Chapter Five

Fertility Basics

Five thousand years ago, the diagnosis of infertility was presumably much easier to make than it is today. Since women bear children, early civilizations generally assumed that infertility indicated a problem with the woman. In fact, we do not know the date that humankind began to understand that conception required sexual intercourse. Even after early civilizations came to realize that conception required a man, most cultures still considered the woman at fault if no pregnancy occurred.

Early Egyptians appeared to log the first recorded diagnosis for infertility on papyri scribed between 2200 and 1500 BC. The early papers listed several diagnostic tests. Among these was one that was based on the principal of "Clear Passage."[3] The theory was that in order to be fertile, a woman had to have a clear passage from her mouth to her vulva. A common way that early Egyptians tested a woman's fertility was to place a clove of garlic in her vagina. They would wait a few minutes and determine whether they could smell the garlic on her breath. When they could, it indicated that the woman was fertile, with a "clear passage" throughout her system.

Today, only a part of that theory remains valid. There must be a clear passage between the fallopian tube, uterus, cervix, and vagina for natural conception to occur.

The first diagnosis of infertility was in ancient Egypt. Physicians placed a garlic clove in a woman's vagina. If they could detect it on her breath, she had a "clear passage" through her body, and was considered fertile.

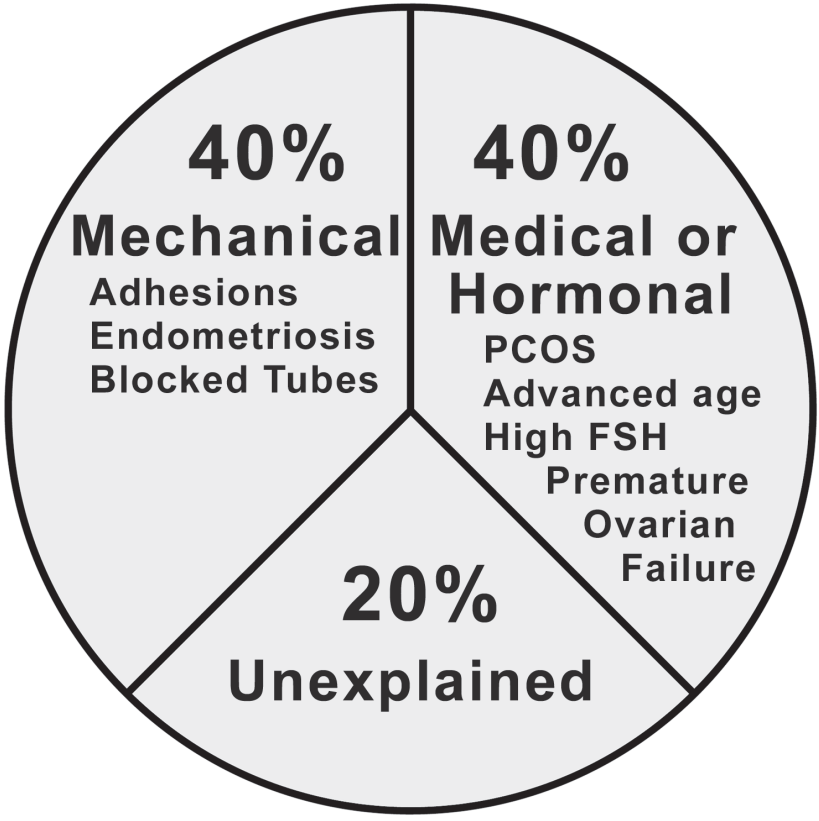
Modern day research shows that about 40% of infertility is due to problems in the male, with an equal amount attributed to the female. The final 20% is considered unexplained, or a combination of the two.

Infertility in men is fairly straightforward and relatively easy to diagnose with tests regarding erectile function, as well as quantity, quality, mobility, and motility of sperm. Male infertility is not a subject of this book.

For most reproductive physicians, female infertility remains a much more complicated area to diagnose and to treat.

Female infertility is divided into three general categories:

- Mechanical infertility (adhesions, blocked fallopian tubes, cervical stenosis, etc.)
- Hormonal or medical conditions (such as age- and disease-related conditions)
- Idiopathic (no known cause)



INCIDENCE OF FEMALE INFERTILITY IN THE UNITED STATES

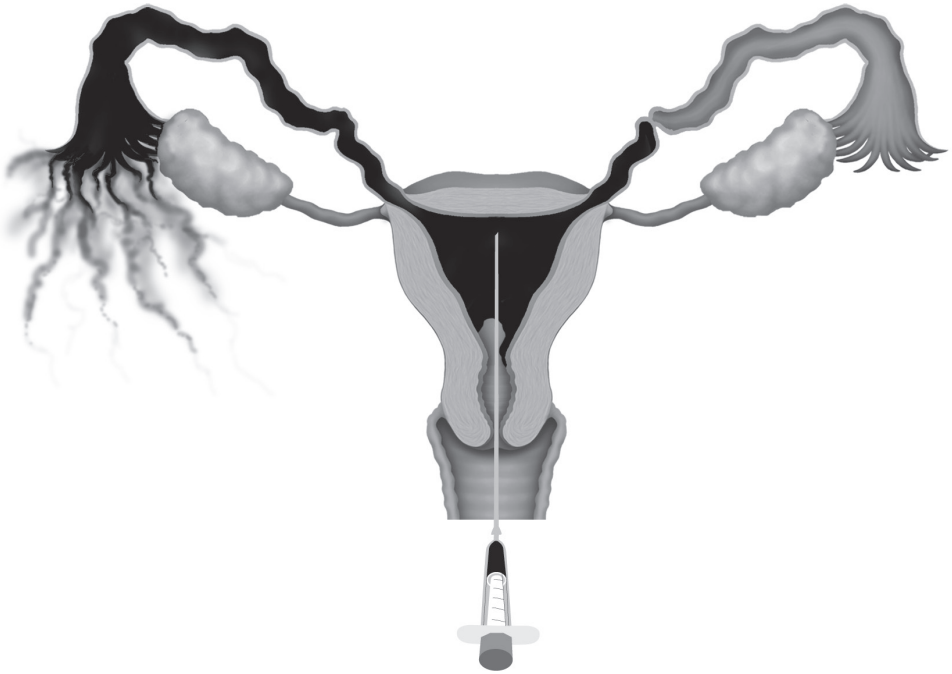
Diagnosis

The diagnosis of female infertility can be a lengthy process, and one that is generally approached systematically and conservatively. Following the Hippocratic Oath, most physicians start with a review of history, along with visual examination and palpation of the reproductive structures to search for any abnormalities

Mechanical Causes of Infertility

If there is no pain and no obvious cause for the infertility, the conservative physician will move on to minimally invasive diagnostic tests and procedures, such as ultrasound or sonogram.

If those tests are inconclusive, or do not show an obvious cause, the physician may prescribe a more invasive procedure, such as a hysterosalpingogram (HSG). In this test, radiographic dye is injected into the uterus via the cervix.



During an HSG procedure, radiographic dye is inserted via the cervix into the uterus. The physician views the dye's progress through both tubes. Here, dye flows freely through the left fallopian tube, but cannot pass the mid-tubal area of the right tube.

The physician will observe (and usually photograph) the course of the dye. Both doctor and patient can watch on a television monitor that follows and photographs the course of the dye as it enters the uterus to determine:

- if the dye proceeds unhindered into the fallopian tube,
- the shape, physical structure, and symmetry of the inner wall of the uterus and fallopian tubes, and
- if each tube is unobstructed and patent (clear) and whether "free spillage" of the dye occurs, which is the most desirable state.

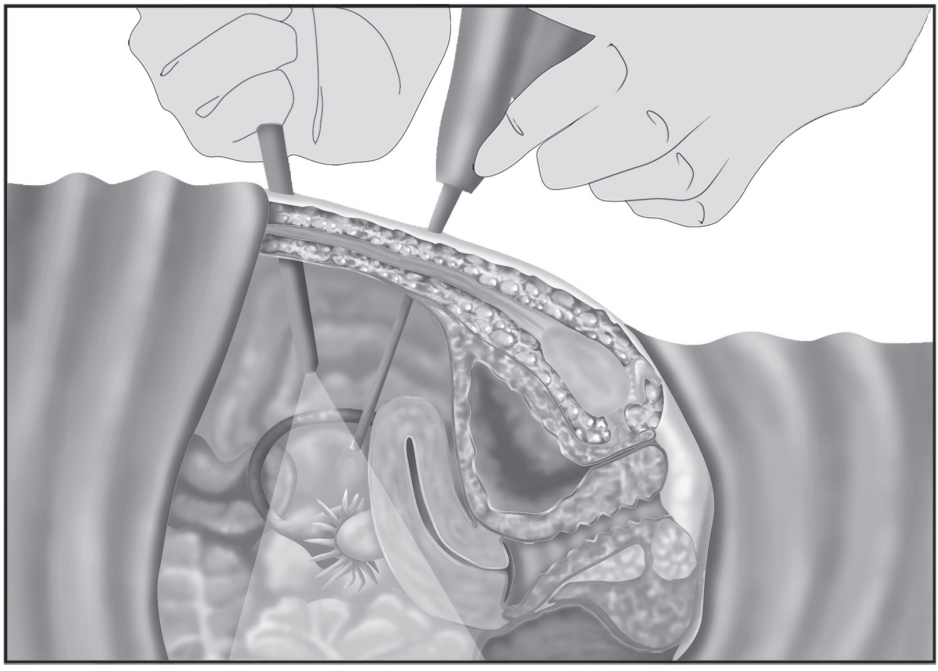
The physician may also deduce whether or not there is any swelling within the tube (hydrosalpinx) which indicates a present or former inflammatory process. In addition, some physicians can deduce whether there is scarring or adhesive activity, due to an unusually circuitous or erratic path of the dye as it proceeds through the fallopian tube on its way to the ovary.

If this and other minimally invasive procedures fail to demonstrate a physical cause of infertility, some physicians may reconsider events in the patient's medical history. For example, if the patient has a history of chronic pelvic or low back pain, intercourse or menstrual pain, or prior surgeries or infections, the physician may begin to suspect that adhesions formed within, around, or between some of the reproductive structures. Other conditions may be considered, such as endometriosis, in which the lining of the uterus is found outside of the uterus, often interfering with delicate reproductive structures such as the ovaries or fallopian tubes.

Adhesions and endometriosis do not generally show-up on x-rays and can only be inferred by HSG, ultrasound, or medical history. They can be definitively diagnosed only by direct visualization during surgery such as a laparoscopy or a laparotomy (open surgery). Complicating some diagnoses is the fact that adhesions can form within structures (as can happen between muscle cells within the cervix or

uterine wall), thus they cannot always be visualized by surgery. In addition, we believe that microscopic collagenous cross-links (the building blocks of adhesions) may decrease mobility and function even though they are too small to be visualized during surgery.

As surgical procedures go, most physicians consider a laparoscopy to be much less invasive than an open surgery (laparotomy).

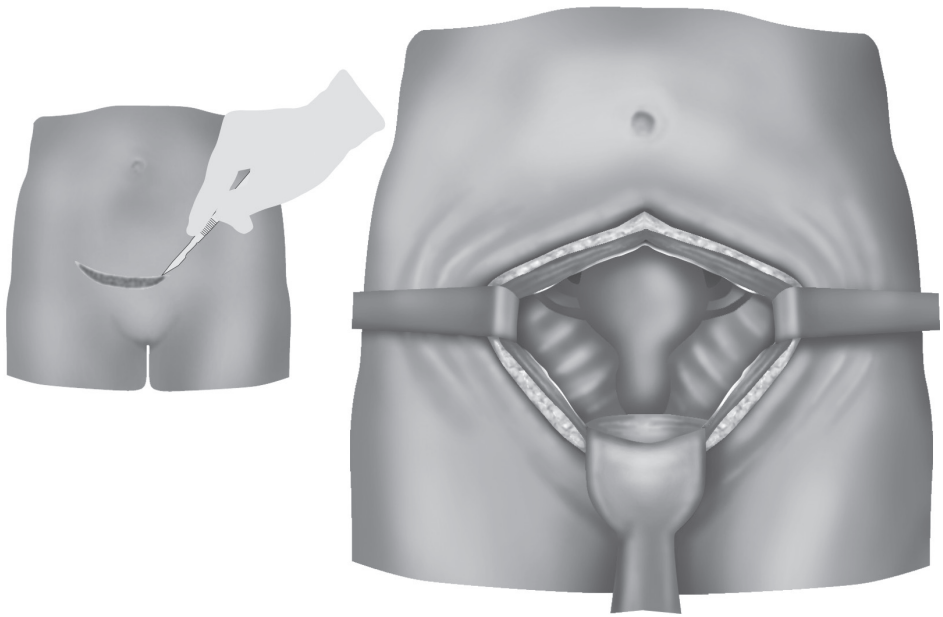


Laparoscopy is performed under general anesthesia. The abdomen and pelvis are filled with gas to separate the organs. The physician uses a light and scope to visualize conditions of the internal structures.

With a laparoscopy, the physician inserts a tube in or near the umbilicus (belly button), then pumps carbon dioxide under pressure into the pelvic cavity. As the gas expands, it creates a space between all of the pelvic organs. The surgeon then inserts a tiny camera to observe and film any mechanical anomalies, such as cysts, fibroids,

endometriosis, adhesions or disease processes. If s/he sees any of these, s/he may cut or burn (lyse) some of the mechanical anomalies with a scalpel or a laser. For example, the surgeon may cut accessible adhesions to free the structures bound by strong adhesive bonds. S/he will generally avoid cutting adhesions in areas that could cause further problems, such as those that attach to compromising locations of the fallopian tubes, ovaries, bladder, or delicate walls of the intestines.

If the adhesions are severe or if the physician cannot safely and effectively access them laparoscopically, s/he may elect to change procedures and go directly into an open surgery, called a laparotomy. This is the most invasive level of surgery, usually reserved for those times when the surgeon feels laparoscopy cannot do an effective job.



The most invasive of all abdominopelvic surgeries, laparotomy (open surgery) lets the physician observe and repair internal structures directly.

Laparotomy provides the physician and patient with significant advantages and disadvantages. A primary advantage of open surgery is that the physician can see and access everything directly. Unhindered by a camera, small instruments, or a tiny space, the doctor can visualize the exact nature, size, and structure of fibroids and cysts. The surgeon can often see the full extent of any adhesions that formed as a healing response in their patient's life. Furthermore, the physician can clearly see where adhesions join to the bowel, fallopian tubes, uterus, or other delicate abdominal or pelvic structures. Thus s/he can do the least amount of damage in removing adhesions or abnormal structures in those areas.

The problems that arise with open surgery include exposure to the elements in the surgical suite (being exposed to airborne infections) and a significantly increased rate and geography of post-surgical scarring (adhesions).

The scarring inherent in open surgery is generally higher than that in laparoscopy for several reasons. As the surgeon cuts the skin, through layer upon layer to access the target areas, each of those layers has to reattach to its former position in order to heal. As cut tissues reattach, the process requires collagen repair (scarring). While scarring repairs cut tissues, it can also adhere layers that were previously mobile and independent from neighboring layers or structures. Unfortunately, the irritation and inflammation of normal movement on newly adhered tissues may cause additional inflammation — with subsequent post-surgical adhesions. When these bonds draw previously mobile tissue together, they can cause pain, decrease mobility, and restrict normal organ function (including reproduction).

Over the past 20 years, physicians have introduced adhesive barriers (often a fine mesh) in hopes of decreasing the scarring that forms between layers of tissue. Notwithstanding the skill and best intentions of the surgeon, the body heals by creating adhesive collagenous bonds. Thus, surgeries create adhesions or scarring as the body

repairs from the surgical trauma to the tissues. For more information on post-surgical pain and dysfunction, please see Chapter Sixteen.

Hormonal Infertility

During the diagnostic process, the physician will also test for hormonal factors that may decrease a woman's ability to conceive or experience a full-term pregnancy. Various hormones can be tested at different times during the menstrual cycle. During days 2 or 3 of the menstrual cycle, a physician may test FSH and LH levels. These will be measured against normal levels and against each other. A panel of estradiol and progesterone levels may also be ordered to check for polycystic ovarian disease and/or an androgen panel may be run to check the levels of free testosterone and dehydroepiandrosterone (DHEA).

Some hormone tests may be done at any time during the menstrual cycle. These include thyroid stimulating hormone (TSH), free T3, T4, free testosterone, DHEA, androstenedione, and prolactin. Physicians and reproductive endocrinologists decide which tests are appropriate for their patients, and may individually consider different hormone levels acceptable. For example, many reproductive endocrinologists will not proceed with IVF stimulation unless FSH levels of day 1 through 3 are below 10. Others accept women with somewhat higher FSH levels.

If the physician cannot find mechanical or hormonal problems, the patient may be diagnosed with unexplained infertility (see Chapter Eleven).

Medical Treatment Options

Mechanical Infertility

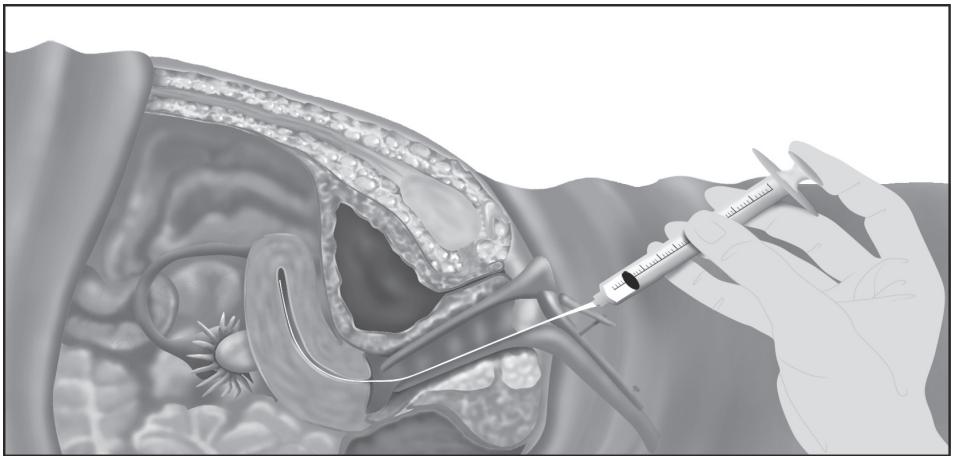
Treatments for female infertility depend on the diagnosis. In addition, treatments may overlap depending on the physician and the

patient's goals. Mechanical infertility is generally treated mechanically, or with techniques designed to bypass poorly functioning structures.

Intrauterine Insemination (IUI) and Clomid®

As noted above, many physicians suggest procedures to medically bypass the causes of mechanical infertility problems. Intrauterine insemination (IUI) is one of the least invasive of all of these procedures.

In an IUI, the physician inserts a catheter into the woman's uterus via the cervix. S/he then injects the partner's sperm directly into the uterus. This method allows sperm to bypass the vagina and negates the need for the sperm to find the cervix and swim into the uterus.



During an Intrauterine Insemination (IUI) the physician injects sperm directly into the uterus.

Clomid or other fertility drugs are often coupled with an IUI. Clomid works to increase the production of eggs in the ovary. Thus, reproductive surgeons and gynecologists have found it to be a useful adjunct to fertility treatment in some cases. An IUI procedure is designed to be administered for a single menstrual cycle. If it fails to

produce a clinical pregnancy, it must be repeated at one or more subsequent cycles.

In Vitro Fertilization (IVF)

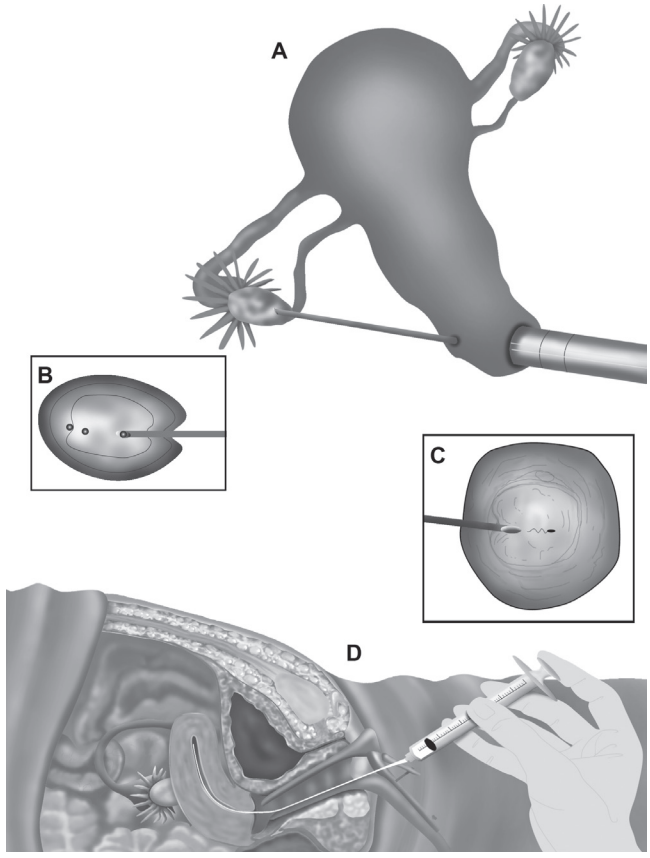
Patients are sometimes encouraged to move to in vitro fertilization (IVF), if IUI does not produce a full-term pregnancy or the fallopian tubes are swollen, impaired, or totally blocked, or for any of numerous other reasons. IVF procedures are conducted by gynecologists with advanced training in fertility diagnosis and treatment or (more commonly) by reproductive endocrinologists (REs). All REs who are licensed to practice in the United States undergo several years of specialized training in diagnosing and treating infertility, after they receive their gynecology credentials.

While IVF protocols vary widely among physicians and depend upon patient diagnosis and treatment responses, most physicians who perform IVFs first conduct physical and medical diagnostic tests to determine:

- whether the woman has a reasonable chance to implant, carry, and nurture a fertilized egg to birth,
- whether the woman is likely to respond positively to ovarian stimulation and other medication,
- if there are any other issues which may impact fertilization, and
- if there is an optimum site to place the transferred embryo(s).

Most physicians will start an IVF cycle by giving the woman pharmaceuticals such as birth control pills to totally shut down the process of natural menstruation. The RE or infertility specialist thus starts with a "clean slate" in which s/he can totally control the woman's reproductive cycle, as much as possible.

The next step often involves giving the patient ovarian stimulating drugs to increase egg production. The initiation of stimulating drugs marks the official "start" of the IVF cycle. Success rates determined by the American Society for Reproductive Medicine (ASRM) and the US Center for Disease Control (CDC) are published for all participating US infertility clinics, based on this "starting point." These success rates are available at www. cdc.gov/ART.



IVF is a series of procedures in which (A,B) one or more eggs are surgically retrieved from the ovary, (C) united with the partner's sperm, then (D) re-inserted into the woman's reproductive tract (uterus or fallopian tube).

The surgeon then surgically removes eggs from the ovaries while the patient is under anesthesia. One or more eggs are chosen and joined with the partner's sperm in a laboratory. Finally, the best of these fertilized eggs are placed inside the woman's uterus.

Like IUI, IVF has one chance to work each menstrual cycle. Many reproductive physicians suggest saving and freezing some eggs for follow-up IVF procedures. If it is unsuccessful, the entire transfer process must be repeated or frozen embryos must be used.

Hormonal Infertility Treatment

Pharmaceuticals such as Clomid® have been shown to increase egg production. Hormones such as FSH, LH, estrogen, estradiol, testosterone, progesterone and TSH may be administered by the physician in order to help normalize or increase a woman's natural ability to conceive. With the assistance of these medications or other options mentioned later in this book, some patients with hormonal factor infertility may be able to conceive naturally, or pursue the IVF process explained above. We discuss hormonal dysfunction in greater detail in Chapter Eight.

Idiopathic (Unexplained) Infertility Treatment

Once a woman and her partner have both been thoroughly tested and the cause of infertility is still unexplained, physicians may review the ovulation cycle with both partners to make certain they understand how to best work with the menstrual cycle. This review will include a thorough explanation of the window of time available in each cycle for natural pregnancy to occur. Since the prime time for conception generally begins four days before ovulation and lasts until the day ovulation starts, it may be necessary for the couple to track ovulation for several months before they get a good sense of when that four-day window of opportunity occurs.

Once that knowledge has been achieved, and if there still is no pregnancy after six months, physicians generally recommend some

form of fertility enhancing pharmaceuticals such as Clomid (as noted above). The physician may order a sonogram or pelvic ultrasound to make sure that the ovaries are producing eggs. Another possible suggestion is an IUI (as noted above), sometimes with a course of fertility enhancing drugs.

Alternative and Complementary Treatment Options

We have only found three natural treatments for increasing fertility that are backed by scientific evidence, with quantitative studies published in peer-reviewed western medical journals. These include group therapy, acupuncture, and our manual physical therapy, the Wurn Technique®. Other techniques have been suggested as fertility enhancements, but to date, none of these have published results in peer-reviewed scientific journals.

Various herbs and traditional Chinese medicine (TCM) have been credited with enhancing fertility by many patients and practitioners, but to date there are no controlled studies published in western journals to support those theories. To date, we have not found science to confirm and quantify, or to deny, success rates for these claims.

Mayan abdominal massage, a technique which was developed and passed down through the Mayan civilization, has been suggested as a self-treatment technique. Mayan abdominal massage differs significantly from manual physical therapy. The intent with Mayan massage is to improve the placement and alignment of the uterus. Because the treatment addresses only the placement and alignment of the uterus, most practitioners do not feel that it can help women with hormonal infertility, blocked fallopian tubes, and conditions outside the uterus. No published scientific studies show that Mayan massage increases fertility or decreases pain.

The list of fertility enhancing "potions," positions, and adjunct techniques is long. As long as a technique is not injuring someone, our feeling is to follow the Hippocratic Oath: "Above all, do no harm."

That is to say, if it is not going to harm you, there is likely no danger in trying something that makes sense to you. As always, we suggest consulting your physician before attempting anything that might interfere negatively with your fertility, or with your physician's treatment.

Behavioral Therapy

In 2000, Harvard psychologist Alice Domar, PhD, published a study in which she found that women who participated in group therapy were 30% more likely to experience spontaneous conception and medically-assisted conception than those in the control group. Participants in the group therapy received relaxation training, cognitive restructuring, methods for emotional expression, and nutrition and exercise information related to infertility.[4]

Acupuncture

A German study published in 2002[5] showed that patients who received acupuncture at specific points on their bodies 25 minutes prior to and 25 minutes after IVF transfer had increased pregnancy rates versus the control group. In 2007, a similar study conducted by the University of South Australia[6] found that fertility rates were also higher in participants who received acupuncture prior to and after IVF transfers.

Some physicians note that the final success rate for the acupuncture group was relatively low compared to the norm throughout the US. While no explanation was given for this in the study, it has been suggested that participants were perhaps more challenging cases who had previously had no success with IVF transfers. However, the success rates between the non-treatment control and the acupuncture group were high enough to surmise that acupuncture improved the IVF pregnancy rates significantly for the participants.

Manual Physical Therapy (Wurn Technique®)

We approached the prospect of affecting fertility with a great deal of caution. Raised as we were in traditional medicine, and dealing with physicians every day for many years before our initial infertility successes, we harbored our own skepticism at the same time that women were telling us, "My doctor told me I would never become pregnant. Since you have treated me, I'm now going to be a mom."

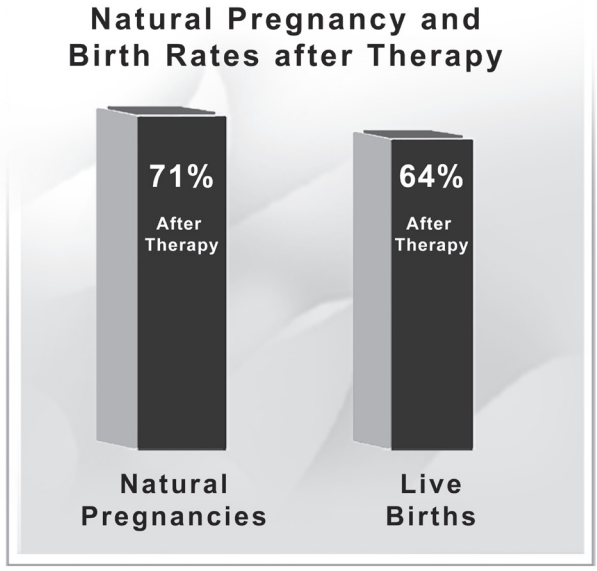
On the one hand, we realized that if this were true, this would be a real boon to womankind. To find a non-surgical, non-pharmaceutical adjunct infertility treatment would be a tremendous benefit to many women, their spouses, and their physicians. On the other hand, we realized that even if scientific investigation confirmed that we had achieved positive results, we would still be met with a great deal of skepticism.

In the end, Dr. King, along with several other physicians coached us through creating scientific trials and studies to determine whether or not we were able to reproduce our positive treatment results. Part of our intent was to try to delineate the specific success rates for various types of female infertility, as well as noting any risks or adverse side effects.

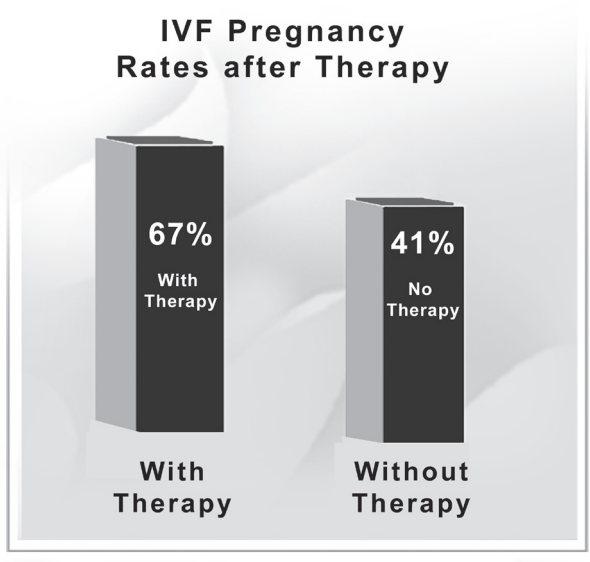
In 2004, the first definitive studies of our work with women diagnosed infertile were published in *Medscape General Medicine.* To date, we have completed seven published studies and abstracts. All studies were conducted under the direction and guidance of independent physicians and scientists at our Clear Passage Therapies® clinic in Gainesville, Florida. In each chapter of this book, we discuss the relevant studies we conducted along with data from studies we have published in peer-reviewed medical journals.

In the 2004 *Medscape* study[7], 71% of women who had been infertile for an average of five years became pregnant naturally after receiving 20 hours of the Wurn Technique®, and 64% produced full-term births. Subsequent review showed that 33% of the new mothers had

a subsequent natural pregnancy and birth, suggesting the therapy has lasting effects for some women.



In a concurrently published study, 67% of women undergoing IVF after receiving the therapy had clinical pregnancies after embryo transfer, versus the 41% national average, used as a control. (We used the national "transfer success rate" of 41% rather than the "start of cycle" success rate of 28% because at that time we had no idea that we could improve hormone levels. Thus we were testing the "mechanical" aspects of IVF after embryo transfer, exclusive of the hormonal aspects that affect the ability of a woman to proceed to transfer.)



While the number of participants in these studies was small, we've been told it is often that way in pioneering studies. The fact that we were able to conduct these studies under the direction of independent physicians, that the facts and methods passed peer review (the scrutiny and review of physicians and scientists assigned anonymously by the journals), and that the results were found compelling enough to be worthy of publication and/or presentation to large physician groups speaks to the credibility of the data we obtained.

Endometriosis and Multiple Failed Surgeries, IUIs, and IVFs

- Madison's Story

I was shocked when I could not become pregnant. My husband and I had always assumed we would be able to have children when we wanted. But after trying for a year, we finally sought the help of my gynecologist.

Because infertility tests are less intrusive for men, my husband was the first to be tested. When his tests came back normal, my personal struggle with infertility began.

HSG (Hysterosalpingogram)

My physician immediately suggested I have a hysterosalpingogram (HSG) — a test to determine if there was any blockage in my fallopian tubes. I was relieved when the HSG revealed that my tubes appeared to be functioning properly.

I knew something else had to be wrong. Since the onset of puberty, I had experienced excruciating pain during my periods. My doctors had never been able to find the source of my pain. I thought that pain might be tied to my infertility.

I consulted another physician who suspected I had endometriosis — a condition in which endometrial tissue grows outside of the uterus, and can cause severe pain and infertility.

Laparoscopic surgery

Unfortunately, the only way to diagnose endometriosis is through laparoscopic surgery. My physician found severe endometriosis encasing the majority of my reproductive

system and bladder. During the surgery, he removed any endometrial tissue he could access. However, the surgery caused my bladder to shut down and a bladder specialist had to be called in. I had to spend considerable time healing, due to these post-surgical complications.

Fertility drugs

Even after the surgery, we found we were still unable to become pregnant. My doctor then prescribed Clomid®, to enhance my fertility. Because this drug affects the hormonal system, I experienced side effects, such as having little control over my emotions. I continued taking Clomid for six months. But after no success, our doctor decided to refer us to a specialist.

IUI (Intra-Uterine Insemination)

The specialist we consulted thought an intrauterine insemination (IUI) was our best option. During the IUI, a thin catheter was inserted through my cervix and my husband's washed sperm was injected into my uterus. Because an IUI has to be performed within six hours of ovulation, I was given hormonal shots. I was prescribed Paxil®, an anti-depressant, to help with emotional swings, but I still felt like I was going through menopause. I would wake up in the middle of the night and want to strip off all my clothes.

Because my menstrual pain was back, my specialist recommended I have another laparoscopic surgery.

My frustration increased when the IUI wasn't successful and two subsequent IUIs also did not work. Because my menstrual pain was back, my specialist recommended I have another laparoscopic surgery. I was hesitant to undergo the procedure again, so I sought a second opinion.

Our new specialist agreed that a laparoscopic surgery would be beneficial. I decided to go through with the surgery, but it turned out far worse than the first. This surgeon accidentally nicked my intestines while removing endometrial tissues — causing me to stay in the hospital for a week.

IVF (In Vitro Fertilization)

After the disappointing results of both surgeries, my husband and I decided to try in vitro fertilization (IVF). For ten days, I gave myself injections that made me sick with an upset stomach. Then, while I was under sedation, the specialists used an ultrasound-guided needle to reach my ovaries, and retrieve my follicles. They were then incubated with my husband's sperm. After an egg was fertilized, the embryo was transferred to my uterus.

I had to wait two excruciating weeks before I could return to the clinic for a pregnancy test. When we were finally told the results, we were devastated to learn the IVF was unsuccessful. Three months later, my husband and I decided to try another IVF transfer. Once again, our transfer ended as a "failure." Grasping thin threads of hope, we schedule a third IVF transfer.

Manual physical therapy

Before the procedure, our superintendent asked me and my husband if we had ever heard of Clear Passage

Therapies (CPT), a clinic that offers manual physical therapy to help relieve pain and improve fertility. My husband and I researched CPT, and read their website and medical studies. Because it had proven success without the drugs and surgery that had caused me so many problems, we knew this was something that I should do. We felt it would not only increase my chances of pregnancy, but would also help my body heal from all I had undergone to that point.

When I arrived for my week of treatment, the therapists first explained that when the body heals from trauma (surgery, abuse, etc.), scar tissue forms and can turn into adhesions that cause pain and prevent proper function within the body. During my twenty hours of treatment, the therapists worked to loosen adhesions and restore proper function to my body.

Afterwards, my body felt looser and healthier. When I returned home, my husband and I were elated to find that there was no longer any pain with sex. My husband joked that he would send me back for more treatment in a heartbeat. Another amazing outcome was that I no longer experienced pain from my endometriosis.

Another amazing outcome was that I no longer experienced pain from my endometriosis.

We completed our third IVF just one month later. When my pregnancy test came back positive, I was so excited! I knew it had to be the manual physical therapy that made the difference.

We were so happy when our beautiful baby girl was born. Five months after her birth, we discovered another surprise. I found out I was pregnant again! After struggling with infertility so long, my husband and I never considered using any form of birth control. It was then that I knew CPT had healed and restored proper function to my body.

Looking back, I wish I had gone to CPT sooner. After all the drugs, the painful, unnecessary surgeries and treatments, it was a natural, drug-free treatment that finally enabled me to become a mother.