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Title

Are euploid embryos less likely to result in ectopic implantation?

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Objective:

Analysis of ectopic pregnancies using traditional cytogenetic techniques has demonstrated a higher than expected increase in aneuploidy of these extrauterine implantation sites. Newer molecular techniques have greater diagnostic accuracy. We sought to evaluate the likeliness of a ectopic implantation of embryos that have undergone pre-implantation genetic screening (PGS).

Materials and Methods:

Women undergoing in vitro fertilization (IVF) cycles from September 2010 to March 2015 were included. Subjects were stratified by fresh or frozen embryo transfer and PGS utilization. Student's t-test and Fischer's exact test were used.

Results:

A total of 914 IVF-PGS and 8762 non-PGS cycles were compared. Groups were similar in age (35.92 \pm 4.44 vs. 35.17 \pm 5.59). There was a greater proportion of cryosynthetic cycles in the IVF-PGS group (63.57% vs. 29.35%). Within the fresh IVF cohort (n=2572), there was a 5% decrease in ectopic pregnancy rates with IVF-PGS (1.20% vs. 1.26%, RR=0.95 [0.35-2.59]; p=1.00). Among 581 cryosynthetic cycles, there were no ectopic pregnancies after PGS compared to a 0.74% rate when PGS wasn't used (p=0.035). Among 9676 total cycles, there was a 60% decrease in the rate of ectopic pregnancy after IVF-PGS (0.44% vs. 1.11%, RR=0.40 [0.15-1.07]; p=0.058).

Conclusion:

The transfer of euploid embryos was associated with decreased incidences of ectopic pregnancies. Frozen embryo transfers resulted in the lowest incidence of ectopic implantation. Along with increasing intrauterine pregnancy loss, aneuploidy may contribute to extrauterine



implantation. The use of PGS to select the most genetically competent embryos may serve to improve live birth probability and decrease the ectopic pregnancy incidence after IVF and embryo transfer.