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PREGNANCY LOSS RATES BY DEVELOPMENTAL STAGE AFTER SINGLE EUPLOID FROZEN-THAWED EMBRYO TRANSFER

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OBJECTIVE:

Patients who conceive naturally experience a predictable decline in pregnancy loss rates as they progress in gestational age, from a 15-25% global loss rate to 3-5% once cardiac activity is observed.[1,2] The objective of this study is to determine the rate of loss at each stage of early pregnancy following single euploid FET.

DESIGN:

Retrospective cohort study

MATERIALS AND METHODS:

Patients who underwent a single euploid FET from 2016-2018 were included in the study. Patients with confirmed pregnancy, defined as bHCG ≥2.5 mIU/mL, were analyzed. Preimplantation genetic testing for aneuploidy (PGT-A) was performed using Next Generation Sequencing. Primary outcome was pregnancy loss rate at the following stages: 1. Initial HCG positive; 2. second HCG rise; 3. presence of gestational sac; 3. presence of yolk sac; 4. presence of fetal pole; 5. presence of cardiac activity; 6. discharge from the practice with ongoing pregnancy. Results were stratified according to history of prior clinical pregnancy loss. Multinomial logistic regression was used to determine the association of covariates with pregnancy loss at each stage, with generalized estimating equations to account for repeated patients.

RESULTS:

A total of 7092 single euploid FET cycles were observed, 2685 of which resulted in pregnancy and were included in the study. Of these, 345 FET were performed in patients with one prior loss and 50 in patients with ≥2 prior losses. Rates of pregnancy loss following each developmental stage for patients with and without a history of prior pregnancy loss are shown in Table 1. Multinominal logistic regression showed that among patients with no prior loss, patient age, oocyte age, BMI, AMH, BAFC, and endometrial thickness were not associated with pregnancy loss at any stage. Among patients with any history of loss, endometrial thickness was negatively associated with pregnancy loss (p=0.03).

CONCLUSIONS:

High loss rates despite transferring screened embryos indicate a significant contribution of non-genomic factors to reproductive failure. While screening for embryonic competency accounted for maternal age, other factors were found to contribute to likelihood of pregnancy loss including endometrial thickness among patients with a prior loss. Personalized management must take into account a multifactorial approach when counseling patients about the likelihood of early pregnancy loss.

Table 1: Rate of pregnancy loss following each developmental stage

Pregnancy stage	No prior loss (N=2290)	1 prior loss (N=345)	≥2 prior losses (N=50)
Positive HCG	20.6%	25.7%	36.0%
HCG rise	20.3%	25.7%	34.7%
Gestational sac	17.5%	21.4%	31.9%
Yolk sac	14.9%	15.5%	27.2%
Fetal pole	12.1%	13.5%	25.6%
Cardiac activity	10.1%	12.0%	21.9%
Discharge	5.7%	7.6%	8.5%

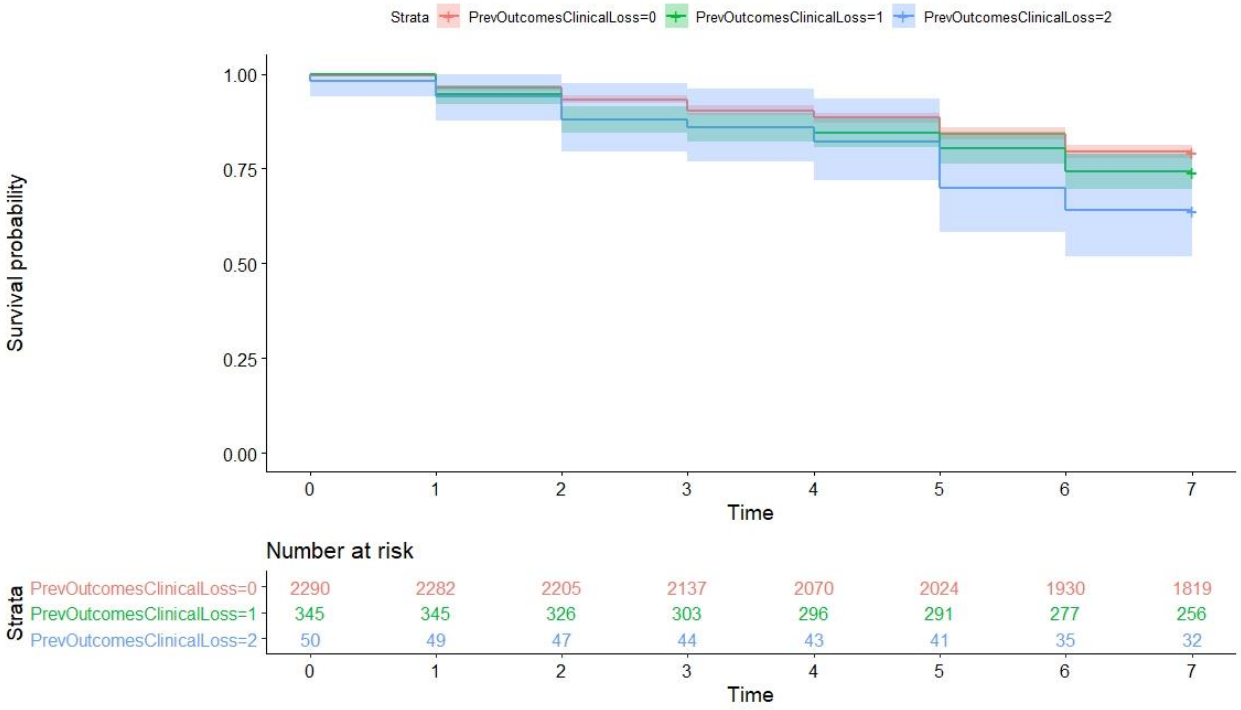

Figure 1. Proportion of pregnancies at each stage according to history of prior loss: 0=+HCG, 1=HCG rise, 2=gestational sac present, 3=yolk sac present, 4=fetal pole present, 5=cardiac activity present, 6=discharge, 7=live birth

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