In this study we found out that patients older than 36 years old with AMH level less than 1 ng/ml, have significantly lower number of blastocyst suitable for biopsy, compared to the patients with AMH level great than 1 ng/ml (0.27±0.20 vs. 2.47±0.32). Patient in the lower AMH group also has significantly higher BMI compared to the group with higher AMH group (28.31±1.44 vs. 24.85±0.63).

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USING 24-CHROMOSOME ANEUPLOIDY TEST AND FROZEN BLASTOCYST TRANSFER CYCLES SIGNIFICANTLY IMPROVES PREGNANCY RATE AND DECREASES MISCARRIAGE RATE IN IVF PROGRAMS. K. Kirienko,[a] A. Strashnova,[a] E. Uvarova,[a] N. Voronich,[a] Z. Zlatopolsky,[b] O. Verlinsky,[b] T. Pakhalchuk,[b] V. Apryshko,[a] S. Yakovenko.[a] [a]Altravita IVF Clinic, Moscow, Russian Federation; [b]Reproductive Genetic Institute, Chicago, IL.

OBJECTIVE: The purpose of this study was to compare clinical outcomes (pregnancy and miscarriage rates) between frozen blastocyst transfer (FBT) cycles without preimplantation genetic screening (PGS), FBT cycles with 24-chromosome aneuploidy test and FBT cycles with 9-chromosome screening for infertile patients with normal karyotype aged 25-45.

DESIGN: Retrospective comparative study.

MATERIALS AND METHODS: Embryos were cultured to the blastocyst stage and vitrified shortly (Cryotech, Japan) after trophectoderm (TE) mechanical biopsy. Mechanically biopsied cells were analyzed by using 24-Chromosome Microarray - aCGH or by QF-PCR with the focus on 9-chromosomes (13,14,15,16,18,21,22,X,Y). A total of 503 couples were involved in the study. The experimental group included 203 couples (average female age is 37), 1022 blastocyst stage (BS) embryos were obtained from this group. Of these embryos, 489 were analyzed by aCGH and 533 were analyzed by QS-PCR. The control group included 300 couples (average female age is 33) undergoing IVF program without PGS. Ongoing pregnancies after single embryo transfer (SET) were confirmed by one fetal sac and heartbeat. Data was analyzed using Student's t-test.

RESULTS: Results are shown in the table. In IVF with 24-chromosome aneuploidy test group the risk of aneuploidies was strongly age-dependent ($p<0, 01$), however, results did not differ notably based on age in IVF with 9-chromosome PGS group. As a whole, IVF with 24-chromosome aneuploidy test resulted in significantly better clinical outcomes (clinical pregnancy ($p<0.01$) and miscarriage rate ($p<0.01$) compare to the other groups. The average cost of an IVF program with 9-chromosome PGS was increased by 4-21% and with 24-chromosome aneuploidy test by 24-25%.

CONCLUSIONS: Our study suggests that 24-chromosome aneuploidy test can significantly increase chances of pregnancy, while reducing the risk of miscarriage in infertile patients with normal karyotype aged 25-45 undergoing the IVF program. The cost of 24-chromosome aneuploidy test increases the cost of a whole IVF program only by 24-25% but allows significantly improve pregnancy rate and decrease miscarriage rate for patients of age group >39 years. Therefore using 24-chromosome aneuploidy test in IVF programs for patients >39 years is a protocol of choice. The combination of TE mechanical biopsy, single FBT cycles with 24 chromosome screening resulted in higher pregnancy rates and could contribute to the birth of a healthy child.

Results.

	Age group, years	IVF	IVF+PGS 9-chromosome	IVF+24-chromosome aneuploidy test
Euploid embryos, %	≤39	-	75.6	50.5
	>39	-	72.5	24.5
SET cancellation in connection with abscence of PGS-normal embryos, %	≤39	-	6.4	11.8
	>39	-	10.4	45.0
Clinical pregnancy rate/SET, %	≤39	35.0	35.5	58.7
	>39	20.0	16.0	26.0
Miscarriage rate/ pregnancy, %	≤39	34.8	22.0	11.4
	>39	57.5	43.0	16.7
The average cost of the program, USD (% of IVF)	≤39	6521	7911 (121%)	8147 (125%)
	>39	6911	7184 (104%)	8562 (124%)

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BIOPSY ON DAY 3 LEADS TO DELAY IN IMPLANTATION. D. H. McCulloh,[a] C. McCaffrey,[b] J. Grifo.[c] [a]Obstetrics and Gynecology, New York University Fertility Center, New York, NY; [b]NYU Fertility Center, New York, NY; [c]NYU Langone Medical Center, New York, NY.

OBJECTIVE: It is now widely held that blastomere biopsy performed on Day 3 leads to a decreased ability of embryos to implant (1). It remains unclear, however, whether the decrease in implantation is due to irreparable damage or to developmental delay that simply leads to embryonic-uterine asynchrony. The objective of this study was to compare the times of implantation (TIs) for embryos that had or had not undergone blastomere biopsy on day 3.

DESIGN: Retrospective analysis

MATERIALS AND METHODS: Patients who became pregnant following fresh transfer on Day 5 were identified and blood levels of human chorionic gonadotropin (hCG) on cycle days 28 and 35 were assembled as were the number of fetal sacs seen with ultrasound over the ensuing weeks. The time of implantation was determined by extrapolating log(hCG) levels back to the day when a threshold of log(10 mIIU/ml) was met. Although we call this TI, it actually represents a time lagging shortly behind implantation. TIs were determined for patients without and with blastomere biopsy on day 3.

RESULTS: The time of implantation for unbiopsied embryos was 7.8 + 1.9 days ($n = 790$). The time of implantation for patients with blastomere biopsy on day 3 was 9.6 + 2.1 days (43). These two TIs were significantly different (T Test, P ~2 X 10-9)

CONCLUSIONS: Implantation for embryos biopsied on day 3 was delayed by an average of 1.8 days relative to unbiopsied embryos. This delay in TI indicates that biopsied embryos suffer from developmental delay. If the uterine implantation window is limited, then it would be expected that developmentally delayed embryos may be at risk of implantation failure simply due to embryonic-uterine asynchrony as the uterine window closes. Asynchrony of the uterus with delayed embryos can be minimized by cryopreservation and resynchronization during FET. We may find that embryos biopsied on day 3, while delayed, will have improved outcomes following FET.

Reference:

1. Scott, et al., Fertil. Steril. (2013)100:624-630.

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DOES THE NUMBER OF EUPLOID EMBRYOS THAT A PATIENT MAKES HAVE AN AFFECT ON THE PREGNANCY OUTCOME OF A SINGLE THAWED EUPLOID EMBRYO TRANSFER (STEET)? N. M. Sachdev,[a] D. H. McCulloh,[b] J. Grifo.[c] [a]New York University Langone Medical Center Fertili, New York, NY; [b]New York University Fertility Center, New York, NY; [c]NYU Langone Medical Center, NY, NY.

OBJECTIVE: To identify if pregnancy outcomes differ in patients that make multiple euploid embryos from a single in vitro fertilization (IVF) cycle in comparison to patients who make only one.

DESIGN: Retrospective Cohort Study

MATERIALS AND METHODS: Global retrospective IRB was obtained. All patients who underwent IVF with preimplantation genetic screening (PGS) with array comparative genomic hybridization (aCGH), with at least one euploid embryo were included. The first single euploid frozen embryo transfer cycle following the IVF cycle was included. All causes of infertility, all indications for PGS, autologous and donor cycles were included. Patients who elected to undergo two or more euploid embryo transfer cycles were excluded. The primary outcome of the study included pregnancy (presence of a gestational sac) and clinical pregnancy (presence of fetal heart beat through cycle day 63 or a live birth). Statistical analysis was done using ANOVA, t-test and a linear regression model.

RESULTS: A total of 327 single euploid embryo transfers were included. The average age of patients included in the study was 37.37 ± 4.90. The overall pregnancy rate was 68.50%(224/327), of which 61.47% (201/327) led to ongoing clinical pregnancies or live births. The most common number of euploid embryos per cohort was one (n=108) with the highest number being