Does time-lapse monitoring improve outcomes compared with conventional morphological assessment in women undergoing in vitro fertilization/intracytoplasmic sperm injection?

Considerable advances in assisted reproductive technology have occurred over the past 4 decades (1). Clinicians and patients have numerous options, and new techniques in imaging and laboratory procedures offer the hope for even better clinical outcomes in the coming years. In their randomized controlled single-center trial comparing methods for noninvasive embryo evaluation and selection, Meng et al. (2) randomized patients at a single facility into time-lapse monitoring (TLM) and conventional morphological assessment (CMA) treatments for the identification of good-quality, cleavage-stage embryos for transfer or freezing. Patients were followed to determine the clinical pregnancy and live birth rates after fresh or frozen embryo transfer. Although the study was powered to detect a 10% improvement in the clinical pregnancy rate, with 115 patients in each group, this was terminated early with a total of 139 study participants, following an interim analysis that found significantly lower clinical pregnancy and live birth rates in the experimental TLM group.

The results of the trial by Meng et al. (2) are interesting in the context of 2 previously published meta-analyses (3, 4), which provided somewhat contradictory results despite both including several of the same studies. The question of whether TLM provides equivalent or better clinical outcomes than CMA remains unresolved. The answer may lie in patient characteristics, which did not differ in most respects between the study groups in the trial by Meng et al. (2) but differed from those of several of the studies included in the aforementioned meta-analytic studies. Participants in the trial by Meng et al. (2) were predominantly young women, of normal body mass, approximately one fourth of whom had ovulatory dysfunction and almost all had primary or secondary infertility. How these differences in patient characteristics may have influenced study outcomes remains unknown.

Although randomized controlled clinical trials yield the highest level of clinical evidence, single-center studies with small patient populations may not be best suited for building this evidence base. Perhaps a large, multicenter trial with a carefully developed study protocol could provide evidence necessary to answer the question of whether TLM provides similar or superior clinical outcomes compared with CMA; however, as of now, this question remains unresolved.

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https://doi.org/10.1016/j.fertnstert.2022.04.024

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REFERENCES

1. Marsh M, Ronner W. The pursuit of parenthood: reproductive technology from test-tube babies to uterus transplants. Baltimore, MD: The Johns Hopkins University Press; 2019.
2. Meng Q, Xu Y, Zheng A, Li H, Ding J, Xu Y, et al. Noninvasive embryo evaluation and selection by time-lapse monitoring vs. conventional morphologic assessment in women undergoing in vitro fertilization/intracytoplasmic sperm injection: a single-center randomized controlled study. Fertil Steril 2022;117:1203–12.
3. Pribenszky C, Nilselid AM, Montag M. Time-lapse culture with morphokinetic embryo selection improves pregnancy and live birth chances and reduces early pregnancy loss: a meta-analysis. Reprod Biomed Online 2017;35:511–20.
4. Magdi Y, Samy A, Abbas AM, Ibrahim MA, Edris Y, El-Gohary A, et al. Effect of embryo selection based morphokinetics on IVF/ICSI outcomes: evidence from a systematic review and meta-analysis of randomized controlled trials. Arch Gynecol Obstet 2019;300:1479–90.