THE HUMAN FIRST CELL-CYCLE: IMPACT ON IMPLANTATION

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Introduction: The morphology of fertilization events has been related with successful implantation by subjective criteria (pronuclei =PN score, PN symmetry and PN position). We describe for the first time the same events by time-lapse technology and timings of the second polar body extrusion (2PB), the appearance of two pronuclei (2PN), the PN abuttal and PN fading in implanted and non-implanted embryos.

Material & Methods: Two-year cohort retrospective study comparing embryos according with known implantation. Participants attended a University-affiliated private clinic where ICSI was performed. Using an IVF incubator with a built-in camera designed to automatically acquire images at defined time points, we monitored individual embryos from 842 patients: only embryos from treatments where the number of gestational sacs matched the number of transferred embryos (n=212) and embryos from treatments where no biochemical pregnancy was achieved (n=687) were included in the study. The chronological pattern of fertilization events as well as of other morphologic features (cell size and nucleation) was recorded.

Results: Timings of the pronuclei events in implanted and non-implanted embryos, were respectively; 2PB 3.37 h vs 3.21 h, 2PN 9.55 h vs 9.42 h, PN abuttal 12.23 h vs. 12.84 h, PN fading 23.89 h vs 24.41 h. We found no difference in the proportion of implanted embryos for the categorical variables PN score, PN symmetry and PN movement.

Discussion: The timing of PN fading could be linked to successful embryo implantation; the other parameters studied were not apparently related as determined by image acquisition and time-lapse analysis.