

Significance of the Luteal Phase in Pre and Post-Pregnancy of IVF Procedure

Teraan Noilza*

Department of Reproductive Medicine and Gynecology, University Medical Center Utrecht, Utrecht, Netherlands

ABOUT THE STUDY

The luteal phase is the second half of a woman's menstrual cycle and is an important phase in natural conception as well as in IVF. It begins after ovulation and continues until the onset of menstruation or the confirmation of pregnancy. This phase is named after the corpus luteum, a temporary endocrine structure formed in the ovary after the release of an egg during ovulation. The corpus luteum is responsible for producing progesterone, a hormone that is essential for preparing the uterine lining for implantation and supporting early pregnancy.

The luteal phase in natural conception

In natural conception, the luteal phase is characterized by a sequence of events that are crucial for the preparation and maintenance of a pregnancy:

Ovulation: Ovulation typically occurs around the middle of a woman's menstrual cycle, because of the release of an egg from a mature follicle in one of the ovaries.

Corpus luteum formation: After the egg is released, the follicle from which it developed changes into the corpus luteum. This structure secretes progesterone, which the uterine lining becomes thicker in preparation for potential embryo implantation.

Uterine lining maintenance: The increased progesterone levels in the luteal phase help maintain the uterine lining, ensuring it is conducive to embryo implantation.

Potential implantation: If fertilization occurs, the embryo usually goes down the fallopian tube to the uterus, where it may implant into the thickened uterine lining.

Pregnancy confirmation or menstruation: The luteal phase continues until either the embryo implants, leading to the confirmation of pregnancy, or the absence of pregnancy results in the shedding of the uterine lining as menstruation.

The Luteal Phase in IVF

In IVF, the luteal phase is carefully managed to increase chances of embryo implantation and pregnancy. Because a normal hormonal increase that accompanies ovulation is ignored during IVF, the luteal phase is artificially controlled through medication and closely monitored by physicians. The following steps outline the luteal phase in IVF and its key components:

Ovulation trigger: In IVF, ovulation is induced using a trigger injection of HCG (Human Chorionic Gonadotropin) or an agonist. This is arranged exactly to coordinate with the planned egg retrieval.

Egg retrieval: Once the trigger injection is administered, the eggs are retrieved via a low-risk method known as egg retrieval. This usually occurs 34 to 36 hours after the trigger injection.

Fertilization: After egg retrieval, the collected eggs are fertilized with sperm in the laboratory. The fertilized eggs, or embryos, are then monitored for growth and development.

Embryo transfer: Depending on the procedures at the surgery, the embryo transfer typically occurs on day 3 or 5 after egg retrieval. The choice of day is based on factors such as embryo quality and patient history.

Luteal phase support: Because IVF avoids the body's normal hormonal increase of ovulation, women typically require luteal phase support to ensure that the uterine lining remains receptive to embryo implantation. This support often includes the use of progesterone supplements, either in the form of vaginal medications or intramuscular injections.

Pregnancy test: Approximately 10 to 14 days after the embryo transfer, a blood test is performed to detect the presence of the hormone HCG. A positive result indicates a pregnancy, while a negative result means that the IVF cycle was not successful.

Luteal phase support in IVF

Luteal phase support is an important component of IVF treatment. The use of progesterone supplements, such as vaginal

Correspondence to: Teraan Noilza, Department of Reproductive Medicine and Gynecology, University Medical Center Utrecht, Utrecht, Netherlands; E-mail: tnoilza123@gmail.com

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suppositories or intramuscular injections, ensures that the uterine lining remains receptive to embryo implantation and supports early pregnancy. Luteal phase support is typically initiated on the day of egg retrieval or the day of the embryo transfer and continues until the pregnancy test is performed.

Importance of luteal phase support

Luteal phase support is important for several reasons:

Hormone replacement: In a natural cycle, the corpus luteum produces progesterone. However, in IVF, the corpus luteum is often not present or does not function at its full capacity, as ovulation is artificially triggered. Therefore, to replace the hormonal support that the body normally provides, luteal phase support is required.

Uterine receptivity: Ensuring a receptive uterine environment is vital for successful embryo implantation. Progesterone supplements help maintain the uterine lining's thickness and quality.

Early pregnancy support: Progesterone support continues into early pregnancy, providing vital hormonal support to the

growing embryo until the placenta takes over this function, typically around the end of the first trimester.

Reducing pregnancy loss: Luteal phase support may reduce the risk of early pregnancy loss, as adequate progesterone levels are important for a developing embryo.

CONCLUSION

The luteal phase in IVF is an important element of the fertility treatment process. It involves carefully coordinated actions to increase the chances of embryo implantation and a successful pregnancy. In IVF, luteal phase support, particularly with progesterone supplements, so that the uterine environment is still favorable to embryo implantation and provides support during the early stages of pregnancy. With advancements in reproductive medicine and the close management of the luteal phase, IVF has provided new hope for individuals and couples struggling with infertility. It is essential to work closely with a qualified fertility specialist who can modify the treatment to individual needs and verify that the luteal phase is effectively managed, contributing to the realization of the ultimate goal: A healthy pregnancy and being successful of the parental dream.