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**DOES THE DURATION OF CRYOSTORAGE OF VITRIFIED-WARMED OOCYTES IMPACT IVF AND PERINATAL OUTCOMES?**

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**OBJECTIVE:**

While previous studies have failed to demonstrate an impact of blastocyst vitrification on IVF outcome, limited data exists regarding whether the length of post-vitrification cryostorage has a time-dependent impact on the reproductive potential of vitrified oocytes. The current study aimed to determine whether IVF and perinatal outcomes differ according to the length of cryostorage of vitrified oocytes.

**MATERIALS AND METHODS:**

This single center, retrospective cohort study included all vitrified-warmed oocytes that were utilized for single, euploid frozen embryo transfer (FET) from 2013 to 2020. Vitrified oocytes were grouped according to cryostorage duration (<1 yr; 1-3 yr; >3 yr). Clinical outcomes included clinical pregnancy rate (CPR), live birth rate (LBR) and pregnancy loss rate.

**RESULTS:**

Patients who cryopreserved oocytes for <1 year were significantly younger than patients who stored oocytes from 1-3 or >3 years ( $p < 0.01$ ). Embryos sourced from cryopreserved oocytes stored for >3 years were more likely to be vitrified on day 5 ( $p = 0.05$ ) and had more favorable TE grade ( $p = 0.02$ ). In the multivariate regression, CPR, LBR, and pregnancy loss rate were not significantly different between the groups. There were also no significant differences between GA at delivery, preterm delivery rate, birth weight and length [Table 1].

**CONCLUSIONS:**

The duration of cryostorage of vitrified oocytes does not impact the reproductive potential of the resulting embryos and subsequent development of ensuing pregnancies. Our findings are encouraging and support the notion that there is flexibility for patients who wish to use oocyte vitrification for fertility preservation for medical indications or to circumvent ovarian aging, with respect to when they may choose to build their family.

**IMPACT STATEMENT:**

Our results demonstrate similar IVF and perinatal outcomes regardless of length of cryostorage, which is particularly reassuring for those patients who undergo oocyte cryopreservation early in their reproductive years.

Table 1.

	< 1 yr (n=30)	1-3 yrs (n=19)	> 3 yrs (n=32)



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Patient age	34.4 ± 4.2	40.7 ± 3.3	41.8 ± 2.4
Oocyte age	33.4 ± 4.5	38.3 ± 3.0	36.2 ± 2.1
BMI	25.4 ± 5.8	25.5 ± 5.1	22.6 ± 2.6
Day of embryo development (%)	40.0	36.8	65.6
5	60.0	63.2	31.3
6	0.0	0.0	3.1
7			
Expansion grade (%)	70.0	68.4	65.6
3	26.7	21.1	31.3
4	3.3	10.5	3.1
5			
ICM grade (%)	70.0	52.6	62.5
A	26.7	42.1	31.3
B	3.3	5.3	6.3
C			
TE grade (%)	26.7	21.1	40.6
A	63.3	36.8	53.1
B	10.0	42.1	6.3
C			
CPR (%)	56.7	42.1	71.9
LBR (%)	27.6	23.5	60.0
Pregnancy loss rate (%)	72.4	76.5	36.7
GA at delivery	40.0 ± 1.7	39.4 ± 0.6	39.2 ± 1.4
Preterm delivery (%)	12.5	0.0	5.3
Birth length (in)	20.4 ± 1.7	19.8 ± 0.4	20.1 ± 0.9
Birth weight (g)	3647.6 ± 819.2	3161.0 ± 296.9	3409.5 ± 497.7