Comparison of embryo quality between MINC benchtop incubator and Embryoscope timelapse system

Context: The EmbryoScope is an incubator containing a time lapse system for the study of embryo morphokinetics. Although this system has been introduced into many IVF centres, few prospective studies comparing embryo quality between different culture systems have been performed.

Objective: To investigate if a closed embryo culture system with minimal disturbance has an impact on embryo quality.

Methods: Patients who had more than 6 normally fertilized embryos were allocated to the study. Embryos were split between two culture systems, the EmbryoScope (ES group) and a standard benchtop incubator (SI Group). Both groups were cultured under the same conditions (6% CO2, 5% O2 and nitrogen balance at 37oC, using Vitrolife sequential medium).

Patient(s): Between May-November 2014, 37 patients undergoing ART were included in the study. 187 embryos were assigned to the SI Group and 214 to the ES Group. Morphological assessments were made at the same time points each day, using a standard grading system.

Intervention(s): Dishes were removed from the benchtop incubator for embryo assessment once per day. Assessments were made in situ for the embryoscope.

Main Outcome Measure(s): The proportion of good quality embryos on day 2, day 3 and day 5 was compared.

Result(s): The proportion of good quality embryos was higher in the ES Group compared to the SI group on day 2 (50.8% vs. 68.2%; $P=0.0005$ statistically significant) and on Day 3 (56.6 % vs. 74.3%; $P=0.0002$ statistically significant). Blastocyst formation was also higher in ES group (27.8 % vs 35%, $P=0.16$), but this trend was not significant.

Conclusions: This study demonstrates that embryo quality at cleavage stages is significantly better when embryos are cultured in the EmbryoScope compared to a benchtop incubator. Further assessment is required to determine if there is a significant effect on pregnancy rate.