

Comprehensive chromosomal screening (CCS) significantly reduces miscarriage rates

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Recent meta-analyses show that comprehensive chromosome screening is a useful tool to select embryos that results in higher implantation and reduced miscarriage rates. The aim of this retrospective analysis is to compare the results obtained from conventional in vitro fertilization (cIVF) and the use of CCS in case of patients with advanced maternal age.

Data were collected between January of 2013 and April of 2016 at our clinic. All autologous cycles with no chromosome rearrangements were included with advanced maternal age (AMA; 37-42 years of age) and fresh embryo transfer. In CCS group the transferred embryo(s) were all euploid, while in cIVF group transferred embryos had an unidentified chromosome profile.

In CCS group 78 euploid embryos were transferred in 63 cycles with an average number of 1.24 embryos per cycle. The clinical and ongoing pregnancy rates were 41,27% and 36,51%, respectively. In case of cIVF cycles the average number of transferred embryos was significantly higher (1,46 vs. 1,24; $p < 0,01$) but no difference was found in case of the clinical pregnancy rate (31,96%). Despite the similar clinical pregnancy rate there was a significantly higher ($p < 0,05$) miscarriage rate in cIVF group. These embryos had a 5,4-fold risk (95 % CI: 1,08 to 27,09) for miscarriage after a detected heart-beat compared to the euploid embryos ($p < 0,05$). The sustained implantation and ongoing pregnancy rates were significantly higher in the CCS group (34,62% vs. 16,20%, $p < 0,01$, 36,51% vs 21,65%, $p < 0,05$, respectively).

Furthermore in the cIVF group 3 pregnancies were terminated due to trisomy on chromosome 21.

Our results demonstrate that CCS is a more effective technique to select viable embryos for transfer than conventional morphology-based selection for AMA patients. With the use of CCS not only the ongoing pregnancy rate per ET can be increased but less patients experience miscarriage that is considered a major benefit compare to conventional IVF/ICSI treatments.