

## Diagnosis and Treatment of Infertility

### Overview

For conception to take place in the human female, the following events must occur:

1. Eggs must be released from the female's ovary.
2. Sperm must be deposited in the vagina.
3. The sperm must find their way through the female reproductive system to the egg and fertilize the egg.
4. The embryo must attach to the lining of the uterus.

Infertility is defined in most cases as the inability to conceive after one year of trying. When infertility occurs, it is because of failure in one of the four steps listed above.

### Causes of Infertility

Approximately one-third of infertility cases are due to "subnormal" fertility in both the male and the female. In the remaining two-thirds of the cases, approximately half are due to only male factor and half are due to only female factor. The problem must be approached with the investigation of both partners.

### *Infertility in the Male:*

Infertility in the male may result if the male has no sperm, not enough sperm, sperm which are improperly formed or inadequately active, or, although he has sperm, the passage from the testicle to the end of the penis is blocked. Other problems may occur with ejaculation, as a result of which the sperm are not deposited in the vagina in the proper way. A number of factors may contribute to the development of these conditions:

- A history of sexually transmitted disease, such as gonorrhea or chlamydia.
- A history of fevers or infections, particularly mumps occurring after puberty.
- Trauma to the testicle.
- Radiation to the testicle.
- Damage to the vas deferens, most often by vasectomy.
- Varicose veins in the scrotum.
- Use of certain medications, such as those for depression, high blood pressure, and body building.

- Chronic exposure of the testes to high temperature, such as that resulting from the excessive use of hot tubs, tight underwear, or conditions in the working environment.
- The use of tobacco, marijuana, alcohol, and certain street drugs.
- Certain genetic or hormonal problems.

### ***Infertility in the Female:***

A female may be infertile because she does not have eggs, does not release the eggs in a monthly fashion, has a blockage in her reproductive system, or has hormonal problems. Specific conditions which contribute to infertility in the female are:

- Unbalanced hormone levels.
- Medical conditions, such as diabetes.
- Medical conditions in which the woman does not have any eggs.
- Obesity, which may cause problems with ovulation.
- Failure to release an egg monthly, even though the eggs are present in the ovaries.
- Defects of the uterus or the reproductive system which are present from birth.
- A history of sexually transmitted disease, such as gonorrhea or chlamydia.
- A history of surgery of the pelvis.
- A history of pelvic inflammatory disease from sources other than STDs, such as appendicitis or other bowel disease.
- Inadequate cervical mucus.
- Endometriosis.
- Antibodies to the sperm.
- Adhesions (scar tissue) in the pelvis which interfere with the normal functioning of the reproductive system.

### **Testing for Infertility**

The workup varies greatly, depending upon the medical history and the ages of the patients involved. The basic workup includes a semen analysis for the male, a blood test or other tests to prove that ovulation is occurring regularly in the female, and an evaluation of whether the woman's fallopian tubes are open so that an egg can get from the ovary to the uterus.

For the male the specific tests required may include:

- A semen analysis.
- Blood tests.
- Referral to an urologist if an abnormality is detected.

For the female the specific tests required may include:

- Ovulation testing using a home urinary hormone testing kit.
- Blood tests.
- Endometrial biopsy.
- X-ray to determine patency of the fallopian tubes (hysterosalpingogram).
- Ultrasound, possibly with saline infusion (Saline Infusion Sonography).
- Hysteroscopy, a procedure in which a small telescope is placed in the uterus to check for abnormalities.

- Laparoscopy, a surgical procedure in which a small telescope is placed through the navel to check for abnormalities of the tubes, ovaries and pelvis. This is the only way to diagnose mild forms of endometriosis.

In some situations, some testing may be omitted and the couple is advised to proceed directly to assisted reproductive technology procedures.

### Treatment for Infertility

Treatment will depend upon the diagnosis and on a number of other considerations and needs to be discussed between the couple and their physician.

The basic treatment options for the male include:

- The use of donor sperm if the male has no sperm and no sperm can be made to appear (Therapeutic Donor Insemination).
- Concentration of the sperm and placement directly into the uterus if there is a small, but inadequate, amount of sperm (Intrauterine Insemination of Washed Sperm).
- In vitro fertilization with direct injection of a sperm into the egg (Intracytoplasmic Sperm Injection, or ICSI) if there is a very small and/or inadequate amount of sperm or if the sperm are misshapen.
- Surgical procedures for varicose veins of the testes or to repair blocked male tubes.
- Medications to enhance sperm production.

The basic treatment options for the female include:

- Ovulatory medications to facilitate or enhance ovulation.
- Surgery to correct blocked fallopian tubes.
- In vitro fertilization, or other advanced forms of embryo and sperm micromanipulation, known as assisted reproductive technologies.
- Donor Eggs for IVF.

Not everyone who is infertile can be made to be fertile. For some patients, adoption or a decision to live child-free are options to consider. All of these options should be carefully discussed with your physician.