



# Progesterone levels on day of ovulation trigger in the fresh cycle and ongoing pregnancy rate in fresh and frozen cycles: subgroup analysis of a randomised controlled multicenter trial

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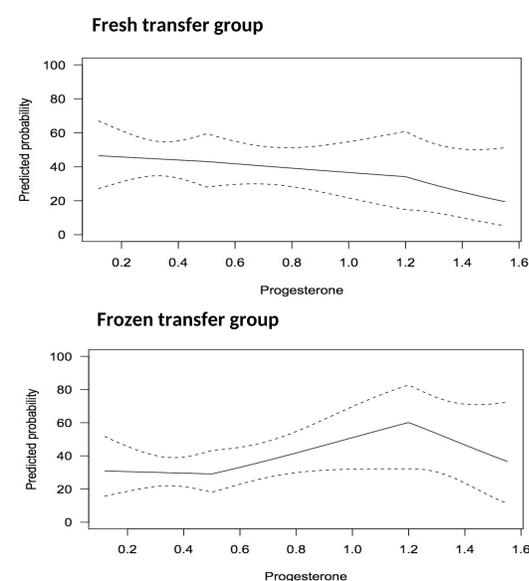
## BACKGROUND

Premature progesterone elevation in the late follicular phase following controlled ovarian stimulation has been associated with decreased ongoing pregnancy and live birth rates in fresh ART cycles. The underlying mechanism is likely an endometrial advancement leading to embryo-endometrial asynchrony and implantation failure. Few studies have investigated the reproductive outcomes in relation to progesterone levels on ovulation trigger day in fresh and frozen embryo transfers in a randomised controlled trial setting where the best available embryo is randomly transferred in either a fresh or frozen-thawed cycle.

## MATERIALS AND METHODS

Subgroup analysis on data from a multicenter RCT\* comparing a freeze-all strategy + GnRH agonist trigger with a fresh transfer strategy + hCG trigger. The aim was to evaluate the association between progesterone levels on trigger day in the `fresh` ovarian stimulation cycle and the ongoing pregnancy rate after fresh or frozen blastocyst transfer. All women who reached blastocyst transfer within the allocated fresh or frozen transfer group and who had serum sampling performed on trigger day in the ovarian stimulation cycle were included. Biobank samples were subsequently batch-analysed for progesterone levels.

\*including regular cycling women between 18 and 39 years in their 1,2 or 3<sup>rd</sup> IVF/ICSI treatment cycle.



**Figure 1** Estimated association between progesterone levels on day of ovulation trigger and probability of ongoing pregnancy in women following fresh or frozen-thawed transfer based on a logistic spline model with knots placed at progesterone level = 0.5 and 1.2 ng/ml.

## RESULTS

In total, 288 women were included in association between fresh cycle the analysis. Amongst these, the prevalence of progesterone elevation above 1.5 ng/ml was only 3.8% (11/288). Comparison of ongoing pregnancy between high, intermediate and low progesterone levels were performed in both the fresh and frozen transfer group showing no significant differences. The estimated non-parametric progesterone levels on day of ovulation trigger and the probability of ongoing pregnancy in both fresh and frozen transfer group is shown in Figure 1. A knot at 1.5 ng/ml was attempted, but due to the very low number of patients above this level, 1.2 ng/ml was chosen instead. No significant effect of progesterone was found in any of the analyses.

## CONCLUSION

In a clinical setting, where strict predefined OHSS risk criteria are applied, the prevalence of elevated progesterone above 1.5 ng/ml was only 3.8%. No significant effect of progesterone level in the late follicular phase on pregnancy rates in either fresh or frozen transfer groups were found. Our results provide no indication for the implementation of routine progesterone level monitoring in the late follicular phase in a clinical setting resembling ours.

**Table 1** Ongoing pregnancy rates in the fresh and frozen transfer groups stratified according to progesterone level in the fresh cycle

	Fresh transfer 56/137 (40.9)	Frozen transfer 51/151 (33.8)
<b>Low progesterone</b> (≤ 0.5 ng/ml)	34/75 (45.3)	30/88 (34.1)
<b>Intermediate progesterone</b> (> 0.5-1.2 ng/ml)	20/54 (37.0)	15/52 (28.8)
<b>High Progesterone</b> (> 1.2 ng/ml)	2/8 (25.0)	6/11 (54.5)