

and 0.28 in the non-ERA group. The average number of prior frozen embryo transfers was significantly different between groups before matching, however was similar after PSM. There was no significant difference in the live birth rate for the matched ERA group, 51.52%, and non-ERA group, 56.82% (OR 0.8075; 95% CI, .4931 – 1.3223).

CONCLUSIONS: In this matched cohort of patients who underwent single, euploid FET, there was no difference in live birth rates between the group that had an ERA performed prior to FET versus those who did not. Further studies are necessary to understand the best patient cohort for routine adoption of the ERA.

IMPACT STATEMENT: The concept of personalized reproductive medicine is appealing, however more studies are needed to evaluate if there is a subset of patients that benefit from the ERA.

References: 1. Bergin K, Eliner Y, Duvall D, Elguero S, Roger S, Penzais A, Sakkas D, Vaughan D. The use of propensity score matching to assess the benefit of the endometrial receptivity analysis in frozen embryo transfers. *Fertil Steril* 2021; In Publication.

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EFFECTS OF SUBENDOMETRIAL AUTOLOGOUS PLATELET RICH PLASMA INJECTION ON ENDOMETRIUM AND PREGNANCY RATES IN PATIENTS WITH UNRESPONSIVE THIN ENDOMETRIUM UNDERGOING FROZEN-THAWED EMBRYO TRANSFER.



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OBJECTIVE: A receptive endometrium, a viable embryo, and cross-talk between the endometrium and the embryo are essential factors for successful embryo implantation. Endometrial thickness is associated with the outcome of frozen-thawed embryo transfer (FET) cycles, and a thin endometrium refractory to available treatment modalities remains a challenge in contemporary reproductive medicine. Platelet-rich plasma (PRP) is rich in growth factors and cytokines and has been used as an agent that induces tissue regeneration. The aim of the current study was to characterize the effects of PRP on endometrial thickness and IVF outcomes in patients with a history of unresponsive thin endometrium undergoing FET.

MATERIALS AND METHODS: Reproductive age women (n=176; age range 24-45) with a history of suboptimal endometrial proliferation (≤ 7 mm) after hormone replacement therapy for FET were offered to participate in the study. Women who gave informed consent for subendometrial PRP injection formed Group 1 (n=78); those who did not accept the PRP injection formed the control group (Group 2; n=98). Autologous PRP was prepared from peripheral blood by centrifugation, and was injected transvaginally under ultrasound guidance into the subendometrial region using a 35 cm 17 G single lumen needle within 10 days of the cessation of the menstruation. On the 2-4th days of the second menstrual cycle after the PRP procedure, hormone replacement therapy with gonadotropin releasing hormone agonist down regulation was started. Women who were found to have adequate endometrial thickness (≥ 7 mm) were started progesterone treatment for ET. Pregnancy (positive serum hCG) and sustained implantation (>8 weeks) outcomes were followed.

RESULTS: A total of 176 women (mean age 36.6 ± 5.5) with a diagnosis of unresponsive thin endometrium were included in the study. PRP and control groups were not different in mean age (37.1 ± 5.6 vs 36.5 ± 5.3 ; $p=0.47$) or BMI (26.7 ± 5.9 vs 26.3 ± 5.2 ; $p=0.58$). PRP treatment resulted in higher endometrial thickness compared to the control group (7.6 ± 1.6 mm vs 5.9 ± 1.3 mm; $p=0.02$). In the PRP group, 3 women (3.2%) conceived spontaneously and 75 (96.8%) attempted FET; in the control group there were no spontaneous pregnancies. In the PRP group, 24/75 women (32.0% of total) could not undergo ET due to persistent unresponsive thin endometrium or fluid in the endometrial cavity, compared to 77/98 (78.5% of total) in controls ($p=0.001$). Pregnancy and sustained implantation rates were 28% (21/75) and 18.7% (14/75)

of total for the PRP group, compared to 7% (7/98) and 2% (2/98) in controls ($p=0.001$ and $p=0.001$, respectively).

CONCLUSIONS: In women with a history of suboptimal endometrial development, subendometrial PRP injection resulted in improved endometrial thickness and a cumulative (spontaneous and following FET) sustained implantation rate of 15%.

IMPACT STATEMENT: Subendometrial injection of autologous PRP might be considered in women with unresponsive thin endometrium. For wider clinical application, its clinical efficacy will need to be demonstrated in prospective randomized clinical trials.

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ENDOMETRIAL FLUID ASSOCIATED PATHOLOGIES IN FROZEN EMBRYO TRANSFER (FET) CYCLES.



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OBJECTIVE: Endometrial fluid (EF) is a rare condition affecting 2-5% of in vitro fertilization (IVF) cycles. Its prevalence is unknown in FET cycles. EF is a poorly understood pathology and remains a challenge for clinicians, as very little data exists to explain its consequences and treatment. Several risk factors associated with its occurrence have already been identified in stimulated IVF such as hydrosalpinges, polycystic ovarian syndrome (PCOS), high ovarian response to stimulation, severe endometriosis, previous caesarean or myomectomy (Pradervand et al. 2021). Our objective was to investigate risk factors for EF during FET cycles. We hypothesized that the duration of estrogen priming is one of the main risk factors.

MATERIALS AND METHODS: We designed a retrospective case-control study based on FET cycles done in the OVO clinic between January 2009 and January 2018. All patients with a cancelled FET cycle for EF were included in the study group. Controls (2:1) were selected by frequency matching on the year of the procedure. Patients with known untreated hydrosalpinges were excluded. Descriptive statistics were produced for all variables including the mean, median, IQR and standard deviation for continuous variables and the count and percentage for categorical variables. Between-group differences were assessed with the Student t-test or the Mann-Whitney U test for continuous data and with the Chi-squared test or the Fisher's exact test for categorical data, as appropriate. The association between the potential risk factors and the presence of EF was investigated with a univariate logistic regression. We then used those that were significantly associated to EF ($p < 0.20$) to construct a multivariate regression model. A p -value < 0.05 was considered statistically significant.

RESULTS: Out of 7483 FET cycles, 712 were cancelled, among which we identified 124 EF cases. Out of those, 87 women agreed to participate in the study. We selected 174 controls having had a FET cancelled or not. Our two groups were similar in term of age (35 years old ± 5.1 (EF group) vs 35.0 ± 4.7 (control group), $p=0.98$) and infertility duration (3.5 years ± 2.8 vs 4.0 ± 2.4 , $p=0.37$). The multivariable analysis shows three statistically significant risk factors independently associated with EF: duration of estrogen priming (days) OR=1.47 (1.3-1.66) (95% confidence interval), adenomyosis OR=10.79 (1.12-104.38) and Müllerian anomaly OR=9.96 (1.71-58.14).

CONCLUSIONS: This study is one of the largest case-control studies on EF cases. Our results confirm our initial hypothesis. A longer period of estrogen priming in FET could increase the risk of EF. This is the only study linking EF with adenomyosis and Müllerian anomalies. The management of these difficult patients as well as the pregnancy outcome in following frozen embryo transfers is to be evaluated in a future study.

IMPACT STATEMENT: This study is one of the largest case-control studies on EF cases and, to our knowledge, the only study looking at pathologies associated with EF in FET cycles. We were able to identify new risk factors that could help better manage these patients.

References: Risk factors for the development of endometrial fluid in women undergoing IVF: A retrospective cohort study

Pradervand et al *Journal of Gynecology Obstetrics and Human Reproduction* Volume 50, Issue 8, October 2021

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