

I Want a Baby - Artificial Reproduction Options

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Those who want to conceive often develop a voracious appetite for gathering resources, be it information from the Internet or advice from relatives and friends, and aspects of such information can sometimes contradict each other. For your initial consultation, it is therefore crucial that you find the right person and receive the correct information. To this end, you should possess some basic knowledge before you begin your infertility assessment and treatment.

Chance of conceiving

The natural reproductive process begins with the ejaculation of sperm into the vagina during sexual intercourse. Thereafter, a sperm and egg meets in the fallopian tube and fertilization occurs, and the embryo then travels to the uterus where it will implant itself. The egg can survive for about 24 hours after ovulation, while the sperm can survive for seven days or even longer.

Generally, 84% of couples who have a regular sex life will conceive within a year, and half of the remaining couples will do so in the second year. A woman's fertility declines with age. The chance of conceiving is 87% for a 35-year-old woman, and drops to 67% by the time she turns 38. At 30, a woman's fertility will start to decline drastically, and by 35, the decline will become even more pronounced. A man's fertility also declines with age, although this drop is not as significant as that of a woman's. The fertility of a man declines by 10% between the age of 35 and 40.

The frequency of intercourse is another factor that will influence a couple's pregnancy rate, with the best results being achieved with a frequency of about once every 2-3 days. Stress will affect a couple's libido and frequency of intercourse, and in turn, their chance of conceiving. Some couples become concerned when they do not conceive within what they perceive to be a reasonable time frame; however, this perceived time frame is often insufficient. These couples should be given the right information, as there is no need for them to seek an immediate assessment and treatment for infertility.

Infertility refers to the failure to achieve a pregnancy after one year of regular sexual intercourse (2-3 times weekly), and it is at this point when a infertility assessment can be performed. For a woman who has reached the age of 36, the assessment can be carried out six months in advance.

Furthermore, men should note that drinking, smoking, and an elevated scrotal temperature decrease the chance of conceiving. Women should also note that smoking or exposure to secondhand smoke, a BMI above 30 accompanied by the absence of ovulation, and a BMI below 19 accompanied by irregular menstruation or the absence of menstruation, are factors that will decrease the chance of conceiving.

Infertility assessment

Prior to receiving treatment, it is necessary to perform some clinical assessments in order to determine the presence of pathological conditions. However, 25% of infertility cases will face the issue of unexplained infertility, which refers to infertility for which a cause cannot be determined despite the fact that all tests have been performed.

For men, we will usually assess semen quality according to the reference values released by the World Health Organization in 2010. If the results are normal, the tests need not be repeated. However, if the results are abnormal, another round of tests is conducted three months later. The exception is cases involving azoospermia or severe oligospermia, for which the tests will be performed again just two to four weeks later. For cases involving antisperm antibodies, screen is not required.

For women, even a patient with regular menstrual cycles can get her lutein level tested during a high temperature period, so as to determine if she is ovulating or if her lutein level is too low. Furthermore, various tests can be conducted to better understand a patient's ovarian function: an antral follicle count (AFC) that is fewer than four, an anti-Müllerian hormone (AMH) level that is lower than 0.76ng/mL, or a follicle-stimulating hormone (FSH) level that is roughly greater than 10mIU/mL all indicate that the patient's ovarian function is poor and that the use of medications for ovulation induction would lead to poor responses. With regard to tests for assessing fallopian tube function, if a female patient does not have a history of certain conditions (i.e. pelvic inflammation, eccyesis, endometriosis), a hysterosalpingography or ultrasound hysterosalpingography could be performed to check for uterine adhesions. A patient with a history of the conditions mentioned above may consider a laparoscopy and hysterosalpingogram, which can detect

lesions in the fallopian tube or pelvic cavity.

Infertility treatment options

Patients who have a regular sex life but suffer from unexplained infertility, mild endometriosis, or mild male factor infertility, could undergo a one-year observation. Artificial insemination is only considered if a postcoital test has indicated poor sperm activity in the cervical mucus, or if physical or psychological factors are making it difficult for intercourse to be carried out. Some studies have also revealed that natural cycle artificial inseminations are no more effective than observations. On the other hand, the use of stronger ovulation induction medication will improve the live birth rate for artificial insemination, although this will also increase the risk of multiple births. At present, research has yet to confirm whether artificial insemination is effective for moderate male factor infertility, however, severe cases will require the performance of in vitro fertilization paired with intracytoplasmic sperm injection in order to achieve pregnancy. But past evidence has also shown that artificial insemination still plays a role in addressing moderate male factor infertility. If a successful pregnancy has yet to be achieved after a year of observation, or after three to six rounds of artificial insemination have been performed, then in vitro fertilization (IVF) may be carried out.

For patients who are unable to ovulate due to pituitary gland-related problems, they could stimulate their ovulation via the use of gonadotropin-releasing hormones (GnRH) or take trigger shots (gonadal hormones, which include follicle-stimulating hormones and luteinizing hormones). A patient with an excessive level of prolactin may opt to use prolactin-lowering medications. As for a patient who is suffering from ovulation issues and has a BMI of more than 30, she should first lose weight before using ovulation and/or insulin resistance medications. Whether a patient is taking ovulation medications or trigger shots, ultrasound examinations should still be performed to reduce the risk of ovarian hyperstimulation and multiple births.

For the IVF procedure, the egg and sperm are removed, after which fertilization is carried out in vitro, and the resulting embryo is cultured and subsequently implanted in the uterus. This procedure can be divided into the ovarian stimulation, egg retrieval, insemination, embryo culture and implantation stages. Leftover embryos can be frozen and stored for future use, such that ovarian stimulation may be skipped for future attempts. During the ovarian stimulation stage, we will use ultrasonic and blood tests to monitor the follicular development of the hormones and determine the optimal time-point for egg retrieval. Egg retrieval is then

performed 34–36 hours after the administration of human chorionic gonadotropins. Insemination may be performed through natural insemination or a microinjection, with the latter being performed when sperm quality is poor. The proportion of IVF treatments involving microinjections is growing, it is currently about 60% in the US and possibly even higher in Taiwan. Before the embryo is implanted, its zona pellucida is thinned or perforated using a technique called assisted hatching, which can help an embryo to hatch prior to its implantation. Even though assisted hatching may not necessarily improve live birth rates, it can still be performed for cases in which the female patient is older or previous IVF attempts have failed. Preimplantation genetic diagnosis is often carried out for couples with hereditary diseases. Before the embryo implantation is performed, a number of cells are first extracted for a gene analysis, so as to confirm that the absence of genetic diseases in the embryo.

IVF is best-suited for women who have been pregnant or had live births. Given that women experience a rapid decline in fertility after they turn 40, and that the live birth rate for IVF babies decreases with a woman's age, it is therefore not recommended for women above 40 to undergo IVF treatment. In other words, it is better to have a baby sooner rather than later. For women who are between 40 and 42, but do not suffer from conditions that will impede the effects of ovulation induction medications and have never received an IVF treatment, they may consider trying it once. For women younger than 40, the general recommendation is make three attempts.

In summary, a woman's age is the biggest factor that affects her chance of conceiving; thus, it is best to start a family earlier if that is possible. In the event that a woman is unable to find a suitable partner, she may consider egg freezing as an option. National Taiwan University Hospital's (NTUH) Fertility & Reproductive Medical Center provides a full range of reproductive options; hence, anyone who has needs in this area can simply make an appointment with our medical team and our physicians. We are a big family comprising physicians, technicians, and counselors, who will treat every infertility patient as a part of the family. More importantly, and in contrast to the unsubstantiated opinions out there, we provide treatments that are backed by clinical evidence and are beneficial to our patients, in the hope that those with reproductive needs can soon meet their beloved child.