oil. The device was inserted into the patient’s vagina for incubation and carried for 5 days before she returned to have embryo development evaluated and an embryo transfer. IUI’s were performed with gradient prepared semen per standard protocols. Data was collected for a single calendar year in 2017. RESULTS: A total of 36 patients, between ages 27 and 42, opted to have IVC cycles performed. All patients were able to tolerate the device well, with no adverse events requiring premature removal of the device. The per-start positive biochemical pregnancy rate was 52% and the ultrasound confirmed pregnancy rate was 47%. The per-transfer pregnancy rates were 69% and 63% respectively with a total of 28 transfers performed (a 22% non-transfer rate). The pregnancy rates for IUI performed in the same calendar year were 13% and 12% respectively for patients in the same age bracket with a total of 869 cycles performed.

CONCLUSIONS: IVC with day 5 blastocysts transfers appears to offer an appreciable pregnancy rate increase when compared with IUI cycles. While IVC cannot compete with full IVF cycles, due to inherent treatment limitations, it may offer a more efficacious first treatment option for infertility patients that meet the selection criteria than several rounds of IUIs. However, cell requirements for a large HeLa culture and L cells in CSF, which don’t reflect the requirement of embryos. This may have caused to limit the ability of human embryos in vitro. Efficacy of media composed of amino acid concentrations of human oviductal fluid has yet to undergo analysis because there is no medium with the amino acid concentrations similar to human oviductal fluid. In this study, we confirm whether human oviductal amino acid medium is more effective in human IUI compared with current single step medium.

DESIGN: randomized control study.

MATERIALS AND METHODS: Human oviductal fluid samples were collected laparoscopically from 28 women aged 26-39 years, and were analyzed in helping to formulate new embryo culture media. In 2017, medium composed of amino acid concentrations of human oviductal fluid has become available in Japan. We conducted an RCT to evaluate the medium using 762 embryos obtained from 212 cycles of patients who underwent IVF or intracytoplasmic sperm injection (ICSI) between September 2017 and February 2018. Before fertilization, the oocytes were divided into two groups: cultures using the new medium composed of human oviductal amino acid (OVIT); and cultures using current medium (CSC). The embryo grade during culture period (day 0 to day 5) and clinical outcome after embryo transfer were compared between OVIT group and CSC group.

RESULTS: Patient characteristics including women’s age, men’s age, the number of previous IVF-ET failure cycles were not different significantly. The number of embryo which was transferred to the uterus or cryopreserved was larger in OVIT group compared with CSC group (46.0% (247/537) versus 36.3% (195/537), respectively; P<0.01). The implantation rate after transfer of vitrified-warmed embryos was higher in OVIT group compared with CSC group (38.5% (35/91) versus 28.9% (227/76), respectively; the difference was not statistically different). The miscarriage rate was 25.7% (9/35) versus 40.9% (9/22), respectively, thus, the on-going pregnancy rate was 28.6% (26/91) versus 17.1% (13/76), respectively; P<0.05.

CONCLUSIONS: Medium composed of human oviductal amino acids enhances embryonic ability more than the current single step medium, and it may make a contribution to clinical success in IVF treatment.

FERTILITY & STERILITY®

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FURTHER STUDIES INTO THE USE OF A MODIFIED SPECIFIC GRAVITY CHAMBER AS A MEANS OF INDUCING A MICROFLUIDIC EFFECT ON EMBRYO GROWTH. A. Branson, a C. Wessels, a L. Penrose, b S. Prien. aAnimal and Food Sciences, Texas Tech University, Lubbock, TX; bOb/Gyn, Texas Tech University Health Science Center, Lubbock, TX; Ob/Gyn, Texas Tech University Health Sciences Center, Lubbock, TX.

OBJECTIVE: Limited research has suggested that microfluidic culture can enhance embryo development. To date, devices for inducing the effect have proven both expensive and complicated to use. Previous research from this laboratory has suggested that the modified specific gravity device (MSGD), which was designed as a non-invasive means of assessing embryo quality, has the added benefit of inducing a short-term microfluidic effect, which appears beneficial to embryo development. The objective of the present study was to further explore the effect and determine if processing method had any impact embryo outcome.

DESIGN: A laboratory based study on embryo development following exposure to a microfluidic field.

MATERIALS AND METHODS: A series of MSGD were prepared with varying chamber lengths as described in a previous study (33, 66, 99 mm). Sixteen mice were then superovulated using standard techniques to produce single cell embryos/unfertilized oocytes (N=176). The recovered embryos were then randomly assigned to one of four treatments, the three chamber length or a non-dropped control. In a previous study, embryos had been allowed to move through the observation zone (10 mm) by the force of gravity and then the chamber released inducing a mass flow effect (potential excessive shear force). Here embryos were given time to descend to the full length of the chamber by gravity alone. Embryos were then placed in standard culture conditions and allowed to develop for 6 days. Embryos were evaluated every 24 hours for growth.

RESULTS: A total of 98 embryos developed past the single cell stage and were used in the final statistical analysis. Embryos were assessed for both cellular divisions and stage of embryo development. Only embryos dropped through the 33 mm chamber appeared to have significantly higher cell numbers than the control embryos at the end of the study (P<0.001). However, as in the previous reported study, embryos exposed to the MSGD of any length demonstrated better development rates to the morula and blastocyst stage than those embryos in the control group (P<0.001).

CONCLUSIONS: As in the previous studies, the MSGD appears to create a microfluidic effect beneficial to embryo development. The effect appeared to be consistent with previous research, indicating that embryos benefit from traversing the MSGD regardless of the speed of descent, suggesting a robustness to the benefit. Further study is needed to determine the mechanisms in play which result in enhanced embryo development.

Supported by: The Laura W. Bush Institute for Women’s Health
RESULTS: Post-randomization, the control group consisted of 24 patients with 269 zygotes while 451 zygotes from 41 patients were cultured in the Miri® TL. Control zygotes developed into 124 (46%) excellent quality blastocysts while 193 (43%) excellent quality blastocysts were identified in the study group. No significant difference (p = 0.3877) was observed in blastulation rates between incubator types by chi-square analysis. In addition, 43 frozen embryo transfers (13 Control and 30 Study) were performed with no significant difference (p = 0.8642) in pregnancy success, 53% and 56%, respectively. Pregnancy success was marked by positive fetal cardiac activity at 7 weeks gestation. Morphokinetic data was also analyzed by t-test and did not show a significant difference (p = 0.787) in division times between aneuploidy and euploid embryos.

CONCLUSIONS: Previous studies have shown no difference in blastocyst formation, viability and ongoing pregnancy rates between other commercially available time-lapse incubators and standard large-box incubators.1,2. We conclude similar observations in this randomized comparative validation study with the Miri® TL. Incubator and standard large-box incubators. The Miri® TL provides a novel, safe and non-invasive approach to monitoring the embryos throughout culture. Although blastulation rates, pregnancy success and morphokinetic data in relation to embryo ploidy did not result in significant differences, the added value of time-lapse as a patient engagement tool has yet to be determined.


Supported by: ESCO medical provided the Miri® TL Benchtop incubator at no costs for this study. No additional financial compensation was provided to patients or clinic.

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OBJECTIVE: Time lapse technology is offering a multitude data about kinetics of embryonic development, but few have studied influence of the male gamete in embryonic kinetics. Our main objective is to determine if the seminal quality can affect the morphokinetic variables of human embryos.

DESIGN: Retrospective study in which were included 118 oocyte donors. Group A and B were compared. 80 of them (863 oocytes and 791 embryos) were good prognosis patients sperm samples (more than 15 million/ml, more than 30% of motility and more than 4% of normal forms) (group A) and 38 cycles (427 oocytes and 303 embryos) coming from sperm samples from poor prognosis patients (less than 5 million/ml, less than 5% of motility and less than 1% of normal forms) (group B).

MATERIALS AND METHODS: The oocytes and pronuclear stages were divided into two groups after sperm injection. The 1st group was dry culture which included 286 oocytes. The 2nd group was the humid culture which included 285 oocytes. Humidification was induced with 80 mL of Molecular Biology water (Lonza; Belgium) in a large petri dish. Embryological Parameters were assessed and recorded through 5-6 days culture.

RESULTS: In the dry culture group, 286 MII oocytes from 21 women were cultured inside dry chambers from day 0 to day 5 or 6. In the humid culture group, 285 MII sibling oocytes were cultured in humid chambers from day 0 to day 5 or 6. Humid culture negatively affected the high-quality blastocyst rate as it was significantly lower in the humid culture group (43.5%) than the dry culture group (62.9%) (P = 0.0032). However, there were no significant difference in cleavage rate in the humid culture group (75.4%) than the dry culture (78.67%) (P = 0.3577), neither was significant difference in blastocyst formation rate in humid culture group (50.23%) than the dry culture Group (55.11%) (P = 0.3060).

CONCLUSIONS: Humidification didn’t affect fertilization, Cleavage, or Blastocyst formation rates, but there was a significant difference in high-quality blastocyst rate favoring dry culture.

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A COMPARISON OF PGS EUPLOIDY RATES BETWEEN DAY 5 AND DAY 6 BLASTOCYSTS. G. Abdo,a M. R. Goodwin,a M. G. Abdo,b F. Sharara,c 1Virginia Center for Reproductive Medicine, Reston, VA; 2George Washington University, Washington, Washington, WA.

OBJECTIVE: Aneuploidy screening of blastocysts is being used to improve live birth rates and reduce the number of embryos for transfer. A primary observation indicates that embryo culture and developmental speed of blastocyst stage can affect PGS results. The current study tests the hypothesis that faster embryo development and blastocyst formation on day 5 can lead to higher euploidy rate.

DESIGN: A retrospective study of PGS results from blastocyst biopsied on day 5 versed day 6 was conducted to identify differences in euploidy rates in PGS cases.

MATERIALS AND METHODS: A total of 818 blastocyst biopsies (693 day 5 blastocyst biopsies and 125 day 6 blastocyst biopsies) were included in this analysis. Assisted hatching was performed on day 3, and trophectoderm biopsy took place on days 5 or 6. Euploidy and aneuploidy rates, structural segmental abnormal, complex abnormal and no-results rates were