Receiving oocytes
What does this consist of?

This consists of laboratory fertilization of a donor's oocytes with the sperm from the partner of the female recipient, then transferring the resulting embryos into the maternal uterus. Nowadays, and owing primarily to societal changes, women delay childbearing until more advanced ages, reducing the probability of spontaneously conceiving their own oocytes, which in turn increases the demand for this technique.

In 1983 the Australian team of Trounson and Lutjen achieved the first pregnancy by way of this technique, and since then the annual cycles carried out worldwide have not ceased to increase. In Spain the reception of oocytes is regulated by law 14/2006 of May 26, regarding Techniques of Assisted Human Reproduction and done so respecting anonymity.

When is it recommended?

Reception of oocytes in woman with a menstrual cycle
- Low ovarian reserve, in those women who maintain menstrual cycles but of an ovarian quantity and/or quality that does not permit conception.
- Over 42-43 years of age
- Altered hormones
- Insufficient response to IFV cycles
- Repeated failures of IVF
- Chromosomal or genetic alterations of the mother with high risk of transmission to offspring, with no possibility of Preimplantation Genetic Diagnosis.
- Repeated miscarriages without treatable cause

Reception of oocytes in women without ovarian cycle
- Menopause
- Early menopause
- Latrogenic menopause (resulting from surgical procedures or due to oncology treatments)
- Primary ovarian failure (from birth): alteration in the amount of gametes such as gonadal dysgenesis: Turner’s Syndrome, Sawyer’s Syndrome, etc

Diagram of ovaries with low reserve

A diagram of ovaries with low reserve
Requirements of the couple

A reception of oocytes can be performed as long as the following requirements are met:
- Presence of a uterus capable of carrying out gestation within the limits of viability.
- Absence of any physical or mental maternal disease that contraindicates hormonal or gestation treatment.

Donor-recipient assignation

Within the legal framework of law 14/2006 regarding Techniques of Assisted Human Reproduction along with the Royal Decree 1301/2006, of November 10, concerning regulations of quality and safety, the donation of gametes and embryos is carried out by a free, formal, and confidential contract between the donor and the authorized center. The sperm bank, the record of donors, and the activity of the centers, must guarantee the confidentiality of the data of the donors.

The assignation of the donor to the recipient is executed by the medical team who apply the technique, according to the physical characteristics of the couple, as well as their blood type and Rh factor, aiming for the greatest similarity possible between the donor and recipient.

Study of the couple prior to reception

Once the appropriate technique has been recommended, the recipient of oocytes and his/her partner must undergo a series of complementary examinations to evaluate the state of their health and confirm that the woman can go forth with gestation without risk to herself and/or the child (general and serological analyses, an ultrasound, and a complete gynecological examination are among the examinations).

Preparation for the reception cycle of oocytes and procedure

The reception of oocytes can be carried out in two contexts:
- After a treatment of ovarian stimulation of a donor and subsequent to the insemination of her oocytes, with a simultaneous embryo transfer.
- After cryopreservation of oocytes from a prior donation.

In patients with a menstrual cycle, the embryo transfer can be performed without complementary medical treatment. Nevertheless, in the majority of cases and in patients without ovarian function we administer a hormonal treatment that permits us to better synchronize the cycles of the donor and the recipient. The aim of this treatment is to achieve a favorable intrauterine environment for the embryo implantation and in the event of gestation maintain its initial phases until the placenta can assume this role.
The protocols of endometrial preparation include estrogen (in tablets or patches), progesterone (in pessaries or in tablets) and on occasion other medications such as GnRH analogues. The guidelines vary according to dose, duration, and form of administration of the different medications, but there doesn’t seem to exist differences regarding the rates of pregnancies. We monitor the recipient on occasion by way of ultrasounds and hormonal determinations in the blood.

In the laboratory, the donor’s oocytes are inseminated with the semen of the couple or from a Sperm Bank according to the requirements of each case. This process can be carried out in various ways:

- **Conventional technique**, in which the oocytes and sperm are placed in a culture in an environment favorable to fertilization.
- **Intracytoplasmic Sperm Injection (ICSI)**, in which sperm is injected into each recovered mature oocyte.

---

**Sequence of conventional IVF**

- **Day 0**: Oocytes + sperm
- **Day 1**: Inseminated oocyte
- **Day 1-2**: 2 cells embryo
- **Day 2**: 4 cells embryo
- **Day 3**: 6 cells embryo

**Sequence of IVF-ICSI**

- **Day 0**: Mature oocyte
- **Day 0**: Sperm
- **Day 0**: ICSI
- **Day 1**: Inseminated oocyte
- **Day 3**: 8 cells embryo
The day after insemination, a determination can be made as to the number of correctly fertilized oocytes or pre-embryos, which potentially will begin cell division so as to become embryos.

In some cases the normal reproduction techniques may be complemented with other procedures regarding gametes and embryos so as to improve the capacity for embryo implantation, such as assisted hatching, extraction of fragments, etc...

The transference of embryos can be performed either on the 2nd or 3rd day after obtaining the oocytes, or the 5th or 6th day (the embryo in the blastocyst phase). In each cycle the couple must agree with the biomedical team on the number of embryos to transfer in individual form, the aim of which is to maximize the probability of gestation and minimize the risk of multiple gestation. Spanish law limits the number of embryos to be transferred to 3 for each cycle.

This procedure consists of depositing the embryos into the uterus by the vaginal and cervical canal. It is performed by a long and fine catheter, and most times monitored by ultrasound. The procedure is done on a walk-in basis, with no anesthesia necessary.

10-14 days after the embryo transfer, a pregnancy test is done, generally by determining the presence of the hormone beta-human chorionic gonadotropin (ß-HCG) in the blood, so as to determine whether or not gestation is occurring.

Risks

The principal complications of this procedure are:

- **Multiple pregnancy**: in oocyte reception the risk of multiple pregnancies is especially high, given that the embryos with a high rate of implantation are transferred. This risk is related with the number and quality of transferred embryos.

- **Cancelation of transference due to**:
  - Immature oocytes or insufficient quality for insemination.
  - Failure of fertilization.

- **Personal risks**: The medical, social, and work characteristics of each patient may suppose a modification of the general risks of the appearance of specific complications.

Results

The reception of oocytes is the technique of assisted reproduction with the best results in rates of gestation and live newborns, probably due to the utilization of oocytes from healthy and under-35-years-of-age patients. In different records (among those the Spanish Society of Fertility), the rate of gestation exceeds 50%.
Taking into account the percentage of reception cycles in which extra embryos can be cryopreserved, the rate of gestation per patient then exceeds 60% when we include those gestations resulting from previously frozen embryos.

It is estimated that the accumulative rate of gestation per patient, after 4 cycles of oocyte reception, nears 90%.

Gravida Fertilitat Avançada
Av. Diagonal 660, Pl 16 Hosp. de Barcelona 08034
Barcelona
Tel: +34 93 206 64 89 - Fax: +34 93 205 76 86
gravida@gravidabcn.com

Together we can find the best solution