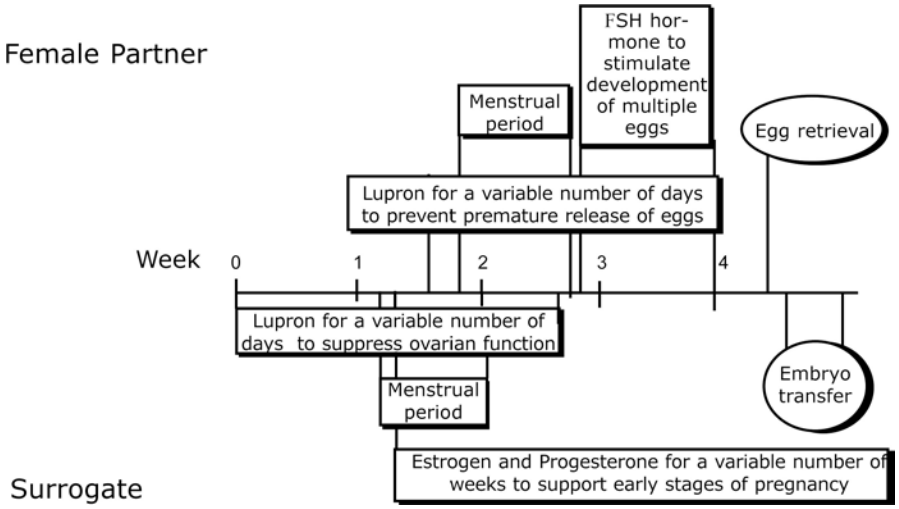
Gestational Surrogacy

In gestational surrogacy, the intended mother provides the eggs, the intended father provides the sperm and *in vitro* fertilization is done to create embryos. The embryos are then transferred into the surrogate's uterus.

Gestational surrogacy consists of:

1. Ovarian stimulation to induce growth of multiple eggs within the intended mother's ovaries.
2. Ultrasound guided retrieval of the eggs.
3. Fertilization of the eggs with the intended father's semen.
4. Preparation of the surrogate's uterus for embryo transfer.
5. Embryo transfer.
6. Establishment of pregnancy.

This is an example of a gestational surrogacy treatment sequence. Actual treatment is individualized.



1. Ovarian stimulation

Gestational surrogacy treatment begins with the onset of the intended mother's menstrual period. Oral contraceptives are started within the first seven days of her menstrual cycle. They prime the ovaries for an optimal response. One week before the estimated onset of the next menstrual period, leuprolide (Lupron) injections begin. Leuprolide prevents premature release of the eggs from the ovaries prior to the egg retrieval procedure. The leuprolide injections are given subcutaneously (just under the skin). They are administered for approximately three to four weeks.

After one to two weeks of taking leuprolide, the intended mother will start her menstrual period. Within one to two weeks of the onset of this period, she begins taking follicle stimulating hormone (FSH) injections in addition to the leuprolide.

FSH stimulates maturation of multiple eggs within the ovaries. The FSH medication is taken for approximately ten days. During this time her progress is monitored by ultrasound and estrogen blood levels.

Once the eggs are ready, she is instructed to stop taking the leuprolide and FSH and to take a single injection of human chorionic gonadotropin (HCG) hormone is taken. This is also a subcutaneous injection. This medication triggers the final stages of egg maturation. Thirty-six hours after the HCG injection, the eggs are nonsurgically retrieved from the ovaries.

2. Ultrasound guided transvaginal egg retrieval

Using ultrasound guidance, a tip of a thin needle is passed through the top of the vagina and into the cul-de-sac (a space behind the uterus). The ovaries are located near the bottom of the cul-de-sac allowing the tip of the aspirating needle to enter the ovarian follicles and aspirate the follicular fluid from them. The fluid is examined under a microscope to identify the eggs.

The egg retrieval takes approximately five to ten minutes. Medications are used for pain relief. Many women do not feel the eggs being aspirated. It is possible to feel a short lasting menstrual-like cramping sensation when the needle passes through the top of the vagina (once for each ovary). The actual follicle aspiration is typically not felt by the patient. The egg retrieval is a very safe procedure. The egg retrieval procedure is the last step in the intended mother's participation in the treatment. She will have her normal menstrual period within two weeks of the egg retrieval.

3. Laboratory

On average, eight to fourteen eggs are aspirated. The eggs are identified under the microscope and are placed into culture medium filled petri dishes. The composition of the medium resembles the fluid secreted by the Fallopian tubes. This allows the eggs and embryos (fertilized eggs) to develop in the laboratory environment at the same rate as inside the Fallopian tubes.

The intended father collects a semen specimen by masturbation on the day of the egg retrieval. The highest quality sperm are extracted from the semen and are combined with the eggs six hours after the egg retrieval. The process of fertilization takes place over a period of several hours during the night.

If the fertility history suggests a possibility of male infertility significant enough to keep the eggs from being fertilized this way, intracytoplasmic sperm injection (ICSI) is performed. In ICSI a single sperm is inserted into an egg. This can significantly increase the fertilization rate for selected couples.

Evidence of fertilization can be seen the next day, 14 to 16 hours after insemination. The fertilized eggs are transferred into growth medium and continue to be cultured in the IVF laboratory.

4. Preparation of the surrogate's uterus

The lining of the surrogate's uterus must be prepared to receive the embryos. The development of the uterine lining must be accurately synchronized with the development of the embryos. This is achieved by taking estrogen and progesterone.

The surrogate's treatment typically starts with taking oral contraceptives. They are used to suppress her ovarian function and to begin the process of synchronization. Oral contraceptives are started within the first seven days of the menstrual cycle.

A week before the estimated onset of the next menstrual period, leuprolide injections begin. Leuprolide "puts the surrogate's ovaries to sleep" and temporarily stops their production of estrogen and progesterone. This estrogen and progesterone secretion by the ovaries would interfere with the development of the endometrial lining.

After one to two weeks of taking leuprolide, the surrogate will have a menstrual period. Within one to three weeks of the onset of her period, she begins taking estrogen by way of medicated skin patches. The progress of the development of her uterine lining is monitored with ultrasound examinations and by estrogen blood levels. Once the intended mother is ready for the oocyte retrieval, the surrogate begins adding progesterone to the estrogen. The addition of progesterone opens the "window of receptivity" for her uterus and synchronizes development of its lining with the development of the embryos.

5. Embryo transfer

The embryo transfer is done one to five days after the egg retrieval. The embryo(s) is/are "loaded" into the tip of a very thin transfer catheter in a very small volume of transfer medium. The catheter is then passed through the cervical canal to within 5 mm of the top of the uterus and the embryos are gently released. The transfer usually takes a few seconds to complete. No resting is required afterwards and the surrogate can immediately resume her normal daily activities. She does not have to change her lifestyle as she goes through the surrogacy treatment.

The gamete embryologists assess the embryos prior to the embryo transfer to determine their likelihood of implantation. Most intended parents and surrogates usually select one to three embryos for the transfer. Approximately one-third to one-half of oocyte donation pregnancies are twins and there are very few triplet or higher order pregnancies.

There may be more embryos than the intended parents and the surrogate wish to have transferred. It is possible to cryopreserve these embryos and store them in liquid nitrogen.

Approximately one-half to three-quarters of the embryos survive the cryopreservation and thawing process. The implantation rate of the surviving embryos can be somewhat lower than with the "fresh" embryos.

6. Establishment of pregnancy

After the embryo transfer, the front and back walls of the uterus gently hold the embryos keeping them within the uterus. There is no need to restrict surrogate's physical activity. She continues taking the estrogen patches and vaginal progesterone capsules or cream.

A blood pregnancy test is done approximately two weeks after the embryo transfer. If the pregnancy test is positive, an ultrasound examination is scheduled two weeks later to visualize the implantation site and to look for a heartbeat. Once a heartbeat is seen, there is a 90% to 95% probability that the pregnancy will continue to a live birth.

The surrogate continues to have her estrogen and progesterone blood levels monitored every one to two weeks. Six to eight weeks into the pregnancy the placenta produces so much of its own estrogen and progesterone that the supplementation can be discontinued. The surrogate's treatment at Nova IVF usually ends at that point and she will be referred for routine obstetrical care. Once she discontinues all medications, her pregnancy becomes indistinguishable from a pregnancy conceived through intercourse.

The following graph shows how the cumulative probability of pregnancy adds up if a couple is going through one to four cycles of IVF. In this example, we used an arbitrary 35% live birth probability per treatment. Your actual likelihood of a live birth could be higher or lower.