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Title

FROZEN TRANSFER IS SUPERIOR TO FRESH TRANSFER OF SCREENED, EUPLOID EMBRYOS

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Objective

Use of preimplantation genetic screening (PGS) frequently necessitates frozen embryo transfer. To determine whether this has an impact on patient outcomes, we compared ongoing pregnancy and implantation rates in freeze-all versus fresh transfer cycles using screened, euploid embryos.

Design

Retrospective matched cohort study of 13 academic and private fertility centers in the US.

Materials and Methods

Propensity score analysis identified 1,642 matched blastocyst transfer cycles (821 fresh, 821 freeze-all) that had undergone trophectoderm biopsy with 24-chromosome PGS. Cohorts were matched on: maternal age, clinic, gravidity, parity, diagnosis, body mass index, antral follicle count, basal follicle stimulating hormone/luteinizing hormone/estradiol, progesterone (P) at trigger, eggs retrieved, number of embryos, and embryos transferred. Generalized estimating



equations modeling was used to compute the odds ratios (ORs) of ongoing pregnancy. Receiver operating curve (ROC) analysis was used to determine cutoffs for maternal age and P at trigger.

Results

After transfer of euploid embryos, implantation and ongoing pregnancy rates were significantly higher in the freeze-all cohort than in the matched fresh cohort (p<0.001 and p<0.0001, respectively). Ongoing pregnancy rate for freeze-all was 53.1% (95% CI 49.6–56.6%), compared to 42.6% (95% CI 39.2–46.1%) for fresh (OR 1.52, 95% CI 1.25–1.85). Odds of ongoing pregnancy after freeze-all transfer were significantly higher than fresh transfer for all stratifications of maternal age and P at trigger (cutoff values of maternal age = 36 years and P = 1 determined by ROC analysis).

Conclusions

Freeze-all transfer with euploid embryos was associated with significantly higher ongoing pregnancy rates than fresh transfer, regardless of progesterone at trigger or maternal age. Given advances in vitrification and the new complexities in interpreting PGS results, there has been a shift towards freeze- all cycles. Our study suggests that not only does this paradigm shift allow for informed decision making, but it may also improve outcomes.

Support

Celmatix Inc.

Table 1

Odds ratios for freeze-all versus fresh outcomes in euploid embryo transfer

| | Freeze-all N | Fresh N | Odds Ratio for Freeze-all/Fresh (95% CI) | P-value |
|------------------------|--------------|---------|--|---------|
| Ongoing Pregnancy (OP) | 821 | 821 | 1.52 (1.25, 1.85) | <0.0001 |
| Implantation Rate (IR) | 821 | 821 | 1.38 (1.15, 1.66) | <0.001 |
| OP Age <=36, P<=1 | 238 | 240 | 1.59 (1.16, 2.18) | <0.01 |
| OP Age >36, P<=1 | 243 | 225 | 1.45 (1.04, 2.01) | 0.03 |
| OP Age <=36, P>1 | 175 | 187 | 1.60 (1.12, 2.27) | <0.01 |
| OP Age >36, P>1 | 165 | 169 | 1.45 (1.01, 2.09) | 0.04 |