

and older who reported having a child. The questionnaire was developed using the CDC guidelines for developmental milestones. Analysis was performed with chi-square cross-tabulations and ANOVA using SPSS software.

RESULT(S): We collected 1,881 surveys: 1,652 (87.8%) participants spontaneously conceived and 229 (12.2%) used ART. ART methods included: infertility medication (91, 39.7%), intrauterine insemination (89, 38.9%), and in vitro fertilization (78, 34.1%). 12.2% (28) of respondents reported more than one method. When comparing spontaneous conception to ART, parents reported similar developmental milestones at most ages (Table 1). A significant difference existed at 12 months where those who had used ART were more likely to report their child met all milestones than spontaneously conceived children's parents, $p < 0.05$. This difference did not persist for subsequent age groups.

CONCLUSIONS: Parent perspectives of childhood development after ART are similar to those who spontaneously conceived.

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SPERM DNA FRAGMENTATION (SDF) WAS MOST EFFECTIVELY IMPROVED BY A SPERM SEPARATION DEVICE COMPARED TO DIFFERENT GRADIENT AND SWIMUP METHODS.



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BACKGROUND: SDF is correlated with poor embryo development, implantation, and ongoing pregnancy rates. Reducing DNA fragmentation index (DFI) in the sample used for insemination may improve IVF outcomes.

OBJECTIVE: Prospective study to compare different sperm preparation techniques on the same semen sample to determine which methods most effectively improves DFI and other sperm health biomarkers, oxidative stress adducts (OSA) and high DNA stainability (HDS) index.

MATERIALS AND METHODS: Thirty samples from semen analysis patients were obtained. Samples sent to ReproSource (Woburn, MA) were blinded by freezing the samples in vials labeled with a random number. An aliquot of 0.3 mL of neat semen was frozen and the remainder of the semen allocated between 5 preparation methods (1-5). A sterile syringe was used to load 0.8 mL of raw semen in ZyMöt Sperm Separation Device (1,DxNow) then layered with G-IVF+ and incubated for 30 minutes. At the end of incubation, 0.3 mL of sperm was removed from the out port and frozen. Approximately 0.8 mL of semen was layered over the Isolate gradient (2,Irvine) and SpermGrad gradient (3,Vitrolife) per package insert and centrifuged for 15 minutes. The samples were reconstituted with GIVF+ and an aliquot of each was frozen. The pellet was re-formed and the tube incubated at an angle

Prep Method 1	Prep Method 2	DFI p-value	OSA p-value	HDS p-value
Neat	Isolate	0.0052	0.0002	0.0011
Neat	Isolate + SU	0.0023	0.0002	<0.0001
Neat	SpermGrad	0.074	0.0574	0.2837
Neat	SpermGrad + SU	0.0184	0.0024	0.0002
Neat	DxNow	<0.0001	<0.0001	<0.0001
Isolate	Isolate + SU	0.6789	0.8360	0.0389
Isolate	SpermGrad	0.3750	0.0656	0.0326
Isolate	SpermGrad + SU	0.6520	0.7394	0.1808
Isolate	DxNow	<0.0001	0.0657	<0.0001
SpermGrad	SpermGrad + SU	0.4464	0.3183	0.0044
SpermGrad	Isolate + SU	0.1761	0.0656	0.0005
SpermGrad	DxNow	<0.0001	0.0004	<0.0001
DxNow	Isolate + SU	<0.0001	0.0224	<0.0001
DxNow	SpermGrad + SU	<0.0001	0.0428	<0.0001
SpermGrad + SU	Isolate + SU	0.4779	0.9764	0.0044

DFI, OSA, and HDS were compared between preparation methods on the same ejaculate using Wilcoxon Rank Sums between each preparation method.

to obtain the swim-up (SU) Isolate + SU (4) and Spermgrad + SU (5), for each gradient. After one hour, an aliquot from the top of the top of the tube was frozen. Each blinded sample, 6 per semen sample, was analyzed using the Sperm DNA Fragmentation Assay (acidine orange/flow cytometry SDFATM) and the OSATM test which directly measures sperm damage from oxidative stress by quantifying the presence of "adducts," molecules in semen covalently modified by free radicals/reactive oxygen species. Statistical analysis was performed in JMP (SAS 2017).

RESULTS: The mean age of men in the study was 37±8.3 years. Neat sperm concentrations ranged from 7 to 104 million/mL with 23.3% oligospermic. The motility of the samples ranged from 15 to 80% motility with an average of 52.2±16.9%. DFI, OSA, and HDS were compared between preparation methods on the same ejaculate using Wilcoxon Rank Sums between each pair with $P < 0.05$ considered significant (See table).

CONCLUSION: Sperm preparation methods have changed very little even with the rapid advances in the IVF laboratory. The sperm separation device is a novel method that effectively reduced DFI ($p < 0.0001$) compared to two different gradients (2,3) and gradients followed by swim-up (4,5). The device also has eliminated centrifugation, a step known to increase oxidative stress. The device reduced OSA levels, a measurement of oxidative stress, and HDS, which is a measurement of immature cells and high histone retention. These are both indicators of sperm health and function. Overall, the quality of the sperm obtained post-processing was improved by the use of the separation device, which may increase the chance of a healthy sperm being used for fertilization.

FUNDING: ReproSource Investigator Award, DxNow donated the ZyMöt devices.

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ELEVATED SERUM PROGESTERONE DURING IN VITRO FERTILIZATION TREATMENT AND THE RISK OF ISCHEMIC PLACENTAL DISEASE.



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BACKGROUND: Elevated progesterone on the day of human chorionic gonadotropin (hCG) administration is associated with lower live birth rates and lower birth weight after fresh embryo transfer in an IVF cycle. While previous research indicates that elevated estradiol during ovarian stimulation increases the risk of preeclampsia and low birth weight, few studies have examined the association between progesterone and risk of adverse pregnancy outcomes.

OBJECTIVE: This study aimed to assess the association between serum progesterone on the day of hCG administration and the risk of ischemic placental disease [IPD; preeclampsia, placental abruption, and/or small for

