad T | Suanbooncharoen P | Ranuman P| Thitipanawal P| Rojanawan A | | Quangkananurug W

Submitted_by Institution: Next Generation Genomic Co., Ltd., Bangkok, Thailand

Objective:

Vacuolated embryos are frequently encountered during preimplantation embryo assessment and have been associated with impaired embryo development. Laser-induced vacuole disruption has been proposed as a strategy to support embryo development; however, evidence regarding subsequent PGT-A and clinical pregnancy outcomes remains limited. This study aimed to compare PGT-A results, blastocyst quality, and clinical pregnancy outcomes between laser-treated vacuolated embryos and sibling non-vacuolated embryos.

Methods:

This retrospective cohort study included 146 blastocysts from 21 patients, comprising 30 vacuolated embryos (VE) and 116 sibling non-vacuolated embryos (NVE). Vacuolated embryos underwent laser-induced vacuole disruption on Day 4 or Day 5 before continued culture. All blastocysts underwent NGS-based PGT-A (Illumina), and results were classified as non-aneuploid (NAF), mosaic, or aneuploid. Blastocyst quality was assessed using Gardner grading criteria. Clinical pregnancy outcomes were evaluated following transfer of NAF embryos. Group comparisons were performed using Chi-square or Fisher's exact tests.

Results:

No statistically significant differences were observed in PGT-A outcomes between the VE and NVE groups, including the proportions of NAF embryos (56.7% vs. 60.3%), mosaic embryos (6.7% vs. 1.7%), and aneuploid embryos (36.7% vs. 37.9%) (all $p > 0.05$). Regarding blastocyst morphology, the proportion of fair-quality blastocysts was higher in the VE group (53.3% vs. 34.5%), whereas the proportion of high-quality blastocysts was greater in the NVE group (37.1% vs. 20.0%). However, these differences did not reach statistical significance ($p = 0.116$). Similarly, among transferred NAF embryos, clinical pregnancy rates did not differ significantly between the two groups (71.4% vs. 68.4%, $p = 1.00$).

Conclusions:

Following laser-induced vacuole disruption, vacuolated embryos demonstrated PGT-A outcomes and clinical pregnancy rates comparable to those of sibling non-vacuolated embryos. Although blastocyst morphology tended to be less favorable, the presence of vacuoles alone should not be considered an exclusion criterion for PGT-A or embryo transfer. Larger prospective studies are needed to validate these findings.

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