

TIME-LAPSE TIMELINE OF EUPLOID EMBRYOS THAT RESULTED IN CLINICAL PREGNANCY AFTER FROZEN EMBRYO TRANSFER CYCLE

Hartlein, Taylor¹; Lacroce, Samantha²; Bui, Angela¹; Vinogradov, Margarita¹; Glassner, Michael^{1,3}; Anderson, Sharon^{2,4}

¹Main Line Fertility Center, Bryn Mawr, PA, ²Main Line Fertility Center, ³Ob/Gyn Department, Drexel University College of Medicine, Philadelphia, PA, ⁴Ob/Gyn Department, Drexel University College of Medicine

Abstract Body

OBJECTIVE: Time-lapse morphokinetic parameters of embryo development have been reported as predictors of embryo competency to blastocyst stage and to pregnancy. The objective of this study was to calculate an optimal timeline associated with competent embryos by reviewing videos of euploid embryos that resulted in clinical pregnancies.

DESIGN: Retrospective observational study of time-lapse videos of 37 euploid embryos that resulted in clinical pregnancies after frozen embryo transfer (FET) cycle.

MATERIALS AND METHODS: After fertilization, two-pronuclear zygotes were placed into the EevaTM system for time-lapse imaging. Images were collected every 5 minutes until the time of embryo biopsy. Biopsy was performed on good quality embryos that reached the blastocyst stage on day 5 or day 6 of culture. Blastocysts were vitrified, and the biopsied cells were sent to a genetics lab for next generation sequencing and preimplantation genetic screening. Euploid embryos were transferred in subsequent FET cycles. Pregnant patients with gestational sac and cardiac activity were identified, and the time-lapse images of the transferred embryos were retrospectively reviewed. Developmental stages measured included the time between second and third cell division (P2), time between third and fourth cell division (P3), time between first cell division and compaction (Tc), and time between first cell division and blastulation (Tb). The mean minutes (min) and standard deviation (SD) were calculated.

RESULTS: The average \pm SD for P2 was 668 \pm 74 min, P3 was 45 \pm 49 min, Tc was 3759 \pm 371, and Tb was 4270 \pm 324 min.

CONCLUSIONS: A timeline of embryo development was calculated after reviewing time-lapse videos of euploid embryos that resulted in successful pregnancies after FET. This timeline can be used as a guide to help rank euploid embryos for consideration for embryo transfer.