

Time-lapse monitoring of zona pellucida-free embryos obtained through in vitro fertilization: a retrospective case series

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Objective: To report time-lapse monitoring of human oocytes in which the damaged zona pellucida was removed, producing zona-free (ZF) oocytes that were cultured until the blastocyst stage in time-lapse incubators.

Design: Retrospective case series.

Setting: Private infertility clinic.

Patient(s): Infertile patients (n = 32) undergoing minimal ovarian stimulation or natural cycle IVF treatment between October 2012 and June 2014.

Intervention(s): Intracytoplasmic sperm injection (ICSI) fertilization of ZF oocytes, prolonged embryo culture in time-lapse incubators, elective vitrification, and subsequent single vitrified-thawed blastocyst transfer (SVBT).

Main Outcome Measure(s): Rate of fertilization, cleavage and blastocyst development, live-birth rate per SVBT cycle.

Result(s): In spite of advanced maternal age (39 ± 4.2 ; range, 30–46 years), good fertilization (94%), cleavage (94%), and blastocyst development rates (38%) were reached after fertilization and culturing of ZF oocytes/embryos. All thawed ZF blastocysts survived, and up to this date seven SVBT transfers were performed, yielding three (43%) term live births with healthy newborns.

Conclusion(s): Time-lapse imagery gives a unique insight into the dynamics of embryo development in ZF embryos. Moreover, our case series demonstrate that an oocyte with a damaged zona pellucida that has been removed could be successfully fertilized with ICSI, cultured until blastocyst stage in a time-lapse incubator and vitrified electively for subsequent use. (Fertil Steril® 2015;103:e35. ©2015 by American Society for Reproductive Medicine.)

Key Words: Time-lapse monitoring, zona pellucida, blastocyst culture, minimal ovarian stimulation, in vitro fertilization

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