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TITLE

BLASTOCYSTS THAT EXPERIENCE COLLAPSES ARE LESS LIKELY TO IMPLANT AND GENERATE A PREGNANCY: A TIME-LAPSE STUDY

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ABSTRACT

Context: Blastocysts which undergo significant collapse of the blastocoel during development are less likely to implant and give a pregnancy Objective: This study investigated the correlation between blastocyst collapse and pregnancy/implantation rate following elective single blastocyst transfer (eSBT). Methods: This study was carried out between January and August 2016. All cycles with a single blastocyst transfer were analysed. Following transfer, each blastocyst was retrospectively allocated to one of two groups (collapsed/not collapsed). Pregnancy and implantation rates were analysed. Patient(s):149 couples having an elective single blastocyst transfer on day5 were included. Embryos were cultured individually in an Embryoscope slide (Fertilitech) in 6% CO2, 5.0% O2, 89% N2, using single step medium (G-TL-plus; Vitrolife). Intervention(s): Assessments were made in situ using time lapse cinematography.Main Outcome Measure(s): Blastocyst were analysed by measuring the maximum volume reduction during development and defined as having collapsed if there was >20% volume reduction during development. Result(s): A total of 149 cycles were analyzed and of these: 14 blastocysts collapsed once or more (9.4%) and the remaining 135 either contracted minimally or neither contracted nor collapsed during development (90.6%). A significantly higher pregnancy rate (BhCG>5) of 71.1% (96/135) was observed when blastocysts which had not collapsed were replaced compared to cycles in which collapsed blastocysts were replaced (pregnancy rate of 28.6%; 4/14). This trend was repeated when considering the implantation and clinical pregnancy rates of both groups 61.5% (83/135) and 54.9% (74/135) in the no collapse group compared to 28.6% (4/14) and 21.4% (3/14) in the collapsed group. Conclusions: The pattern of blastocyst collapse may be correlated with implantation and clinical outcome

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