on day 5 without UF and EMT of 11mm, the model-predicted probability of having at least 2 LB after 4 SEET is 80%. Notably, oocyte age was not predictive of LB in the final models.

CONCLUSIONS: Our model demonstrates that once a euploid embryo is obtained, LB is dependent mainly on embryo quality and endometrial factors. This model incorporates patient- and embryo-specific factors to generate an individualized probability for 1 or 2 LB based on the number of euploid embryos frozen, and allows for cycle-specific factors to be incorporated, once available, to further improve precision of predictions.

IMPACT STATEMENT: This tool may help patients make personalized decisions regarding how many embryos to freeze to achieve their ideal family size, based on their own demographics and reproductive characteristics. In an era of precision medicine, big data generates tools that enable patients to take steps today that will convey a high likelihood of completing their desired family in the future.

SUPPORT: None

O-20 11:00 AM Monday, October 18, 2021

DOES HARVESTING OVARIAN TISSUE TO DELAY REPRODUCTIVE AGING HAVE A NEGATIVE IMPACT ON THE NATURAL AGE OF MENOPAUSE IN HEALTHY WOMEN?

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OBJECTIVE: Given the increasing success rates of ovarian tissue cryopreservation and autologous transplantation, ASRM has removed this approach from the list of experimental fertility preservation procedures. The advances in ovarian cryopreservation and transplantation techniques led to the question of whether it can also be used to delay reproductive aging and provide a natural form of hormone replacement therapy. However, it is currently unknown if ovarian biopsies obtained for elective purposes will cause a reduction in reproductive lifespan not matched by the longevity of the transplanted tissue. The objective of this study was to determine if ovarian biopsies from healthy women, obtained for cryopreservation, causes earlier menopause than the controls.

MATERIALS AND METHODS: Under a prospective IRB-approved protocol, 48 women underwent harvesting of ~1/5th of one ovarian cortex during benign non-ovarian OBGYN procedures, for the purpose of ovarian cryopreservation to delay reproductive aging. 48 participants who declined to have ovarian biopsy but had similar benign surgeries agreed for follow up and served as controls. The participants were then contacted to determine their menstrual status up to 20 years later.

RESULTS: The mean ages of the participants were similar between the study (26.2 years, range 21 – 36) and the control group (27.1 years, range 24 – 37) at the study entry. During the follow up over a 20-year period, 11 of 96 women dropped out. The remaining participants are now between the ages of 41 and 56. In the study group, 10 women experienced menopause, defined as the absence of menstruation for at least one year. Of those, 3 are between 45 and 47, 4 between 48 and 52 and 3 between 54 and 56 years of age. None of the 48 women who had their ovarian tissue harvested experienced premature ovarian insufficiency. In the control group, 9/48 (18.7%) women experienced menopause: 4 aged 45 to 47 years, 2 aged 48 to 53 and 3 aged 56 to 57 years. There were no significant differences in the age at which menopause arose between the women who had ovarian tissue harvesting and the controls.

CONCLUSIONS: The removal of one fifth of the ovary for the purpose of cryopreservation does not seem to cause premature ovarian insufficiency or early menopause. If this amount of tissue is proven to be sufficient to extend ovarian functions in healthy women after autotransplantation, women can undergo small ovarian biopsies to delay reproductive aging.

IMPACT STATEMENT: This is the first prospective study that report the impact of ovarian tissue harvesting for fertility preservation on the age at natural menopause in healthy women.

O-21 11:15 AM Monday, October 18, 2021

THE IMPACT OF DURATION OF OOCYTE CRYOPRESERVATION ON LIVE BIRTH OUTCOMES IN IVF CYCLES USING AUTOLOGOUS THAWED OOCYTES.

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OBJECTIVE: To evaluate whether duration of autologous oocyte vitrification has an impact on *in-vitro* fertilization (IVF) cumulative live birth rates (cLBR) after fresh or frozen embryo transfers.

MATERIALS AND METHODS: We identified IVF cycles using autologous vitrified/thawed oocytes from 2010-2020. Ovarian stimulation, oocyte vitrification/thawing, IVF/ICSI, embryo culture/transfer were performed using published protocols. Duration of cryopreservation for the oocytes in each thaw cycle was calculated. Primary outcomes were live birth rates per fresh and frozen transfer as well as LBR per oocyte thaw cycle. Statistical analysis between groups were performed using chi-square analysis and ANOVA for categorical and continuous variables, respectively. GEE models were used to control for age at retrieval, number of oocytes thawed/thaw cycle, indication for freezing, BMI, infertility diagnosis, stage of ET (for fresh transfers only) and number of embryos transferred.

RESULTS: Outcomes of 530 IVF cycles utilizing autologous vitrified/thawed oocytes were evaluated. Data were pooled into vitrification duration groups as listed in the table below. Adjusted GEE analysis demonstrated that duration of oocyte vitrification had no impact on live birth rate (LBR) per fresh or frozen embryo transfer or cumulative LBR.

CONCLUSIONS: Though oocyte vitrification has demonstrated superiority over slow freezing techniques, limited data exists regarding whether duration of oocyte vitrification impacts live birth rates. After controlling for potential confounding factors, duration of prior oocyte vitrification had no impact on live birth rate or cumulative LBR in subsequent IVF treatments.

Total thaw cycles (n = 530)	< 1yr (n=202)	1-1.9 yr (n=75)	2-2.9 yr (n=67)	3-3.9 yr (n=66)	4-4.9 yr (n=61)	5 yr or > (n=59)	P value	Adj P value
Mean # oocytes thawed/ thaw cycle	12.95 ± 8.51	11.16 ± 7.12	13.33 ± 9.04	14.66 ± 7.50	12.34 ± 6.24	12.95 ± 8.51	<0.001	
Fresh transfers								
Clinical pregnancy/transfer	79/151 (52.3%)	30/51 (58.8%)	19 /42 (45.2%)	15/41 (36.6%)	15/36 (41.7%)	20/40 (50%)	0.29	0.15
Live birth/transfer	58/151 (38.4%)	23/51 (45.1%)	9/42 (21.4%)	8/41 (19.5%)	9/36 (25%)	11/40 (27.5%)	0.02	0.07
Frozen transfers								
Clinical pregnancy/transfer	31/51 (60.8%)	18/24 (75%)	15/25 (60%)	21/25 (84%)	17/25 (68%)	11/1 (57.9%)	0.36	0.98
Live birth/transfer	23/51 (45.1%)	13/24 (54.2%)	9/25 (36%)	16/25 (64%)	15/25 (60%)	7/19 (36.8%)	0.32	0.93
Cumulative LBR/thaw cycle	81 (40.1%)	36 (48%)	18 (26.9%)	24 (36.4%)	24 (39.3%)	18 (30.5%)	0.13	0.35