

## Progesterone support in assisted reproduction

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During the oocyte retrieval procedure in assisted reproduction, aspiration of granulosa cells is associated with an alteration in the hormonal environment necessary for implantation.

Additionally, the current method of preventing a premature surge of LH by using a gonadotropin releasing hormone (GnRH) agonist in the ovarian stimulation regimen to suppress the pituitary gland is associated with ongoing blockage of LH output for at least 10 days after the administration of GnRH agonist has been discontinued. Such persistence of effect results in impairment of the ability of the corpus luteum to produce progesterone.

There have been many randomized trials performed to evaluate the efficacy of luteal phase support in assisted reproduction, but most of the trials have had insufficient power to make reliable inferences about the benefit of such therapy.

A Cochrane review was undertaken to address this issue of treatment efficacy. In a comprehensive search of the literature up to the end of 2003, 82 studies were identified, of which 59 met the criteria to be included in a meta-analysis.

The results demonstrate no evidence of any significant difference between progesterone and hCG or between progesterone and progesterone plus hCG with respect to rates of pregnancy or miscarriage, but the odds of OHSS with progesterone alone are less than half that of treatments involving hCG. This effect was most noticeable when GnRHa was used. Further, there is no evidence that the addition of estrogen to progesterone for luteal phase support improves outcomes with assisted reproduction. Finally, there are insufficient data to adequately compare the relative efficacies of the oral route of progesterone administration and the intramuscular or vaginal routes, but there is evidence of benefit of intramuscular administration over the vaginal route for the outcomes of ongoing pregnancy and live birth. There is no evidence of a difference in efficacy between vaginal progesterone gel and other types of progesterone administered vaginally.

The induced state of hormone deficiency encountered with GnRH agonist use in assisted reproduction can be treated effectively with progesterone, with a significantly improved pregnancy rate. However, the optimal dose and route of administration of progesterone have not yet been established.