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EFFECTS OF LOW O_2 CONCENTRATION IN EXTENDED EMBRYO CULTURE USING BENCHTOP INCUBATORS (EMBRYOSCOPE AND MINC). M. Martínez-Burgos, C. Losada, S. Pareja, D. Agudo, F. Bronet. In Vitro Fertilization Laboratory, IVI Madrid Clinic, Madrid, Spain.

OBJECTIVE: To evaluate the effects of low O_2 concentrations in embryo culture using benchtop incubators.

DESIGN: Retrospective study of day 5 blastocysts viability and quality in patients selected for extended culture.

MATERIALS AND METHODS: Between 2011/12/15 and 2013/3/15, 1718 Fertilized eggs have been cultured until day 5 in Global Total Medium and placed: (1) 579 in Embryoscope (6% CO_2 in air), (2) 589 in Embryoscope (5%O_2, 6% CO_2, 89% N_2) and (3) 550 in Cook MINC Incubator (premixed 5%O_2, 6% CO_2, 89% N_2).

RESULTS: Results showed significant differences in favour of both Low O_2 Incubators for Blocked Day 3 Embryos, Blastocyst (BT) Formation and Viable Blastocysts Rates, and Blastocyst Quality on D5. There were not differences in Viable Blastocyst over Total or Expanded Blastocyst on D5 rates among the incubators. All incubators showed high Implantation Rate but significant differences were found between (1) and (3).

CONCLUSION: Despite the beneficial effects of culturing embryos in Benchtop incubators due to their capability to control and restore culture conditions quicker than standard incubators, our study showed better results when low O_2 concentrations are used. In any case, those embryos that were able to reach blastocyst stage showed similar viability. Type of incubator didn't cause any differences in all studied parameters if low 0_2 concentrations are used. Further prospective, randomized studies could validate this hypothesis.

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COMPARISON OF THREE pH MEASURING DEVICES WITHIN THE IVF LABORATORY. J. E. Swain. Obstetrics & Gynecology, University of Michigan, Ann Arbor, MI.

OBJECTIVE: To compare pH values from three separate measuring devices.

DESIGN: Comparative study.

MATERIALS AND METHODS: pH measurements were recorded using 3 independent devices: 1) a benchtop pH meter with a glass double-junction, KCl filled electrode & temperature compensation, 2) a solid state pH meter (pHit) with temperature compensation and 3) a portable blood gas analyzer (iSTAT) that is set to measure at 37°C. All devices were calibrated prior to each use. A HEPES/MOPS buffered medium was used for measurement to prevent pH fluctuations. Three independent measurements were recorded for each device at both 37°C and 23°C to verify accuracy due to the impact of temperature on pH. Additionally, measurements were repeated in the presence of 10% v/v protein to examine potential probe interference. Data were analyzed using ANOVA followed by Tukey analysis.

RESULTS: At 37°C, the iSTAT gave similar readings compared to the benchtop pH meter (7.34±0.02 vs. 7.33±0.01), while the pHit device (7.37±0.02) yielded significantly higher readings compared to the benchtop unit ($p<0.02$), but not the iStat ($p<0.06$). Similar results were apparent with the addition of 10% protein, with the pHit yielding significantly higher pH readings than both the iSTAT and benchtop unit, which were similar (7.39±0.01 vs. 7.31±0.01 vs 7.30±0.01, $p<0.01$). At 23°C, the iSTAT, benchtop and pHit devices all gave significantly different readings without (7.23±0.01 vs 7.36±0.01 vs. 7.54±0.02) and with protein added (7.21±0.0 vs 7.35±0.01 vs. 7.54±0.03), $p<0.01$.

CONCLUSION: Accuracy of any pH meter should be validated prior to implementation in the clinical IVF lab. Different devices can display significantly different readings. Protein can impact pH and interfere with pH measurements. The impact of temperature on pH measurement should also be considered. If incubator settings are adjusted based on independent instrument readings prior to validation, improper pH conditions could be achieved thereby compromising cell development and function.

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SINGLE EMBRYO TRANSFER (SET) AT BLASTOCYST STAGE IS AS SUCCESSFUL AS DOUBLE EMBRYO TRANSFER (DET) AT CLEAVAGE STAGE. P. A. Saunders, A. Ison, L. Irwin, M. Cruz, S. Hamilton. ISIS Regional Fertility, Mississauga, ON, Canada.

OBJECTIVE: Despite transfer of 2 or less embryos in more than 90% of our IVF cycles, our program continues to have multiple pregnancy rates of >30%. Starting in January 2012, clinical staff began to promote SET at blastocyst stage to all patients. We report the impact of this initiative on cycle outcomes.

DESIGN: Retrospective study.

MATERIALS AND METHODS: Embryo Transfer (ET) data was reviewed for 173 IVF/ICSI cycles (own oocytes; January 2012 to February 2013). Physicians discussed the risks of multiple pregnancy and its relationship to number of embryos transferred. Based on early embryo development updates, patients with at least 2 available embryos on day 3 were asked to consider elective SET (eSET) on day 5. When DET was requested, patients were encouraged to do so at the cleavage stage. Clinical pregnancy, multiple pregnancy and incidence of embryo freezing were compared by day and number of embryos transferred. Comparisons were assessed by Chi squared analysis with significance at $p<0.05\%$.

RESULTS: Of 173 ETs, 34.1% of all patients and 42.3% under 39 years of age opted for eSET. SET at blastocyst stage was associated with higher clinical pregnancy rate than DET at cleavage stage ($p>0.05\%$;Table 1). Overall, DET was associated with 27.5% multiple pregnancy rate (all twin) while no multiple pregnancies occurred in the eSET group.

Clinical pregnancy, twin and embryo freesing rates for eSET and DET on Day 3 vs 5 for patients with 2 or more embryos on Day 3

Day	# Trans.	CP	All ages Cryo	Twins	<39CP	Cryo	Twins
Day 3	1	66.7%(3)	33.3%(3)	0% (3)	66.7%(3)	33.3%(3)	0%(2)
	2	39.8%(89)	27.9%(89)	25.7%(35)	41.4%(59)	40.7%(59)	29.2%(24)
	3	22.2%(9)	0%(9)	50.0%(2)	66.7%(3)	0%(3)	50.0%(2)
Day 5	1	42.9%(56)	76.8%(43)	0%(56)	49.0%(49)	77.6%(49)	0%(24)
	2	31.6%(16)	43.8%(16)	40.0%(5)	33.3%(9)	55.6%(9)	50.0%(3)
	3	N/A	N/A	N/A	N/A	N/A	N/A

CONCLUSION: With appropriate counselling and patient selection, eSET virtually eliminates the risk of multiple pregnancy without significant impact on clinical pregnancy or freezing of additional embryos.

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A TIME-LAPSE ANALYSIS COMPARING SEQUENTIAL CULTURE CLEAVAGE MEDIUM SK02-10® FROM KITAZATO BIOPHARMA® AND SYDNEY IVF CLEAVAGE MEDIUM K-ICM-100® FROM COOK MEDICAL®. D. Castello, M. J. De los Santos, J. L. Romero, J. M. De los Santos, T. Viloria, M. Meseguer. Clinical Embryology Department, IVI Valencia, Valencia, Spain.

OBJECTIVE: To evaluate the effect of two different culture media brands on embryo kinetics as a previous step to introduce as conventional media in our current clinical practice.

DESIGN: Prospective double blinded cohort study.

MATERIALS AND METHODS: 76 patients undergoing egg donation, a total of 1152 oocytes were divided in two groups at the moment of retrieval, the subsequent four treated with media 1 (CLEAVAGE MEDIUM SK02-10® FROM KITAZATO BIOPHARMA®) (n=529). The resting were collected and subsequently treated with media 2 (SYDNEY IVF CLEAVAGE MEDIUM K-ICM-100® FROM COOK MEDICAL®) (n=623). After ICSI, oocytes were placed inside the Embryoscope. Variables studied included exact timing of cell cleavages (t2, t3, t4 and consecutives), we also studied the