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**DOWN REGULATION WITH LUTEAL GONADATROPIN-RELEASING HORMONE AGONIST THERAPY IN EUPLOID EMBRYO TRANSFERS DOES NOT IMPACT PREGNANCY RATES**

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**OBJECTIVE:**

Gonadotropin-releasing hormone (GnRH) agonists have been used during assisted reproductive technology (ART) treatment both for pituitary suppression and stimulation. Some studies have shown benefits to prolonged GnRH agonist therapy prior to IVF and/or embryo transfer.<sup>1,2</sup> It has been suggested that GnRH suppression of toxic peritoneal cytokines and potential direct effect on endometrial tissue could improve pregnancy rates with ART treatment, particularly in patients with endometriosis.<sup>1</sup> Currently, clinical opinion is divided about whether GnRH agonist therapy improves pregnancy rates when used for luteal down-regulation in a frozen euploid embryo transfer (FET) cycle.<sup>2,3</sup> The objective of this study is to evaluate the clinical utility of GnRH agonist down-regulation in single, euploid FET cycles.

**DESIGN:**

Retrospective cohort study

**MATERIALS AND METHODS:**

A retrospective analysis was performed at a single fertility center, using data from patients who underwent a single, euploid FET cycle from 2012 to 2019. Patients were segregated into two cohorts: Group A: single, euploid FET with down-regulation using GnRH agonist; Group B: single, euploid FET without down-regulation using GnRH agonist. GnRH agonist was started in the mid-luteal phase and continued through the addition of estrogen and progesterone for



AMERICAN SOCIETY FOR  
REPRODUCTIVE MEDICINE



endometrial lining preparation. The GnRH agonist was stopped prior to a single, euploid FET. Primary outcome included pregnancy rates among study cohorts.

## RESULTS:

Group A demonstrated a pregnancy rate of 72.92% in 96 single, euploid FET cycles with down-regulation using a GnRH agonist. Group B demonstrated a pregnancy rate of 73.27% in the 5,668 single, euploid FET cycles without a GnRH agonist. There was no difference in pregnancy rates between groups,  $X^2(2, N = 5764) = 0.0061, p = 0.94$ . A subgroup of patients ( $n=5$ ) with endometriosis in the GnRH agonist down-regulation group achieved an 80% (4/5) pregnancy rate.

## CONCLUSIONS:

Single, euploid FET cycle pregnancy rates were not affected by the use of down-regulation with a GnRH agonist. The increased pregnancy rates found with prolonged GnRH agonist use in other studies was not seen with the short-term use for down-regulated FET cycles in this study. Future research should focus on molecular markers and gene transcription signatures to attempt to define whether there is an ideal population of patients who would benefit from GnRH agonist down-regulation prior to frozen embryo transfer.<sup>2,3</sup> Luteal GnRH agonist for ovarian suppression in FET cycles does not appear to be detrimental to pregnancy rates, and may play a role in personalized reproductive treatment.

## References:

1. Surrey et. al. GnRH agonist administration prior to embryo transfer in freeze-all cycles of patients with endometriosis or aberrant endometrial integrin expression. *Reprod Biomed Online*.2017 Aug;35(2):145-151.
2. Xie et. al. Artificial Cycle with or without a Depot Gonadotropin-releasing Hormone Agonist for Frozen-thawed Embryo Transfer: An Assessment of Infertility Type that Is Most Suitable. *Curr Med Sci*.2018 Aug;38(4):626-631.
3. Khayat et. al. Management of recurrent implantation failure by gonadotropin-releasing hormone agonist and aromatase inhibitor suppression, in women without evidence of endometriosis. *Gynecol Endocrinol*.2019 Mar;35(3):267-270.