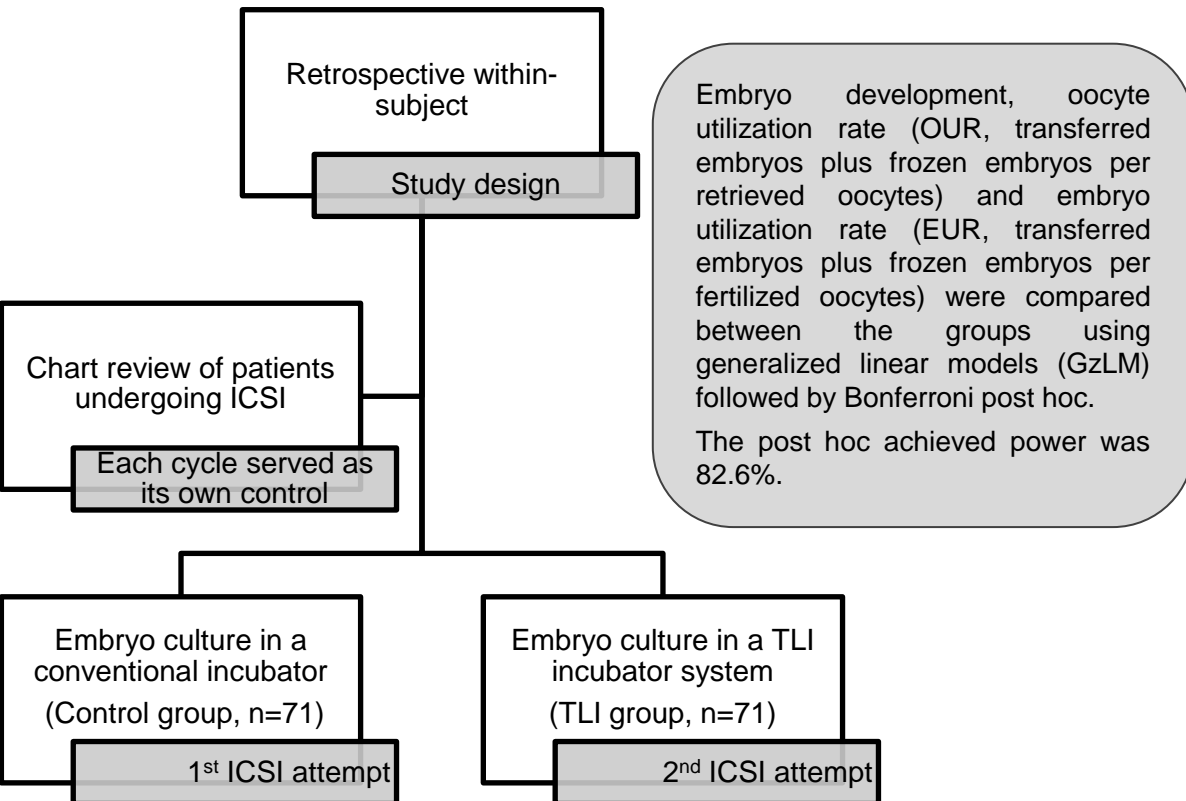


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WHAT IS KNOWN ALREADY

The time-lapse imaging (TLI) system, which allows a non-invasive continuous assessment of embryo morphokinetics parameters in a closed culture system has been developed, promising improved embryo development by reducing oscillations in pH, humidity and temperature. To investigate this hypothesis, one study has already compared embryonic development in a TLI versus a benchtop incubator (G-185). However, It has never been investigated whether embryonic development can be improved within-subject, by switching from benchtop incubator in the first intracytoplasmic sperm injection (ICSI) cycle to the EmbryoScope, a TLI incubator, in the following ICSI cycle, and that was the objective of the present study.

MATERIALS AND METHODS



RESULTS

| Variables | Control group (n=71) | TLI group (n=71) | p-value |
|-----------------------------------|--------------------------|--------------------------|---------|
| Fertilization (%) | 76.0 ± 1.3 (73.5 – 78.7) | 80.0 ± 1.4 (77.2 – 82.6) | 0.044 |
| Non-fertilization (%) | 14.8 ± 0.6 (13.7 – 15.9) | 6.3 ± 0.4 (5.6 – 7.0) | <0.001 |
| Day-2 non-cleavage (%) | 3.8 ± 0.2 (3.3 – 4.3) | 1.1 ± 0.1 (0.9 – 1.3) | <0.001 |
| Cleavage (%) | 85.3 ± 1.2 (83.0 – 87.7) | 84.2 ± 1.3 (81.7 – 86.8) | 0.521 |
| Day-5 embryos (%) | 62.4 ± 1.0 (60.5 – 64.3) | 86.4 ± 1.1 (84.2 – 88.6) | <0.001 |
| Blastocyst development (%) | 40.9 ± 1.1 (38.8 – 43.1) | 55.6 ± 1.3 (53.1 – 58.1) | <0.001 |
| Frozen blastocyst (%) | 31.8 ± 0.8 (30.3 – 33.3) | 37.0 ± 0.9 (35.2 – 38.9) | <0.001 |
| OUR | 40.7 ± 1.0 (38.8 – 42.7) | 50.2 ± 1.1 (48.0 – 52.4) | <0.001 |
| EUR | 52.4 ± 1.1 (50.3 – 54.7) | 66.6 ± 1.2 (64.3 – 68.9) | <0.001 |
| Pregnancy rate (%) | 30.2 | 30.8 | 0.940 |
| Implantation rate (%) | 24.6 ± 40.0 | 26.1 ± 41.6 | 0.830 |
| Miscarriage rate (%) | 21.1 | 15.0 | 0.622 |

Table 1. Comparison of embryonic development and ICSI outcomes between Control and TLI groups using GzLM followed by Bonferroni post hoc.

CONCLUSION

Embryonic development, OUR and EUR are significantly improved in the EmbryoScope, as compared to G-185. Even though the clinical outcomes were similar between the groups, the results may also lead to higher cumulative pregnancy outcomes following embryo thawing and transfer.