E2<1,000 pg/mL or P < 0.5 ng/mL. All variables with an effect on EMT were considered as potential effect-modifiers of the influence of EMT on live birth and assessed for their significance as interaction terms in the multivariable logistic regression model.

In the multivariable logistic regression model, EMT was an independent predictor of live birth in our sample, even after accounting for the before-mentioned potential confounders (predicted live-birth rates by ascending order of EMT thickness: 18.2, 25.4, 28.7, 30.2 and 26.2%, respectively).

Limitations, reasons for caution: This study should be interpreted with caution owning to its retrospective design and the potential for unmeasured confounding such as female smoking habits and previous uterine surgery. Furthermore, these results should not be extrapolated to other perinatal outcomes, such as prematurity and live birth weight.

Wider implications of the findings: By accounting for the concealing effect of multiple confounders, we associated, for the first time, EMT to a greater than expected influence on IVF outcomes, specifically LBR. These results reestablish the role for EMT assessment in modern-day IVF, where cycle monitoring and elective embryo cryopreservation may adequately circumvent this issue.

Trial registration number: Not applicable.

O-112 Is endometrial thickness associated with intrauterine growth restriction or placental related pregnancy complications in fresh IVF cycles?

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Study question: Our objective was to evaluate the association between endometrial thickness, on day of hCG trigger in fresh IVF cycles and intrauterine growth restriction (IUGR) and placental related obstetric complications.

Summary answer: Univariate analysis shows that a thin endometrial thickness (<8 mm) is associated with increased risk of intrauterine growth restriction and grouped placental-related pregnancy complications.

What is known already: IVF pregnancies in general appear to be associated with worse obstetric and perinatal outcomes such as preterm delivery and low birth weight compared to spontaneous conceptions. A previous study has shown that a thick endometrial lining (>12 mm) is associated with an increased risk for placenta previa. We conducted a study evaluating the association between endometrial thickness and the resulting neonatal birth weight and placental related pregnancy complications.

Study design, size, duration: A retrospective analysis of 1,002 consecutive singleton live births from a cohort of 6,350 fresh ET cycles performed between July 2007 and December 2014. Data for confounding variables were available for 849 singleton deliveries. Intrauterine growth restriction was defined as <10% according to a national population-based live born infant birth weight curves.

Participants/materials, setting, methods: We analyzed patient variables (maternal age, smoking, BMI), treatment cycle parameters (stimulation protocol, total gonadotropin dose, ICSI/IVF) and pregnancy outcome (mode of delivery, gestational age, birth weight and pregnancy complications). Composite placental related pregnancy complications included preeclampsia and pregnancy induced hypertension, placenta previa, placental abruption and intrauterine growth restriction)

Main results and the role of chance: Univariate analysis shows a significant association between a thin endometrium (<8 mm) and intrauterine growth restriction (35/199, 17.6% and 67/650, 10.3%; $p = 0.006$). Thin endometrium was significantly associated with composite adverse outcome (19.9 and 12.8%, $p = 0.014$). In a multivariate logistic regression analysis, adjusting for confounding factors including age, smoking, BMI, parity, chronic hypertension, pre-gestational diabetes and gestational diabetes, endometrial thickness was not a significant predictor of intrauterine growth restriction or placental-related pregnancy complications.

Limitations, reasons for caution: The limitation of the study is the retrospective nature of the study. Medical charts were reviewed for patients who delivered at our hospital. Pregnancy outcome was recorded as part of routine prospective patient follow-up by telephone surveillance and documented in the patient chart for patients that delivered out of hospital.

Wider implications of the findings: Univariate analysis shows a strong association between endometrial thickness and placental-related complications and IUGR. When adjusting for maternal risk factors such as advanced age, smoking, BMI, chronic hypertension and pre-gestational diabetes this effect is non-significant. Further larger studies are needed to dispute or confirm these findings.

Trial registration number: None.

O-113 ER map: a new comprehensive and reliable endometrial receptivity test

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Study question: Is it possible to determine the receptivity status of an endometrium by combined qRT-PCR expression analysis of genes involved in endometrial proliferation and immune response?

Summary answer: The new ER Map test can predict endometrial receptivity status by qRT-PCR using a panel of 16 genes involved in endometrial proliferation and immune response.

What is known already: The endometrium reaches a receptive status for embryonic implantation around day 19–21 of the menstrual cycle. During this period, known as the window of implantation (WOI), the endometrium shows a specific gene expression profile suitable for endometrial function evaluation. The number of molecular diagnostic tools available to characterize this process is very limited and lack key elements for the accurate determination of the WOI, such as immune response genes, crucial for embryo implantation. In this study, qRT-PCR analyses of genes involved not only in endometrial receptivity development but also in the immune response metabolism is performed for the first time.

Study design, size, duration: A comprehensive solution to analyse the endometrial transcriptomic signature at the WOI is explored. ER Map validation was achieved on 130 endometrial samples including fertile women and patients undergoing fertility treatment between July 2014 and December 2015. Expression analyses of 192 genes involved in endometrial receptivity and immune response were performed. All patient samples were additionally tested with an independent endometrial receptivity assay (ERA) to verify their endometrial status.

Participants/materials, setting, methods: A total of 96 fertile women (18–34 y.o) and 34 ART patients participated in the study. Endometrial biopsy samples were obtained at LH + 2 and LH + 7 in fertile subjects and at P + 5 (progesterone) in patients. Total RNA was purified using RNeasy Mini Kit (Qiagen) and quality-checked using Agilent Bioanalyzer. Oligonucleotides for the amplification of the 192 selected genes were designed by using GeneFisher 2.0 platform. Gene expression was quantified by qRT-PCR using Biomark-HD platform (Fluidigm).

Main results and the role of chance: The new ER Map test can predict endometrial receptivity status by qRT-PCR using a new panel of 16 genes involved in endometrial proliferation and immune response. Mean gene expression of 96 out of the 192 selected genes was found to be statistically different when comparing LH + 2 and LH + 7 samples (*T*-test, $p < 0.05$). Those genes were mainly related to the cell division, tissue proliferation and immune system metabolism. Principal Component Analysis showed that more than 90% of the gene expression variance of the set of samples studied was explained by 16 key genes. These genes allowed accurate classification of samples into 4 endometrial receptivity status: non-receptive, pre-receptive, receptive and post-receptive in both groups, fertile women and infertile patients. Using a discriminant model based on the 16 selected genes, 100% cases were correctly classified. In the group of fertile donors, 100% of LH + 2 samples were categorised as non-receptive, and all LH + 7 samples were classified as receptive. Within the patient group, ER Map classification matched the endometrial biopsy status prediction of the independent diagnostic tool ERA in all 100% samples.

Limitations, reasons for caution: A higher number of samples are desirable to fine receptivity status prediction and minimise no results. A clinical trial to evaluate IVF treatment success following ER Map application is required to assess the advantages of this new test for accurate prediction of the WOI and improvement of implantation.

Wider implications of the findings: A new comprehensive system for human endometrial evaluation based on receptivity and immunology-linked genes has been developed. This molecular tool has been optimised in the diagnostic